

# THE CASE FOR A ROMAN TRANSPORT CANAL INTO LEICESTER

Extended on-line material to that offered in *Itinera* Volume 3, 2023

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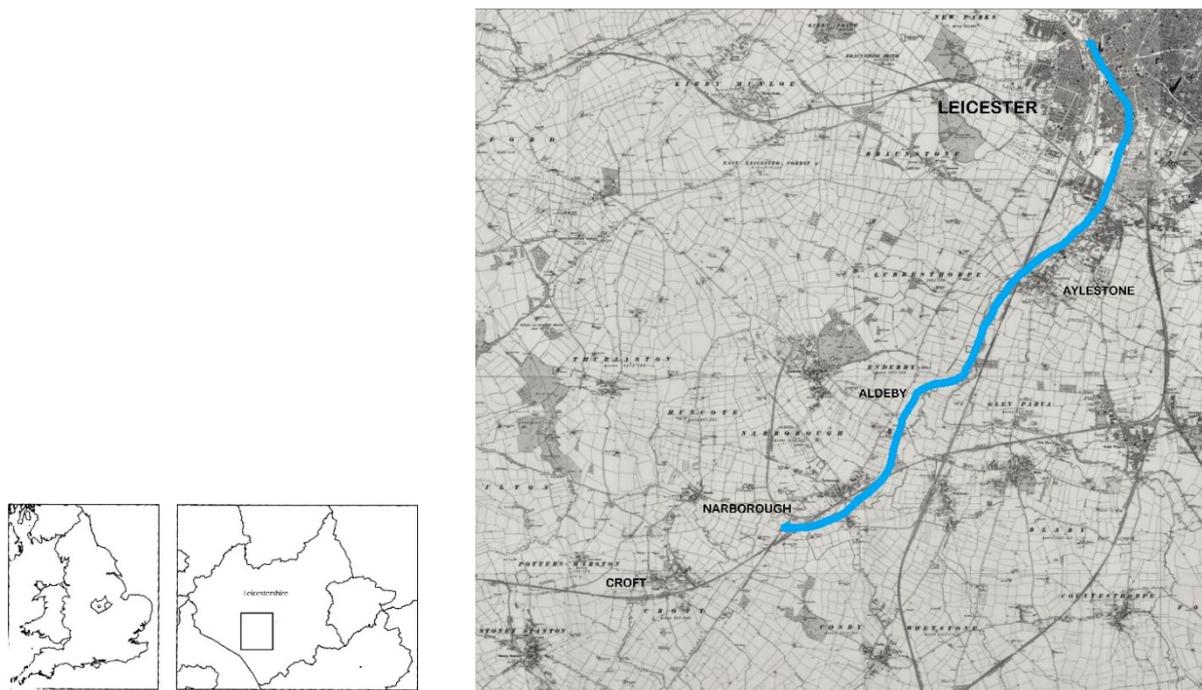
## ABSTRACT

*The Raw Dykes is a large double bank and ditch of uncertain age and purpose located in the south of modern Leicester. It is now commonly considered to have been part of an aqueduct conveying water to the Roman baths situated by the Jewry Wall in Leicester. These baths were excavated by Kathleen Kenyon in the 1930s, although aspects of her findings have been queried by other archaeologists. Mitchell examined some aspects afresh and proposes that the Raw Dykes was part of a much larger waterway which had not only fed water to the baths but had also enabled boats to transport granite into Leicester from quarries in the south-west of the County.*

## INTRODUCTION

Leicester was an important town in Roman Britain. At some time, possibly during the second century AD, it became a *civitas capital* of the *Corieltavi* people and was known as *Ratae Corieltavorum*. It retains to this day the remains of a suite of Roman public baths, of which one wall, known as the Jewry Wall, still survives to a height of some 9 metres.

Some 2km south of the site of the baths are the remains of a large double bank and ditch earthwork known as the Raw Dykes. These remains were first mentioned in 1322 ([www.storyofleicester.info](http://www.storyofleicester.info) accessed Dec 2022) but have since been heavily truncated and levelled, especially in the later 18<sup>th</sup> century, so that only a stretch some 110m long out of more than 600m survives to be seen today. See **Figure 1** for a general map of the area, and for the specific locations including the Jewry Wall baths and the Raw Dykes earthwork see **Figures 17 & 40**.



**Figure 1:** location of Leicester within the UK, and map of the area discussed. The possible course of the Roman transport canal is about 16km long is shown in blue. OS 6" map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.

The Raw Dykes has not always been reputed to be Roman in origin, but more recently it has become considered likely to have been part of an aqueduct bringing water into the Roman town (Wacher 1975, 344-45; Historic England [https://www.heritagegateway.org.uk/Gateway/Results\\_Single.aspx?uid=6fd93a5d-8d92-4f7b-9d6b-c7e5186f119d&resourceID=19191](https://www.heritagegateway.org.uk/Gateway/Results_Single.aspx?uid=6fd93a5d-8d92-4f7b-9d6b-c7e5186f119d&resourceID=19191), accessed June 2022). However, when William Stukeley inspected the remains in AD 1722, he proposed that they had been part of a prehistoric *cursus* (Stukeley 1776, 109). Another possibility is that they had been part of the territorial banks and ditches of an Iron Age *oppidum* or boundary (Page (ed) 1907, VCH, Vol 1, 181), similar to those which are known at Bagendon near Cirencester and Gosbecks near Colchester (G. Appleby, *pers. comm.*)

However, the author believes that there is a case to be made for the Raw Dykes to have been part of a Roman transport canal, providing not only a supply of water to Leicester but enabling the shipment of building and other materials into the town as well. The reasons why this theory has not been advanced before are explained in the following section. Much of Roman Leicester seems to have been constructed from granite quarried to the south-west of the town. Moreover, the Roman town seems to have experienced a major building boom in the second quarter of the second century AD, with the construction of the Jewry Wall baths, the Forum, and a Basilica, with a *Macellum* following somewhat later, and a Temple (Morris, Buckley and Codd 2011, 17) and possibly with a Theatre (G. Appleby, *pers. comm.*). Therefore, there would clearly have been a need for the transport of significant quantities of building and other materials into the developing Roman town during that period of growth, although this does not necessarily require that the means to do so would have included a transport canal.

Nevertheless, the size of the channel of the Raw Dykes is much larger than what would have been required to house an aqueduct for the supply of water alone. It is this observation which led the author to propose that the Raw Dykes had also been part of a canal constructed by the Romans to transport granite into the Roman town from an area to the south-west of Leicester. (Although the author had not been aware of it until preparing this article, this aligns with a suggestion made by Sheppard Frere in his book *Britannia* (Frere 1967, 245)). The author spent many years investigating this proposition by a detailed examination of the ground south-west of Leicester. He has undertaken this by means of (a) field walking along the 61 m OD contour, (b) aerial photographic surveys, (c) desktop research and

recently, (d) via the use of lidar. However, despite many talks and presentations given to archaeological and historical societies (Jones 2015, 28), there had been no formal publication of this work.

Mitchell took a degree in Fine Arts and then, following a successful career in business, took up landscape archaeology with an interest in the morphology of early Christian churches. This led him to conduct a detailed examination of St Nicholas church in Leicester which partly lies over the Roman baths site. Since 1999 he has studied the Jewry Wall and the excavations of the Roman baths and the Raw Dykes, largely carried out by Kathleen Kenyon (later Dame) in the 1930s. As a result, he commissioned a professional survey of the levels of both the Baths and the Raw Dykes, which showed errors in Kenyon's survey results. Contrary to one of her conclusions, it would have been possible for water in the Raw Dykes to have run directly to the baths by the Jewry Wall (these levels have since been confirmed via the use of lidar). These new results prompted the author to attempt to solve some of the problems resulting from poor methodology and recording. He is a member of Leicestershire Fieldworkers, Northamptonshire Archaeology Society and the Roman Roads Research Association.

Although this is a more detailed presentation of Mitchell's research, in 2021 he teamed up with John Poulter to publish their joint paper 'The case for a possible Roman transport canal into Leicester' in *Itinera* Volume 3, 2023, 105-144. Poulter, coming from a background in systems engineering, has published several books and articles on the planning of Roman roads and walls. He is a member of the Roman Roads Research Association, the Railway & Canal Historical Society, the Society for the Promotion of Roman Studies, and a Fellow of the Society of Antiquaries of London. He became involved with Mitchell's work, and most of his efforts since then have been directed towards examining the practical feasibility and the water management issues of Mitchell's theory – see **Acknowledgements**.

By coincidence, both Mitchell and Poulter grew up in Leicester, and as a child Poulter was familiar with the regular flooding of the River Soar to the south-west of the city in the 1940s. Mitchell's analysis of Kenyon's work at the Jewry Wall site has revealed multiple flaws in her excavations, analyses and conclusions there, leading Poulter to agree that a separately published paper was required to document these in more detail. This paper is part of that process.

The article which follows addresses the archaeological case for a possible Roman transport canal running into Leicester from an area to the south-west of the Roman town. It also starts to explore the archaeology of the Jewry Wall Roman baths and the history of its misinterpretation which has hidden the true extent and purpose of this site. In their joint article the authors agreed to limit their study along the valley of the River Soar to no further than the south-west of the Fosse Way (Roman road RR5e), just south of the village of Narborough. However, there are grounds for considering that the proposed Roman transport arrangements would have continued further west, at least towards the village of Croft, and some suggestions of how this might have been accomplished are presented in their joint paper (see *Itinera* Vol 3, 139).

This article is divided into the following sections:

- Abstract & Introduction
- Part One: The Problem
- Part Two: The evidence
- Appendix A & B
- Acknowledgements
- Bibliography

## THE PROBLEM AND THE EVIDENCE

### Part One: The problem

#### The paradigm of waterless *Ratae*.

**There is a serious problem with the interpretation of the water supply to Roman Leicester (*Ratae Corieltavorum*). Part One explains how this problem arose and a history of the attempts to tackle it including how the present author approached the search for yet another solution. Part Two details the evidence for a transport canal from the Fosse Way to the public baths in *Ratae*.**

The case rests in part on the need for a reliable, continuous, and copious supply of water into Roman Leicester (from hereon *Ratae*) yet by 2000 none had been found. An attempt to explain the source of this water was made by William Keay (Keay, 1933. Details in Burgers (2001, 41)) and was again adapted by Wachter (Wachter 1995, 351) as a solution. This theory was based on the damming of the Knighton Brook and running the water down a narrow channel found in the bottom of an earthwork ditch lying about 2km (1.3m) south of *Ratae* and known locally as the Raw Dykes (SK 8342 2599) even though the flow from Knighton Brook was likely to be inadequate. The dam has not been discovered and the narrow channel, i.e., the ‘curious notch’ (a description used by the present author) see **Figure 3** - could also suffer from serious evaporation in summer. This was not ideal especially, as Wachter observed, that the very large and steep drain next to the Jewry Wall Roman bath site was obviously built to carry away copious and continuous quantities of water (Wachter 1975, 345). The problem is succinctly stated in Historic England’s ‘Reasons for Designation’ for the listing of the monument:

*The Raw Dykes* (List Entry Number: 1017391. UID: 30218. National Monuments Record Number: SK550 SE 9) *represents a rare survival of a Roman water control feature in an urban context. It is particularly unusual in that it could not have operated on the more usual gravity flow principle utilized elsewhere in Britain, and thus represents a segment of a comparatively complex system which would have required both intensive labour and considerable engineering skills to construct.* <https://www.heritagegateway.org.uk/Gateway/Results> accessed in June 2022. Bold script added.

The reason for the statement highlighted in bold arises from an excavation of the Raw Dykes conducted by Kathleen Kenyon in 1938/9. According to her the channel was too low to deliver water to the bath site, the fault of an ‘incompetent provincial engineer’ (Kenyon 1938, 40-41). It could not, therefore, have operated on a ‘gravity flow principle’.

Returning to Historic England’s description of the scheduled monument where it is interpreted as an aqueduct (see **Figure 2**):

*The monument includes the remains of a Roman aqueduct known as the Raw Dykes situated immediately west of the junction of Aylestone Road and Saffron Lane, Leicester.*

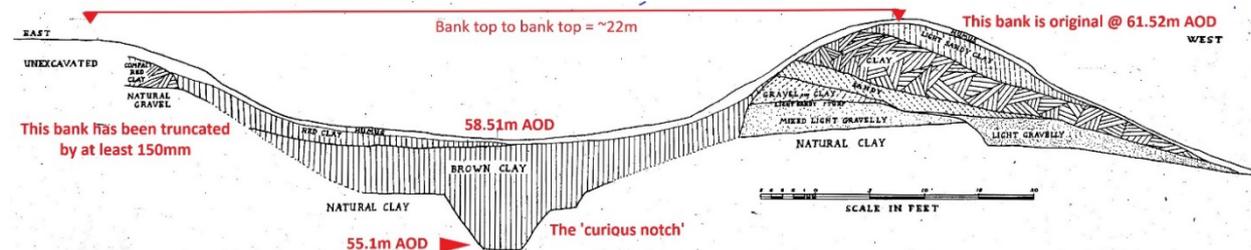
*The monument includes linear earthworks up to 110m in length and orientated on an approximately north east-south west axis following the 60m contour. The remains consist of parallel banks defining a flat-bottomed linear depression approximately 110m in length, a maximum of 20m in width and 2.5m in depth. The north western bank reaches a maximum height of approximately 4m above ground level on its western side and is up to 17m in width at its base. The south eastern bank rises to a height of about 2.5m above the central depression on its western side but is only approximately 0.6m high on its eastern side due to a rise in*

ground level. The Raw Dykes are considered to represent the remains of a Roman aqueduct or water channel constructed to supply the settlement of *Ratae Corieltavorum*.

It is over 80 years since Kenyon's report and her levels survey has created the 'paradigm of waterless *Ratae*'. Clearly *Ratae* must have had water so how did it get there?



**Figure 2:** The Raw Dykes Scheduled Monument looking south towards the railway line and Gas Works beyond (Kenyon 1948, Plate XIX) just prior to excavation in 1937. Was this oversized ditch the remnant of a Roman transport canal? © Corporation of the City of Leicester. By kind permission of Leicester City Council.



**Figure 3:** Kenyon's section through the Raw Dykes Scheduled Monument (after Kenyon 1948, Plate XXXIII). The height levels are from Mitchell's resurvey commissioned in 2000. Note the red clay layer on the left of the channel which possibly comes from Croft or Stony Stanton. The brown clay (Keuper Marl) is probably from Croft.

### A possible solution

In 2000 the author invited Tony Rook of the Welwyn Archaeological Society and author of the 'Roman Baths of Britain' to advise him on how to interpret the Jewry Wall bath site. He suggested that the source of the water had to be located before anything else. As a result, the author commissioned a professional survey of the levels and found that the bottom of the ditch was 1.44m higher than Kenyon's measurement.<sup>1</sup> At a stroke this meant that it was technically feasible for water in the Raw Dykes Scheduled Monument (this description is used from hereon to distinguish it from other possible sections of the Raw Dykes) to reach the Jewry Wall baths along the 60/61m AOD contour.<sup>2</sup> It is possible that **Such a channel would have terminated in a canal basin, from which the water for the baths could have been drawn off and raised into a tower, in a similar way to that which has been postulated for Lincoln** (Thompson 1954, 117), **or else run into an underground cistern or tank and raised into the baths**

<sup>1</sup> A full survey report is available for inspection on request.

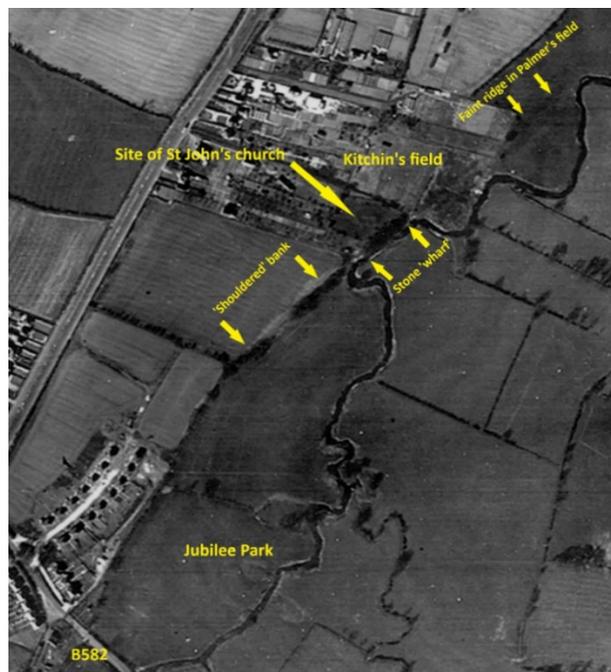
<sup>2</sup> See also The Victoria County History of Leicester, Vol 1, 252-273. For a comprehensive list of sources see Burgers (2001, 196).

from there. This raises the question of what had been the floor level of the baths. This is addressed on pages 14 to 15 and then in **Appendix A**.

Putting aside the exact details discussed above this was enough to liberate the research to move south along the 60/61m AOD contour searching for the point at which the River Soar could have supplied the Raw Dykes channel.

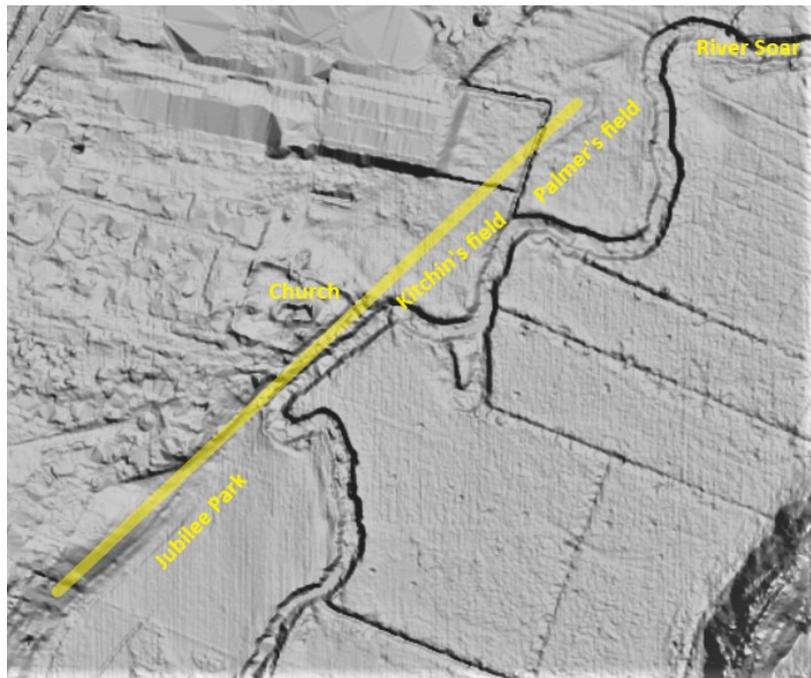
### The search

The search involved walking the extent of the Soar Valley south of Leicester using a wrist altimeter as a guide. Early OS maps were useful as they had spot heights and contours. Research continued by taking to the air to photograph using a powered glider<sup>3</sup> (see **Acknowledgements**) and searching the archive of RAF sortie photos sourced from National Monuments Records, Swindon, and RAF Brampton (see **Figures 4 & 6**). Permission to access private land was sought and the local archaeology community was asked for advice or information: this included letters to Leicestershire Historian and verbal announcements at meetings of the Leicestershire Fieldworkers, together with feedback from talks to get people looking for clues at Leicestershire Archaeological and Historical Society, Friends of Leicestershire Museums and Leicestershire Fieldworkers (Jones 2015, 28). More recently the use of Google Earth Pro (accurate to within plus or minus half a metre although prior to this date the tolerance was less certain) and lidar (accurate to within 1 or 2 decimal places of a metre), such as the Environment Agency (EA) 1m and 2m open-source maps, has helped revolutionise the search for earthworks (<https://experience.arcgis.com/experience/> accessed June 2022). However, the lidar images and sections provided by independent researchers with the Roman Roads Research Association (RRRA) using the EA open-source maps have proved invaluable – see **Acknowledgements**.

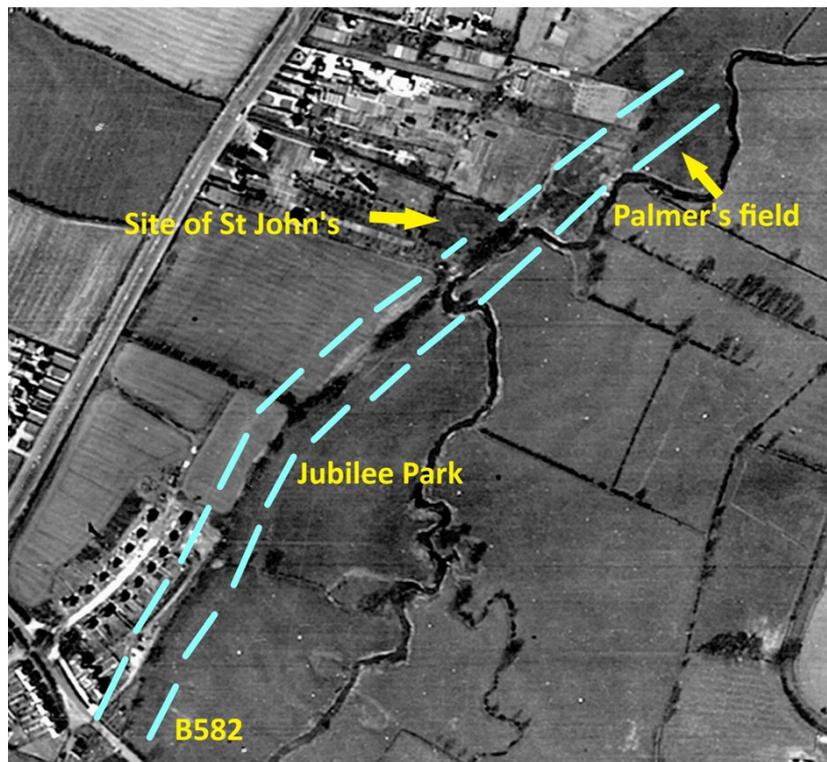


**Figure 4.** An enprint from a RAF Brampton sortie photo. St John's, Aldeby (SP 553 990) taken at 16600ft in March 1948 (3007 RP CPE/UK/2555 27 1550ZMAR48 20IN 16600FT 19634/01) in the collection of the National Monuments Record, Swindon. This is not the only aerial photo but is the clearest of the RAF sortie images. Crown © reproduced under Open Government Licence v.3.0.

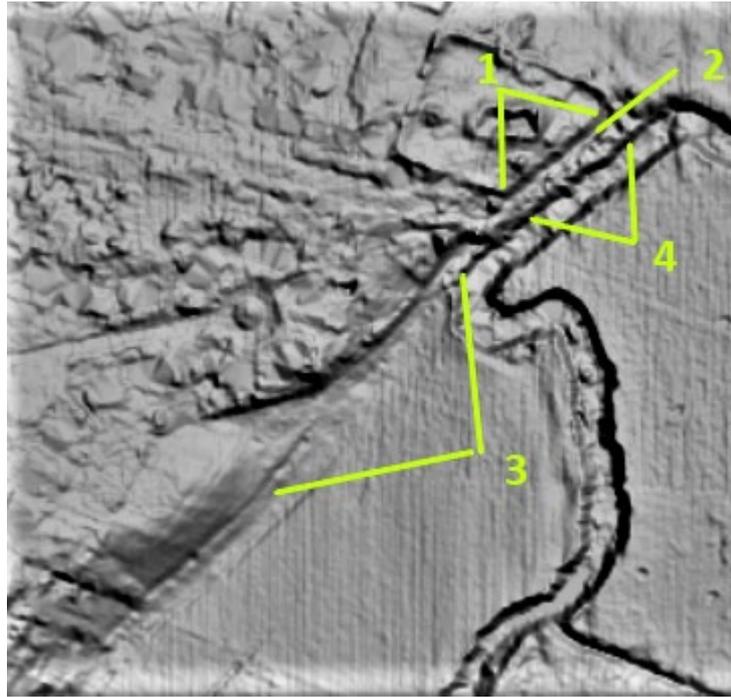
<sup>3</sup> Coventry Gliding Club based at the Husbands Bosworth airfield. The search took place during the Foot & Mouth epidemic so gliders could not be used as they might be forced to land anywhere so a powered glider was used instead.



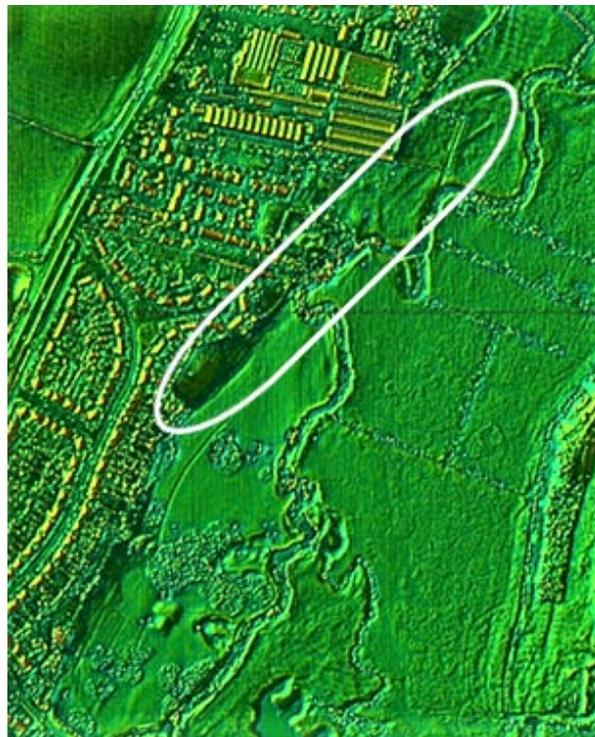
**Figure 5:** A lidar scan courtesy of Dave Armstrong. The evidence at the four locations shown is dealt with below and in **Part Two**. The tops of the 'shouldered' bank (yellow line) are very clear along some sections of the 'Aldeby earthwork' but not in Kitchin's field. Results can vary from scan to scan. Lidar data © Environment Agency copyright and/or database right 2020. All rights reserved.



**Figure 6:** Locating the evidence of the 'shouldered' bank in the 'Aldeby earthwork'. The course of the possible transport canal is between the pecked lines and is described as part of the 'Aldeby earthwork'. The double-bank feature is visible in Kitchin's field but not in **Figure 5** above. Crown © reproduced under Open Government Licence v.3.0.



**Figure 7.** An enlarged lidar scan of the Aldeby church site and the playground slope in Jubilee Park. This enlargement of **Figure 5** is part of the 'Aldeby earthwork' showing the 'shouldered' bank as a knobby ridge crossing the image at 45°. Between the edge of the church site and the river it is possible to discern four straight features (1) a scarp along the edge of the church enclosure – possibly the edge of a boundary wall or bank (2) a declivity (3) a thin and knobby ridge and (4) a stone-lined bank into the river. The thin knobby ridge is the top of the 'shouldered' bank. The knobby ridge might be the remnants of timber piles which formed the low wall of a quay which continues along the edge of the playground slope. This feature was last seen in 1999 lying behind the stone bank and appeared to be set at a shallow angle. *Courtesy of Dave Armstrong. Lidar data © Environment Agency copyright and/or database right 2020. All rights reserved. See also (Hartley 1989, 67).*



**Figure 8:** A customised lidar scan of the 'Aldeby earthwork', this time with a very clear trace of the top of the 'shouldered' bank in Kitchin's field and the ridge in Palmer's field. *Courtesy of David Ratledge. Lidar data © Environment Agency copyright and/or database right 2020. All rights reserved.*





**Figure 9:** An aerial view of the Aldeby church and Jubilee Park with the playground. The waterlogged channel of the former canal is clearly visible as is the scarp and the knobby ridge of the 'shouldered' bank. © Google Earth Pro (2022) Image by Maxar Technologies.

Several areas of interest emerged. In particular, the Soar valley around Aldeby church where there was some evidence of a stone 'wharf' fronting the 'church' site backed by a 'shouldered' bank which is now thought to be part of a much longer feature best seen in Jubilee Park. This was first seen in 1999 although obscured by vegetation and a crumbling stone wall. It was man-made protruding about a metre above the then water level and leaning back into the soil bank at a slight angle. First impressions suggested it was formed from upright timber baulks laid in a tight formation. The building behind it was thought to have started life as an apsidal ended building with the apse probably at the western end.<sup>4</sup> This strongly suggested that the building was Roman. A diamond-shaped Roman roof slate has been recovered from the site, identified as second or third century using David Ramsey's 'Catalogue of roof slates recovered from the Narborough/Huncote area' (Ramsey, 2002, 24.) Two strong clues that this was a Roman age site. This was a good starting point for the search.

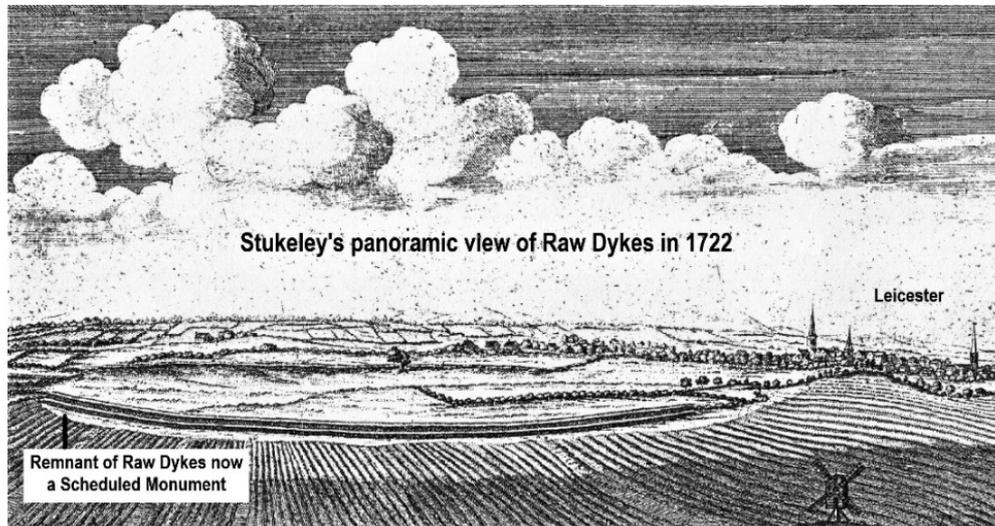


**Figure 10:** A view of Aldeby 'wharf' on the River Soar looking north. A tumble of stone consisting of shaped blocks and rubble can just be seen on the left of the picture taken in 2000. This is the north end of the conjectured wharf wall. The 'shouldered' bank which lies behind is not visible. The wall has not been dated but is possibly post-Roman. © Steve Mitchell

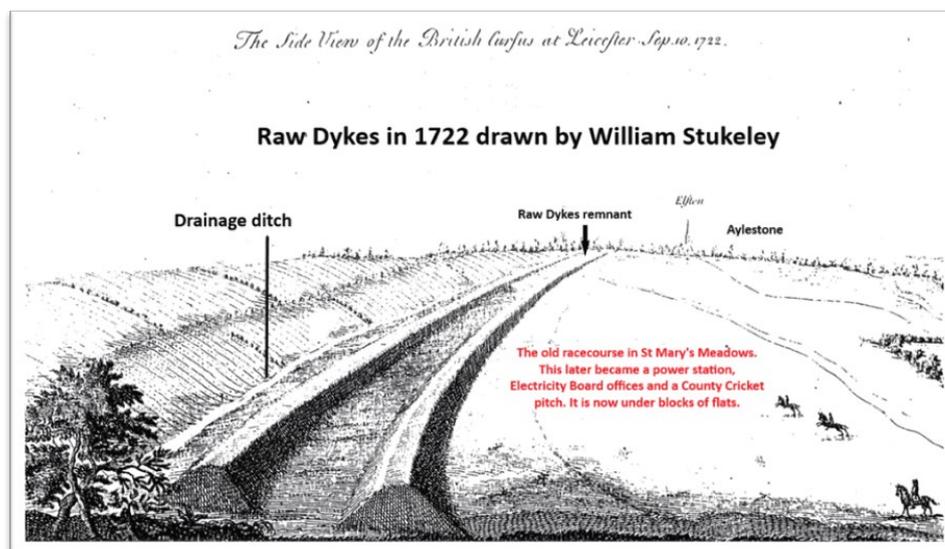
<sup>4</sup> A site that has had problems with excavation and interpretation. See Nichols Vol IV, 159; TLAHS Vol XV, 1927-8,1 332-6; Liddle, 1982, Leicestershire Archaeology Vol 2, 14-15; Peet & Parsons report (unpublished) using RAF sortie photos on a stereo viewer saw a circular structure. HER: St Johns Church. UID: 340498; Leicestershire, Blaby, Enderby. SP 55345 99070. *Summary: Former church abandoned circa 1270-90 surviving as foundations and sub-surface deposits. Inconclusive excavations revealed probable pre-Conquest apsidal chancel of earlier church? The plan of this church, as revealed by the (present) excavations, suggest that it may be of pre-Conquest date. Unfortunately, the excavations have proved inconclusive.*

## Earlier evidence and examples from elsewhere

What was the search hoping to find? There are several early 18th century etchings of the Raw Dykes before it was flattened or truncated by modern developments most notably from Stukeley's *Itinerarium Curiosum* (Nichols Vol 1, 11-13).



**Figure 11:** Stukeley's etching of the Raw Dykes in 1722 (Nichols Vol I, 12) which is about 600m long. It shows that ridge & furrow slopes steeply down towards the eastern bank but is separated by a drainage ditch (see **Figure 12**). This ditch serves the same function as the flanking ditches to most Roman roads – it protects the bank from erosion from water run-off. There is possibly the same arrangement with Grimmer's ditch (see **Part Two: Grimmer's ditch**). There is no evidence of any Roman road nor is there any logical place for it to exist (see **Appendix B: The road to Tripontium**). This may be an idealised view of the dyke as it may have been cut by a footpath at its southern end (see **Figure 15** and **Figure 20**). This 'cut' was also used by racegoers and was recorded by Camden in 1760. *Reproduced by kind permission of the Heart of Albion Press (albion@indigogroup.co.uk).*



**Figure 12:** A cross-section of the Raw Dykes by William Stukeley (Nichols Vol I, 12). The oval racecourse is on a level gravel terrace with a well-used footpath (crossing from right to left) which cuts across the dyke opposite the modern Saffron Lane. Nichols also informs us that the dyke was used for traffic – vehicles and pedestrians. Most of this disappeared with the construction of the toll road through Aylestone from Leicester to Lutterworth in c.1776, although some of the eastern bank survived into the twentieth century. Further south, lengths of the modern road run along the bottom of the dyke alongside preserved sections of the east bank (see **Part Two: Parkhill Court**). The west bank has completely disappeared. *Reproduced by kind permission of the Heart of Albion Press (albion@indigogroup.co.uk).*

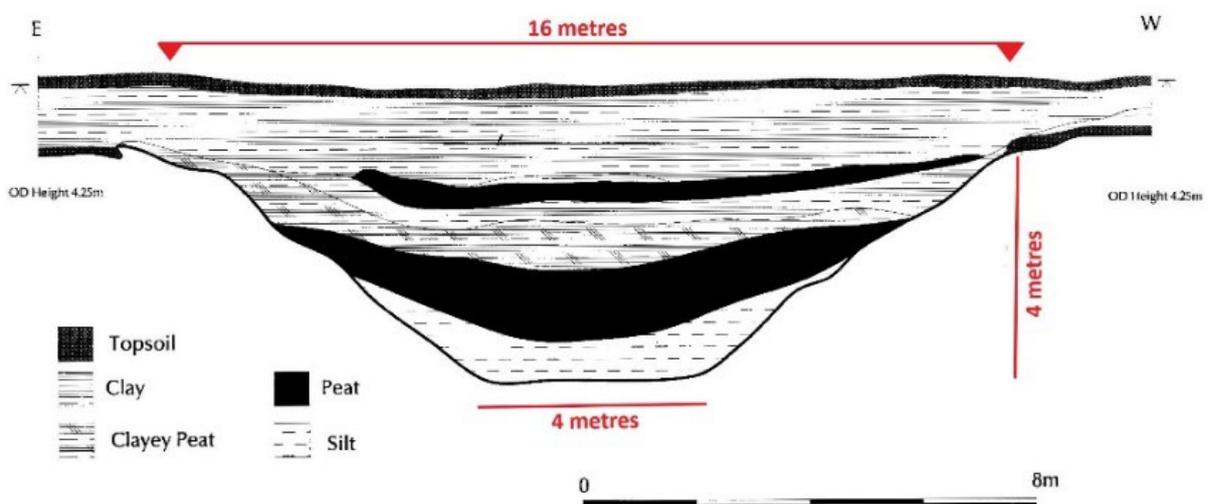
It quickly became apparent that similar local examples of a Stukeley-type linear earthwork were not recorded in the available archaeological record, and it was some years later before an example on the ground was discovered - see **Part Two: Grimmer's ditch**.

'Raw Dykes' has been compared to sections of Car Dyke in Lincolnshire and Cambridgeshire by Kenyon (Kenyon 1948, 41) and Frere (Frere 1987, 267-8). Along the Car Dyke one short dry section of a Stukeley-type ditch and banks is at Helpringham, Lincolnshire near Grantham (Scheduled Monument List Entry Number 1004946. UID: LI 274. TF 14632 39102). Frere and Wachter both refer to the Car Dyke as part of a canal transportation system and Wachter also describes it as possibly Hadrianic (Wacher 1975, 136). Frere states that Car Dyke had two purposes, the diversion of surplus water from one river-system to another and transportation of goods (although he qualified that this was not for long-distances (Frere 1987, 273)). He also maintained that subsidiary canals were connected to the Car Dyke and that the Fosdyke was a long-distance Roman canal running from the Trent to Lincoln (Frere 1987, 268). Early OS maps reveal that most of Car Dyke had disappeared before WW1.



**Figure 13:** The Car Dyke at Helpringham, Lincolnshire. The ditch has been partially filled in by silting and natural erosion, possibly between 1.5m and 2m deep, which is like the ditch in Grimmer's field. The farmer was instructed to flatten it as part of the post-War agricultural effort but was saved because he kept his plough horses there. The aqueduct at Wroxeter (*Viroconium* Cornoviorum) was also bull-dozed in the 1950's (White & Barker 1998, 99). The ranging pole is 2m. © Steve Mitchell

So, it is possible that 'Raw Dykes' had also been backfilled in the same manner as the Helpringham and Wroxeter examples cited above. Local enquiries around Aldeby yielded no memories of such an event.



**Figure 14:** A cross-section of the Car Dyke at Billingborough in 1974. It appears that the Car Dyke was probably constructed on 4m template: this template may also have been used on Raw Dykes (after Simmons & Cope Faulkner 2006, 11). Note that the shape of the cross-section is similar to that of the Raw Dykes shown by Stukeley in Figure 12 but without the upcast banks. By kind permission of Heritage Lincolnshire.



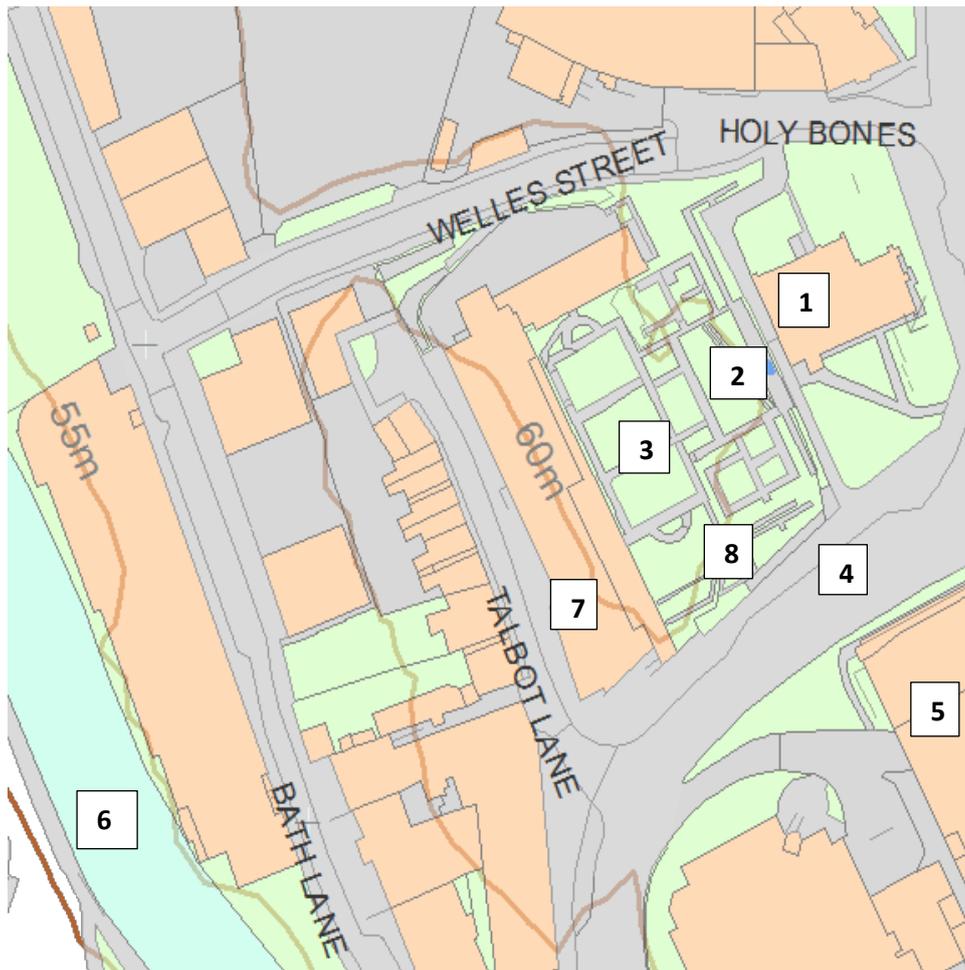
**Figure 15:** A 1m DTM 2019 lidar image of the Raw Dykes Scheduled Monument which is similar in dimensions to the Helpringham Car Dyke. There is a gap at the northern end of the Scheduled Monument which is a cut through the dyke reported by Camden in 1760 but is a candidate for the point where the footpath from the parish of St Mary's, Leicester crosses over to Saffron Lane providing a dry-shod route to Aylestone. See **Appendix B**. Lidar composite DTM 2020 1m. © Environment Agency copyright and/or database right 2020. All rights reserved.

It is worth noting that the RAF aerial photograph in **Figure 4** above appears to show a long section which might be a shallow depression holding water (waterlogging) and a drier section to the north appearing as two dark parallel lines. It all appears rather smudgy but does suggest the remains of a Stukeley-type linear feature as the width of the channel is similar in size but without the raised banks but whether the banks have been pushed into the channel or the channel has silted up by natural action is not known. A visit to the most northerly section revealed a low straight ridge, about 30m long and not more than 150mm high, crossing the field and this was subsequently surveyed and found to be at 60.7m AOD - see **Part Two: Palmer's field**. This measurement compares favourably with the levels found by Mitchell at the Raw Dykes Scheduled Monument where the west bank averages 61.52m AOD. On this basis it was felt that there was sufficient evidence to hypothesise a continuation of the Raw Dykes Scheduled Monument to Aldeby St John's, about 4.6km (2.86m). Aldeby 'wharf' is about 6.6km (3.9m) from Jewry Wall.



**Figure 16:** The low winter sunlight catches the top of a low ridge (arrowed) about 30m long in Palmer's field (SP 5553 9921). This marks the location of the dark smudgy line in the RAF aerial photo (**Figures 4 & 6**). The St John's church site is behind the trees on the right of the picture. This is thought to be part of the 'shouldered' bank of the Raw Dykes canal which is part of the longer 'Aldeby earthwork' – an extension of the 'shouldered' bank from Palmer's field to Jubilee Park. © Steve Mitchell

## The Roman public baths at Jewry Wall



**Figure 17:** Jewry Wall and baths site showing the contour levels. Legend: 1) Church of St Nicholas 2) Jewry Wall 3) Roman baths excavation 4) St Nicholas Circle – the possible site of the canal basin 5) Holiday Inn car park 6) River Soar (GUC) 7) Jewry Wall Museum 8) Wacher's large drain. *OpenSourceMapping*

The site of the Roman public baths at Jewry Wall is an archaeological puzzle. Firstly, Jewry Wall is not in its original state as it has suffered repeated damage, repairs, and alteration. However, its true relationship to the baths site has been badly obscured. This is partly due to (a) a long and colourful history of antiquarian interpretations described in Nichols and (b) to Kenyon's 1937/9 excavation which was inadequately surveyed and drawn, and (c) an over-zealous rebuild of Kenyon's excavation plan by the Ministry of Works. The arguments which Kenyon presented to explain the development of the baths are difficult to interpret. The war intervened so it was not until 1948, some ten years later, that it was finally published.<sup>5</sup> However, this lacuna helped create a problem. Although her findings have not gone unchallenged, they remain the official interpretation and have subsequently coloured all research which, in turn, has caused archaeologists to either look in the wrong place for a Raw Dykes type channel or even dismiss its use as an aqueduct. This intellectual process produced and consolidated the 'paradigm of waterless *Ratae*'.

<sup>5</sup> Kenyon proclaimed that she had found forum and basilica late in 1938. The next year when the excavation was opened again, she found a hypocaust. A huge contradiction. It didn't help that there was considerable political pressure, even hostility, from the Corporation as they had wanted to use the site to develop modern public swimming baths. Her arguments to convince them that the site was used for both a civic centre and public baths and should be preserved, succeeded, but the published details are unconvincing when scrutinized closely. (Wacher, 1995, 346/Cottrill unpublished letter in the Jewry Wall archive. Another interpretation was advanced by Taylor & Goodchild, 1949).



**Figure 18:** The Jewry Wall (Scheduled Monument List Entry Number: 1074773. UID: 188802. SK 58221 04489) with the church of St Nicholas behind (Scheduled Monument List Entry Number: 1013312. UID:17154. SK 58228 04504) and the site of the Roman baths in front. The yellow arrow points to Kenyon’s excavation datum level (now recalculated as 62.1m AOD) on the top of the seven-brick course labelled ‘level of basilica floor’– (see Section P-Q Plate XXXIII). The red arrow is Mitchell’s datum level on the sill (61.91m AOD) in the southern doorway. The yellow line is the approximate position of the *opus signinum* floor of the baths based on Goddard’s report.<sup>6</sup> The white star is placed in ‘the ragged hole’.<sup>7</sup> (Photo by kind permission of Bryan Scott.)

The portion of the Jewry Wall which stands today appears to have had two doorways passing through it. See Figure 18. Kenyon took it that the floor of the baths (which would have been constructed of *opus signinum*) would have been level with the top of a seven-brick course standing beside the northern doorway. She measured the top of this course to be at 62.3m (204.4’), and used it as the datum point for her excavation of the site. However, a new survey commissioned by Mitchell found that the level of the sill of the southern doorway stood at 61.91m AOD – a discrepancy of 0.39m. Unfortunately, it appears that the sill of the southern doorway could be one result of a rebuild by the Ministry of Works, and therefore may not represent the level of the floor in Roman times. Fortunately,

<sup>6</sup> The existence of the *opus signinum* floor in the passageway between the Jewry Wall and the church has been widely ignored in the scholarly literature. Certainly, Haverfield, Kenyon and Wachter have not mentioned it. Perhaps part of the reason is that Goddard’s excavation in 1863 also reported on the structural instability of the Jewry Wall and recommended urgent remedial action (Goddard 1870). This involved cleaning out the trench and building a brick revetment wall and railings together with brick piers and abutments to the arch openings along the length of the exposed wall (recorded in a scale drawing by A. Hall, 1876, Jewry Wall Museum archive). This is what you can see today. The *opus signinum* floor was effectively hidden from view. Haverfield illustrates the plan and elevations, based on Hall’s scale drawing, as they are now and makes no mention of Goddard’s excavation (Haverfield 1918, 16). However, Kenyon does excavate in the passageway and reports finding a ‘hard mortar floor’ 15” thick just over 5ft below the cobbled pavement (Kenyon 1939, Notebook ‘Leicester 1’, 23). This is without doubt Goddard’s *opus signinum* floor. See **Appendix A**. See also (Courtney 1998, 131).

<sup>7</sup> It seems that every commentator from Stukeley through to the interpretation board placed by the Leicester City Council at the edge of the site has assumed that ‘the ragged hole’ in the northern end of Jewry Wall is a matching doorway to the one at the southern end. An exercise was undertaken by architect Bryan Scott of the Welwyn Archaeological Society and his scale overlay drawing of the southern doorway is placed over the hole for comparison (in the author’s possession). It is obvious that hole could not be a matching doorway. The arch in the southern doorway is made with canted bricks (*voussoirs*) but there are none visible in the northern ‘doorway’. Parts of the walls below the supposed arch jut into the space of the hypothetical door opening. If there was a doorway here, then it could only have been much lower in height and narrower in width. It might also help explain the anomalous putlog pattern; some of the missing putlog holes were in the wall which has disappeared – the reason why ‘the ragged hole’ was investigated in the first place.

in 1863 Henry Goddard had found a section of the *opus signinum* floor (see **Figure 54**) on the eastern side of the Jewry Wall and had measured it to be 15” thick. An excavation in St Nicholas’ church also found it to be at least 1.5m below the modern floor level (this has been mentioned more than once in the literature but a citation from this source has not been found. It is possible that it is a confusion deriving from a report in TLAHS, Vol 71, 39) - but establishing exactly at what level the floor lay is difficult because none of these are based on reliable datum levels.<sup>10</sup> **Appendix A** seeks to unravel these uncertainties and deduce the level at which water from the canal could have entered the baths.

### Canal or Aqueduct?

Although the idea of an aqueduct into *Ratae* is widely accepted the idea that this aqueduct could also act as a transport canal is treated with caution at best or dismissed out of hand. The basis for believing that a transport canal existed is because the dimensions of the Raw Dykes Scheduled Monument are consistent with other canals which have been, or could have been, used for transport of bulk commodities or for military tasks across the ages and in a wide variety of locations. For British examples see (Bond 2007, 153-196). Scholarly arguments about whether waterways are canals, or even whether they are Roman in origin has changed over the years (W.G.Hoskins, Sheppard Frere, Peter Salway and John Wachter were for the idea – although some dithered later on). The latest views on this subject are given below in extracts from the official summaries. Otherwise, the listing of Roman waterways as canals is sparse in Britain.

**1. Car Dyke.** Traditionally, the Car Dyke has been regarded as a means of transportation, created in the 2nd century, and more recently as a catchwater drain, although firm archaeological evidence for the construction date and use of the canal in its original form is sparse. It has been suggested that the presence of unexcavated causeways along its route make it impractical as a navigable waterway. However, the undug causeways may have served to maintain differing water levels in the separate channels and long stretches of the route would still have been navigable. The size and extent of the dyke implies considerable expenditure of labour and resources, whether military or civilian in origin. In places the canal appears to have silted up and fallen into disuse by the end of the Roman period. (Part of the ‘reasons for designation’ in HE List Entry Number: 1021104).

**2. Fosse Dyke** (Fosdyke) is generally accepted as being an artificial canal of Roman construction, although there is no absolute proof that it is Roman. It can be shown by medieval documents to be of pre-Norman construction, and if we look for their builders before the 11th century it seems to belong in concept and execution to the Roman period. (Part of a description of Fosse Dyke (a canal that runs from the Trent to Lincoln), West Lindsey, Lincolnshire. HER Number: MLI52273.)

**3. Roman canal by-passing the rapids on the Danube at the Iron Gates.** Probably used for military purposes. (Sasal 1973 in The Journal of Roman Studies, Vol LX111, 80-98).

**4. Roman canal discovered in Oosterhout, Netherlands,** probably used for military purposes. [Dutch unearth Roman canal, road near UNESCO heritage sites \(phys.org\)](https://phys.org/news/2021-07-dutch-unearth-roman-canal-road.html). Also reported at <https://phys.org/news/2021-07-dutch-unearth-roman-canal-road.html> accessed 2022.

### Was there an underground cistern?

Although there is no necessity for an underground cistern in the water management system proposed in this paper it nevertheless could have been provided for as part of the long-term plan for water distribution. The water supplied by the proposed Roman canal could have been directed to a cistern situated under the southern end of Jewry Wall baths. Here it would have been allowed to settle before being transferred to a tank raised above the floor level so the baths (and the town) could be fed by gravity. Cisterns were also fed by rainwater catchment from roads and buildings (Burgers, 2001). Any Roman town with aspirations of status would not be without proud evidence of its water supply. Public fountains and domestic water features were *de rigueur* (Burgers 2001, 1-6). Cisterns were constructed in wood, metal or plaster lined brick or stone (Burgers 2001, 113). In *Ratae* there is some tentative evidence

that the cistern was built in the same material as the baths - i.e., brick lined with plaster. An antiquarian description of a rumoured sighting of a vaulted passageway close to or from under the former Recruiting Sergeant Inn in Applegate Street) (Nichols Vol 1, 8) and an angled door jamb set low in the southern extension of the Jewry Wall possibly point in this direction (Kenyon 1948, Plate XXVI). Furthermore, Nichols describes how the foundation levels of the Jewry Wall seem to extend southwards close to the former Recruiting Sergeant Inn. (Nichols Vol 1, 8). These have yet to be discovered. Goddard's drawing shows that the foundation wall under the *opus signinum* floor extends downwards by at least 2.4m but it is unclear whether this is its fullest extent. This means that there is probably enough room for a full human-height tank under the baths floor. The use put to Wachter's large drain and the hypothesis that the proposed Roman canal terminated at the bath site is discussed below (see **The Route to a Canal Basin**) are all consistent with there being a large cistern of some sort and the need for a large capacity regular spillway which, because of its size could also act as an emergency overflow. Whether or not there was a cistern is open to argument and needs more research, but it is worth mentioning again that the Jewry Wall baths are one of the largest surviving example of *thermae* in Britain<sup>11</sup>. It is possible that with so much water being delivered into the *civitas* that there could have been a swimming pool (*natatio*) and lots of public and private fountains.

### Lead pipes and boxed conduits

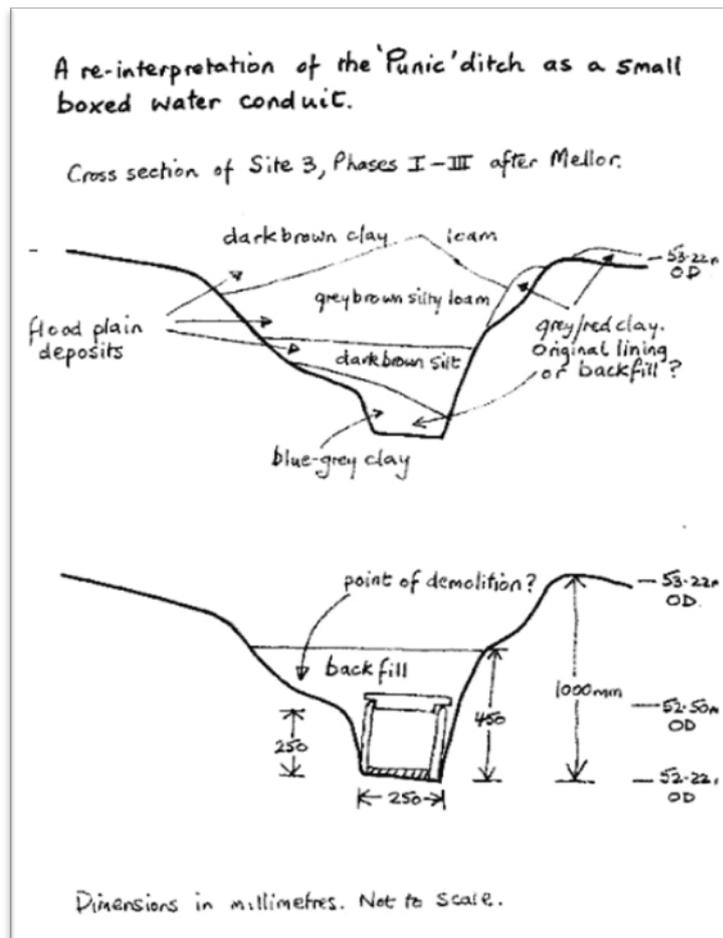
The report of the excavations in 1938/9 do not mention lead pipes and none were subsequently reported (Burgers 2001, 163). The only evidence of water supply advanced by Kenyon is the foundations (sleeper walls?) for a large tank lined with sticky clay (?) which she claimed was filled by hand from the river. In support of this she found a large quantity of sherds of large pitchers in the vicinity. However, a close inspection of her analysis of ceramic types fails to find evidence to support her conclusion. In any case if this was a water tank, an interpretation not accepted by Wachter (*pers.comm*) then it is thought to be put there much later, possibly in the fourth century.

Since then, there have been finds which support the idea that *Ratae* had a supply of water. A short section of ditch which Wachter interprets to be the remains of a box-lined water conduit (Trench 3, 1966) was found by Mellor (Mellor, 1989, 8) – (see **Figures 19 and 24**) 'Mellor's military ditch'. It measures 3'6" (1.07m) wide and 4' (1.2m) deep running northwards from a point near the medieval south gate (SK 455 233) had a square section channel cut into the bottom. It was found to be of second century date (sealed by pottery later than AD 120 and therefore considered 'not military' (Wachter 1995, 352)). It would have been able to receive a pipe, lead or wood conduit, possibly for water distribution (the level of the bottom of this ditch is not recorded in the available literature). This dates from before AD 120 and is similar, but slightly smaller than Trench 2, 1967 which Mellor thought might be military but has subsequently been interpreted by the author in the same way as Trench 3 – see **Figure 19** below. The overall lack of military evidence makes it far more likely that this is the remains of a box-lined conduit running down to an early bathhouse rather than a 'fortlet' as illustrated in **Figure 24**, part of the 55m AOD supply to the early town. For a useful overview of the military evidence see (Cooper & Buckley 2004, 52).

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<sup>11</sup> Burgers (Burgers, 2001, Table 5.1, 71) gives the surface areas of Wroxeter as 0.533ha which includes a palaestra of 0.15ha and Leicester as 0.42ha based on the truncated plan. *Ratae* is, therefore, estimated to be 0.57ha for the *thermae* only. This compares directly with *Deva* (Chester) of 0.64 which is also *thermae* only. To then put this into context *Deva* is the largest attested baths in Britain. Huggin Hill in London (*Londinium*) is thought to have been larger, but the archaeology is incomplete (de la Beydoyere, 2001, Plate 77).





**Figure 19:** A sketch by Mitchell showing a reconstruction of Mellor's 'military ditch' as a box-lined water conduit. She suggested that because of its 'punic' shape it could be a defensive ditch but qualified this by stating that it was probably too narrow. The idea of a 'military ditch' became the bedrock of a theory that there was a military origin for *Ratae* (McWhirr, 1970). A contrary argument is proposed that this was a branch of the 55m AOD box-lined conduit supplying an earlier and smaller public baths just like *Londinium* which, too, started with a small baths on the riverside (Hall & Merrifield 1986, 9). © Steve Mitchell.

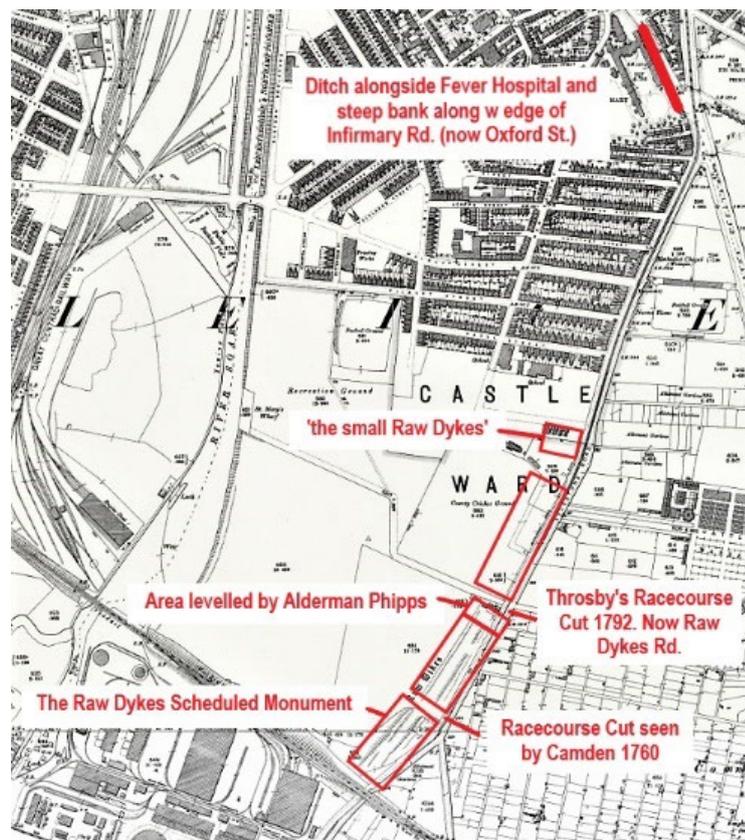
In addition to these possible conduits Wachter cites two stone artefacts that are associated with water – a stone-basin drinking fountain (or tank) and a possibly polygonal shaped foundation suggesting a fountain (Wachter, 1995, 352). Other cisterns, tanks and troughs have been attested since Wachter's time but still no lead pipes (*pers.comm.* G. Appleby).

### What route did the canal take from the Raw Dykes Scheduled Monument to the baths?

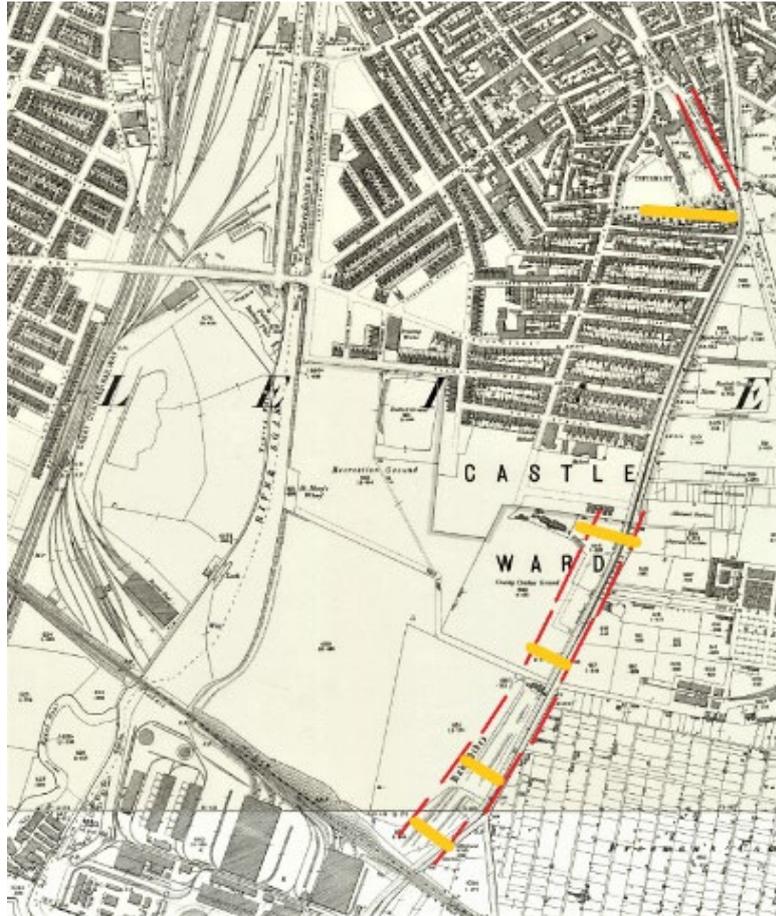
The general direction which the Roman canal could have taken into the centre of *Ratae* is relatively easy to determine. Firstly, if the channel bottom was designed to have run on a level altitude, this defines a search area at today's levels bearing in mind that historical levels change over time, for instance street levels will have risen, and inside today's Leicester this could have been by 4 or 5 metres higher than in the time of *Ratae* (Buckley & Lucas 1987, 10). This results in a quite a narrow corridor of possibilities. Secondly, it can be expected that the proposed canal would have taken the shortest navigable route. However, because of the need to unload vast quantities of heavy stone it can be anticipated that the canal would have run right up to the point which minimised the physical effort of distribution. That point lies between the baths and the forum over part of what is now St Nicholas Circle. See **Figure 24**. Of course, this is also the same point as that needed for the efficient collection and distribution of water. A synergistic solution.

The obvious starting point for tracing the route is from the end of Stukeley's ditch. We do know the exact location of the southern end of the Raw Dykes Scheduled Monument so using this as a starting point we can attempt to place the whole of Stukeley's ditch on a modern map, or we could if we know the exact whereabouts of the Raw Dykes Scheduled Monument on Stukeley's drawing. The problem is exacerbated by the Raw Dykes Scheduled Monument being the only surviving fragment – all the rest has disappeared.

Fortunately, we have Nichols to guide us (Nichols, Vol 1, Pt 1 & 2). He gives us dimensions and dates for the slow eradication of Stukeley's ditch. This can now be supplemented by more recent excavation data from sites - see **Figure 20** below.



**Figure 20:** The location of antiquarian evidence along the line of Stukeley's Raw Dykes. The antiquarian authors all assumed that the Raw Dykes ran up to the town walls close to the Newark Gateway which, still stands today stranded between over- and under-passes. OS 6" map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.



**Figure 21:** The location of modern archaeological excavations along the line of Stukeley's Raw Dykes. From the bottom (1) Kenyon 1938 (2) ULAS Report No 2021-157 (McLeish 2021) (3) AOC <https://doi.org/10.5284/1010324> accessed June 2022 (Bazley & Carew 2006) (4) ULAS Report No 2021-065 Accession No YA6.2021 (Jarvis 2021) (5) long trench across the former open carpark at Leicester Royal Infirmary in an attempt to locate Raw Dykes (*pers.comm.* R. Clark). Unpublished. OS 6" map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.

We can now firmly trace Stukeley's ditch as far as Brazil Street (SK 5860 0308). However, from the history of Leicester Royal Infirmary (LRI) we learn the following –

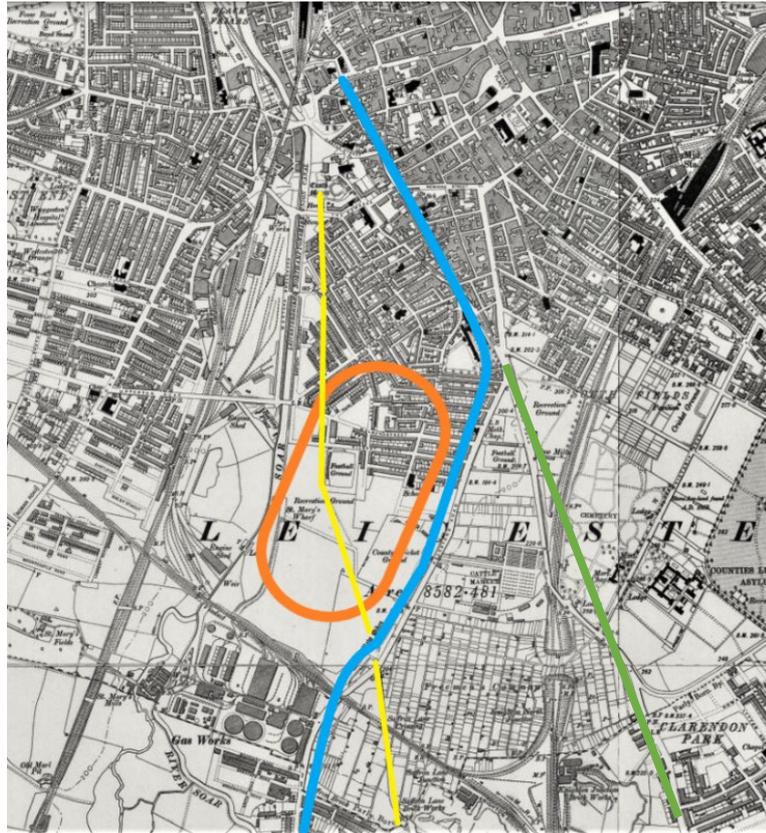
*For thirty or forty years there were recurring references to the ditches (?1772 onwards?)...A major ditch running parallel to the east wall of the Fever House and lying between it and Infirmary Rd., culverted in 1819, would have fallen into disuse when the Infirmary drainage was connected to the new town sewer in 1831. (Frizelle, 1988, 33) The building of the hospital entailed alterations to the road running from the South Gate of Leicester towards Welford, the line of which was slightly altered in 1771 to pass further east of the Infirmary (Frizelle, 1988, 38).*

Enquiries with the Clerk of Works at the hospital have proved negative.



**Figure 22:** The probable course of the Raw Dykes after Frizelle. The red arrow marks the point where the road was re-aligned. The orange line is the original southward extent of the Fever Wing. The blue dotted lines are the reconstructed course of Raw Dykes. The green arrows mark the section of steep scarp, probably part of the east bank of Raw Dykes. The red circles indicate spot height level: north = 208' (63.4m); south = 201' (61.3m). The memorandum suggests that it may have been in water in the late 18<sup>th</sup> century. Nichols reports that the Dyke extended to Infirmary Square which is located by the continuation of the left-hand blue dotted line. (*Part of OS map Leicester XXXI. 14. 10 surveyed 1885. Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.*)

This together with the earliest OS map help to extend our route as far as Infirmary Square (SK 866 376) which is close to the start of Oxford Street, the point at which, it is assumed, it strikes off in a straight line to the area between the forum and baths mentioned above - for ease of reference we will call this 'the canal basin'. It should be noted that the early route to the centre of *Ratae* was not impeded by urban development. The early town was near the river about 2m below the central *insulae* which were reserved for civic development. Recent research reveals that this higher ground was being levelled presumably in anticipation of (or because of) the 'Hadrianic stimulus' (*pers.comm.* G. Appleby).



**Figure 23:** Stukeley's panorama of the racecourse (orange oval) approximately placed on the OS map. The solid blue line is the conjectured route of the Raw Dykes canal and aqueduct. The yellow line is the conjectured route for traffic from St Mary's, Leicester to Aylestone avoiding Raw Dykes and Knighton Brook. The Welford Road (formerly known as the Peatling Road or Gate) – shown as the green line, was probably the main road south prior to the toll road and ran through the Peatlings via Lutterworth to Cave's Inn (*Tripontium*) on Watling Street (The ancient borough: St. Mary's [British History Online \(british-history.ac.uk\)](http://british-history.ac.uk) accessed June 2022). *OS 6" map (1888-1913)*. Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.

### Wacher's history of Roman Leicester

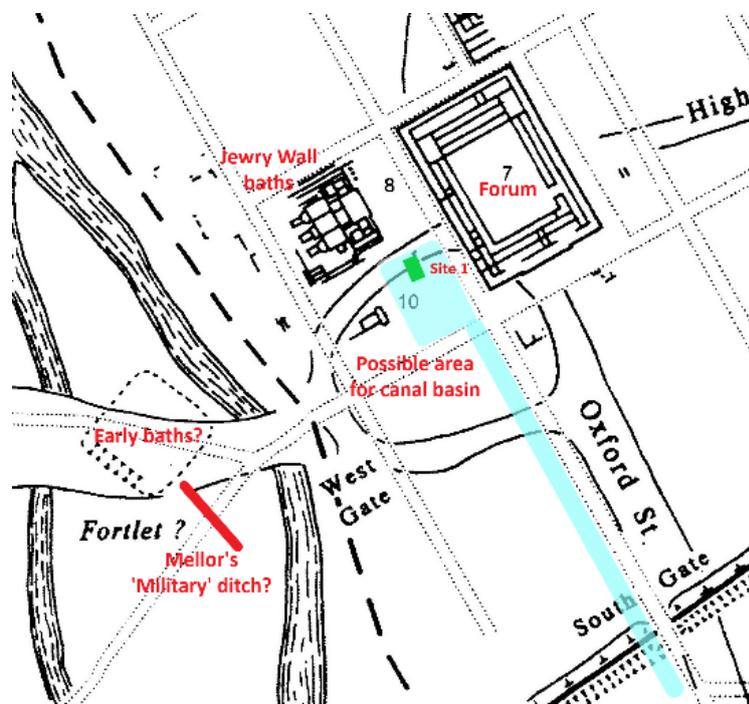
In the last 100 years the two individuals who have had the most influence on our understanding of Leicester's Roman past are Kathleen Kenyon (later Dame) and John Wacher, formerly Professor of Archaeology, Leicester University. Unfortunately, Kenyon skewed our understanding so that it has proved difficult to escape her shadow. Wacher on the other hand has not only tried to remove this burden but has been able to provide sound archaeology to anchor his pronouncements. This paper uses his Roman chronology and builds on his research, but respectfully challenges his view on how water got into the *civitas*.

Taking an overview provided by him and more recent archaeological work, we find that *Ratae* was placed on a busy north-south route<sup>12</sup> – it had the largest forum of any *civitas* capital (Wacher 1995, 41) – its *thermae* was larger than Wroxeter (based on the size of its *calderium* (and possibly equal in size to Huggin Hill, London) – it had a temple – it had water features such as fountains – it had high status town houses – it must have had a exercise hall (but we do not know where it is) and more recently there is possibility that it had a theatre (*odeon*) (*pers. comm.* G. Appleby).

12. Based on the Antonine Itinerary. The number of routes passing through any settlement, ranks the High Cross to Lincoln route, passing through Leicester, as one of two important N-S through routes (Davies 2002, 20-21).

This was without doubt a fully developed town of some size. It must have had a decent water supply. Wachter proposed a chronological hiatus in its development between AD 145 and 150, which was probably due to shortage of building material, and it was this insight that led directly to the research reported in this paper. It cannot be proven, but all of this happened after emperor Hadrian visited Britannia – part of Wachter’s ‘Hadrianic stimulus’. Other authors have made the same assumption, not unreasonably, that all the above followed his visit to the town – possibly, and after his visit to Britannia – certainly. It would have been fitting to mark his visit and this could be why there is a milestone dedicated to him which found on the Fosse Way just north of Leicester.<sup>13</sup> Whether this happened or not there was a rapid and full-bodied flourishing - the town ‘had a sudden injection of energy and cash towards the mid-second century resulting in ‘...an explosion of both public and private development’ (Clay & Mellor, 1985, 35). But alas, still no rational explanation of how water was delivered into the town.

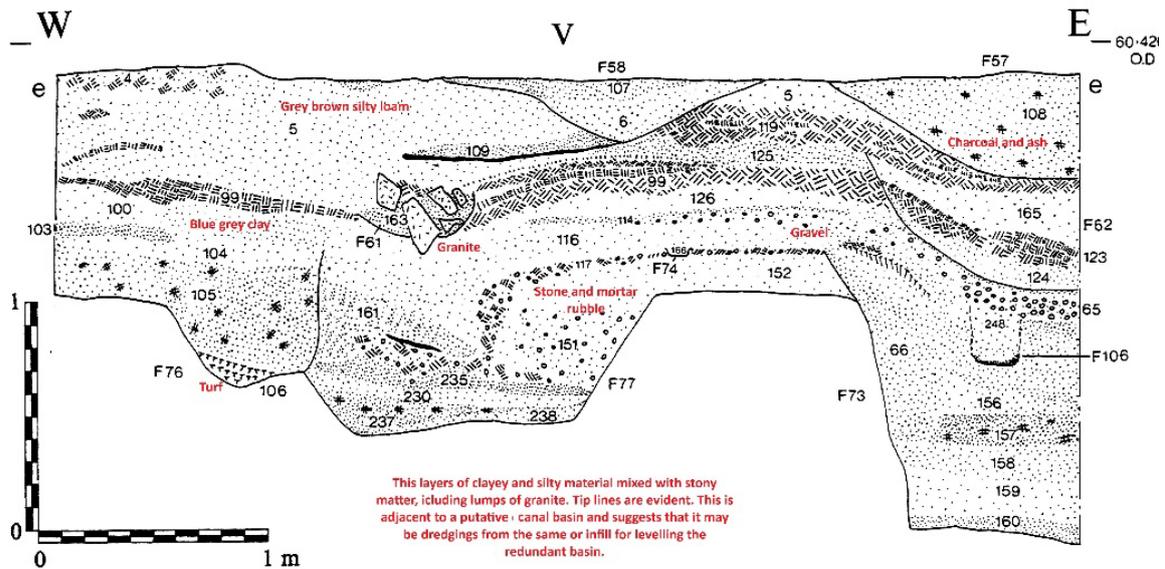
### The route to a canal basin



**Figure 24:** A conjectural plan of the route taken by the Raw Dykes canal into the Jewry Wall baths site (map after Connor & Buckley 1999, 5). Known Roman remains are superimposed over a modern road plan. Site 1 is where the Peacock Pavement was situated (see below). The conjectured fortlet is re-interpreted as a small public baths on the river’s edge served by a box-lined water conduit in Mellor’s ‘military’ ditch (Trench 2, 1967: Mellor 1989, 5). Mellor’s Trench 3 (Mellor 1989, 8) was found just east of the South Gate and north of the town wall (in the bottom right of this plan not shown).

The evidence for a canal basin is based on a series of excavations undertaken in the West Bridge area of Leicester between 1962 and 1971 (Clay & Pollard, 1994). Among the locations dug they uncovered the magnificent Peacock Pavement in the basement of a shop which was next door to the former Recruiting Sergeant Inn. The mosaic pavement had not been touched before this date and when it was carefully lifted, they found that it sealed artefacts from not later than AD 150.

13. HE monument 319164. Roman milestone, bearing the inscription of the emperor Hadrian dated to the years AD 120-1 and terminating in the mileage figure ‘A RATIS II’, was found in 1771 on the Fosse Way at Thurmaston. The HE database has only one other record of a Hadrian milestone.



**Figure 25:** A trench from Site 1 (section e-e Area 5) which suggests that it could be close to the proposed canal basin (after Clay & Pollard, 1994, 8). The descriptions and text have been added.

It is fortunate that the Peacock pavement sealed Site 1 until the modern era. The higgledy-piggledy layers that were uncovered beneath it provide a clue as to what was happening in that area immediately prior to AD 150. This date is both Wachter's terminus for the completion of 'Hadrianic' *Ratae* and the construction date for the Peacock pavement. If the sealed layers are interpreted as either the dredgings from a canal basin or the infill to level the redundant basin then it is probable that the canal basin was only in existence for about five years, the length of the chronological pause described by Wachter between AD 145 and 150 (see **Wachter's history** above). It is therefore possible to speculate that the basin was a temporary feature constructed, not of concrete, but in a manner similar to the 'shouldered' bank running along the west side of the 'Aldeby earthwork'.

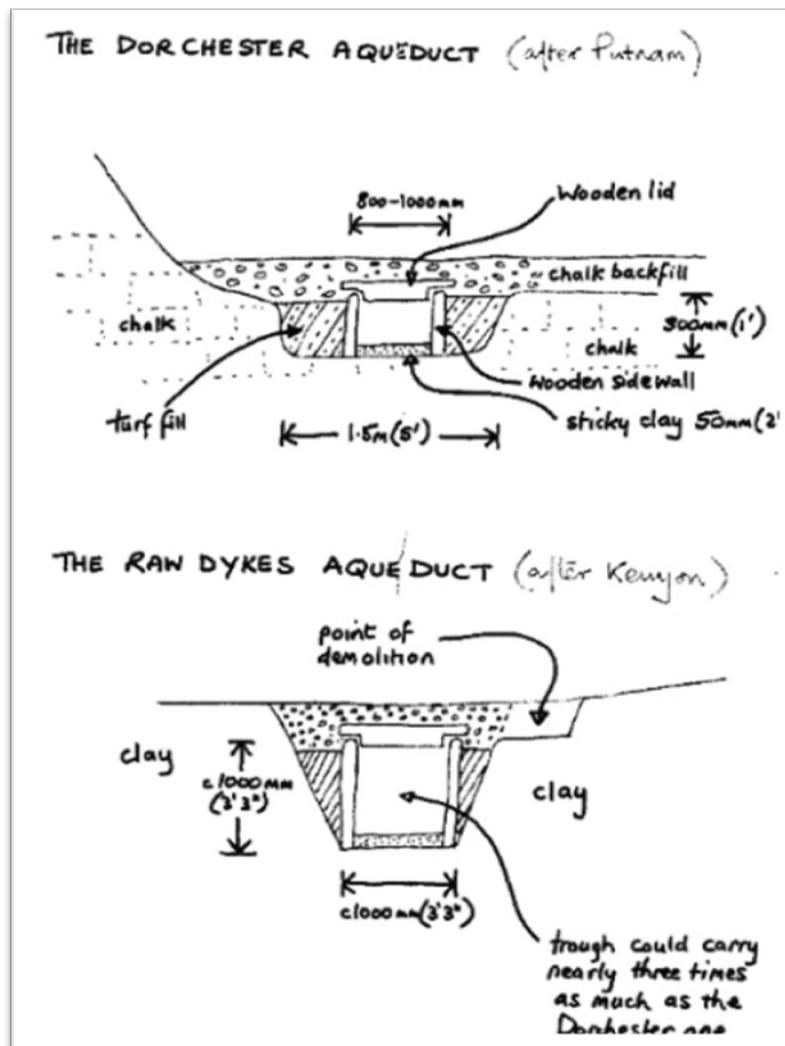
The canal would still be needed as an aqueduct to deliver water and could still be used to deliver firewood and building material by boat along a tow path rather than a basin. It could still deliver to a permanent, but much smaller basin, used solely for water distribution.

### **An early water supply to *Ratae* ?**

Until the publication of Putnam's investigation of the *Durnavarra* (Dorchester, Devon) aqueduct (Current Archaeology 154, 1997, 364-9: see Burgers 2001 for full bibliography) the 'curious notch' in the bottom of Kenyon's cross-section of the Raw Dykes Scheduled Monument remained a mystery. Kenyon ignored it claiming that it was simply part of an attempt to raise the water level by two metres or more with a clay infill following the error made by 'an incompetent Roman engineer' – an attempt that still failed. Wachter interprets it as part of a scheme to take water from the Knighton Brook into the baths citing and adapting Keay's 1933 solution. It, he writes, 'concentrates' the flow of water from Knighton Brook recognising that the brook probably does not discharge enough water for the task (Wachter, 1975 & 1995). The problem with Kenyon's levels has been resolved – the level on top of the clay infill is more than adequate to deliver water into *Ratae* at the right height. Wachter's solution has the water flowing along the ~55m AOD contour which is around 6m below Kenyon's corrected floor level in the Jewry Wall baths. Of course, the water could be raised mechanically from this level but this would not have been necessary. Instead, it appears likely that, in the early town (pre-AD 120), the water serviced the private

bathhouses by gravity alone. The conduit would have run along the modern Bath Lane (the name refers to C19 river bathing not Roman) and possibly fed the early public baths down by the river (see **Lead pipes and boxed conduits**) as well as the private baths which all lay at or below the level of the water conduit. The 'curious notch' is likely to be the hole left after the box-lined conduit has been removed – a larger version of the one in Dorchester. See **Figure 26** below.

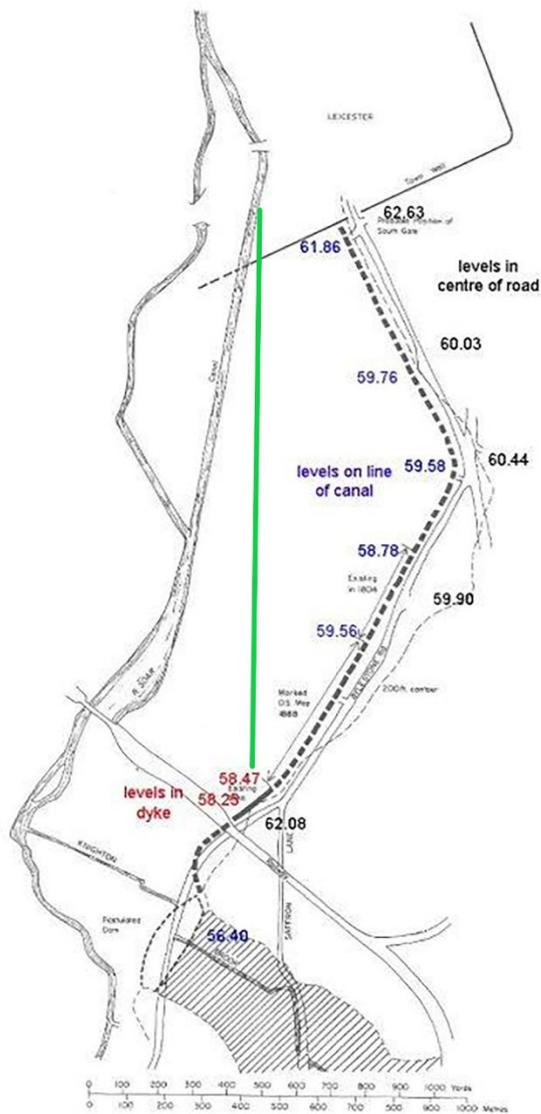
**Figure 26:** A sketch by Mitchell to show the comparison of the *Durnavarria* boxed water conduit to the 'curious notch' found in the bottom of Kenyon's excavation of the Raw Dykes Scheduled Monument. The proposed box-lined water conduit was much larger in *Ratae* and would have run along the 55.59m AOD contour with the top of the box at around 56.59m AOD. It would have serviced villas along Bath Lane which had bath floors at 56.65m AOD and 54.91m AOD (Clay & Mellor, 1984, 23 and 29). © Steve Mitchell



This leaves three questions. 1) **Why remove the box-lined conduit?** 2) **Where did the water in the conduit come from?** 3) **Why is the Raw Dykes ditch so large** in the first place – after all the Dorchester conduit was cut directly into the slope, not in the bottom of huge ditch several metres deep?

The first question is simple to answer. To avoid the possible risk of leaks the box-lining would have been removed and the resulting hole packed with clay and the wood, which was valuable, used elsewhere. The answer to question two is that the water is proposed to have come from a reservoir created by damming Knighton Brook about half a mile south of the Raw Dykes Scheduled Monument.





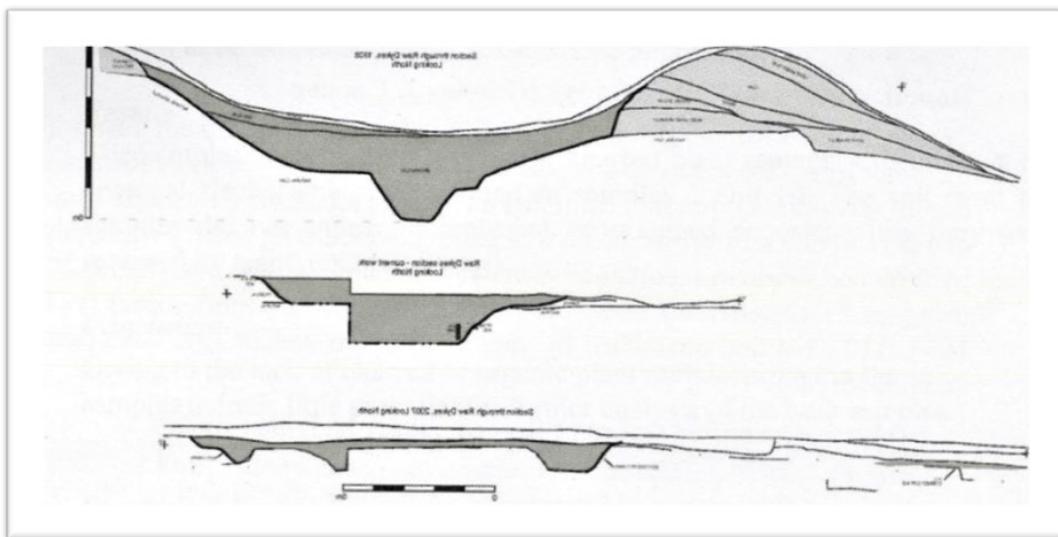
77 Suggested line of the Leicester aqueduct (after W. Keay and Astley Clarke)

**Figure 27:** The Knighton Brook reservoir and dam (after Wachter 1995, 351). If we reinterpret Keay's hypothesis, then the base of the 'curious notch' runs from the Knighton Brook reservoir at just over 55m AOD. The route would take it in the general direction of Castle Gardens and then along Bath Lane (green line). It appears to cross Raw Dykes at the point of the 1937 excavation but probably leaves it a short distance further north. The hypothetical route proposed by Keay & Astley Clarke for the Knighton Brook to feed the Jewry Wall baths is problematic as the land dips significantly along the way. Even if the levels are dealt with the discharge volume rates of the brook and evaporation from an open leat (as assumed by Wachter) would seriously diminish its ability to reach the proposed destination. Levels in red and blue are from lidar surveys courtesy of David Ratledge. *Base map reproduced by kind permission of Batsfords Books.*

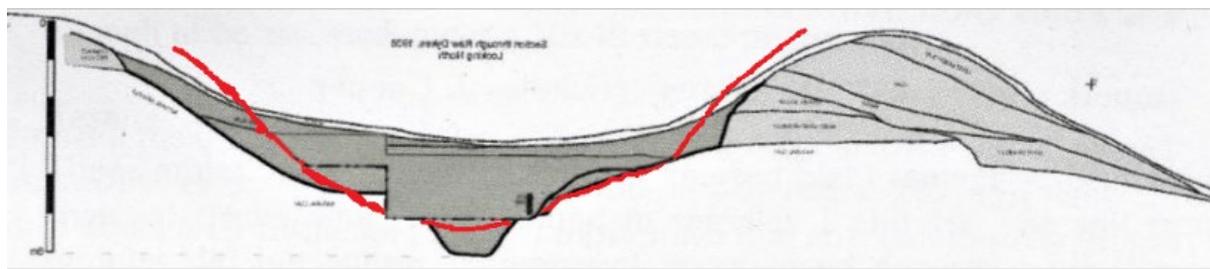
The hypothesis is, therefore, that the box-lined conduit leaves the Raw Dykes ditch and gradually descends towards the ~55m AOD contour. As it approaches the West Bridge area of Leicester it may have branched. There are two conjectural branches, one down Bath Lane and one running down to the river near the modern West Bridge (see **Lead pipes and box-lined conduits** above). These two branches would have provided what was necessary for a thriving Roman style community in the first century AD. Indeed, there is evidence of two sites in Bath Lane with *opus signinum* floors lying at around the 55m AOD level (Clay & Mellor, 1985, 23 & 29). Along Bath Lane the box-lined conduit, whether as a robbed-out ditch or *in situ* has yet to be found but if this interpretation is correct then the robbed-out ditch to the conjectured earlier public baths has. Evidence for the early public bathhouse has not been found but then neither has the conjectured 'fortlet'.

The cross-section made by Kenyon (see **Figure 3**) is probably slightly wider than the 4m module allows. This might be because the channel for the boxed conduit occupies more than 1m of the bottom or more if the open trench is allowed for, or that the Romans found a pre-existing ditch which was wide enough for their purposes, but which was slightly larger than their customary modular width and depth. In any case Nicols reports that the channel width narrows from 22.6m to 19.1m as it continues north and the recent excavation at the former Sturgess Garage site seems to support this – see below. The channel width has decreased, the channel depth has increased slightly, and the ‘curious notch’ has disappeared.<sup>14</sup>

A recent excavation about 450m north of the Scheduled Monument shows that the notch has disappeared, and the channel shape is narrower. (An archaeological evaluation for land at the former Sturgess Garage, 115, Aylestone Road, Leicester. ULAS Report No 2021-065).



**Figure 28:** The results of three excavations undertaken to find Raw Dykes between the Scheduled Monument and Brazil Street. From the top they are (1) Kenyon’s 1938 dig (2) ULAS 2021 dig at the former Sturgess Garage site (SK 8575 3050) and (3) a ULAS dig at the former Power Station site (SK 8259 2808). (By kind permission of ULAS)



**Figure 29:** The middle cross-section from (2) when placed over the top of (1) at the correct altitude should show the profile of the box-lined conduit if it existed. It does not. The red line suggests the shape of the cross-section with a much narrower width across the banks, perhaps closer to 19m rather than 22m. This is much closer to the 4m module thought to have been used by the Romans. (After ULAS (1) & (2) in **Figure 28**)

14. Nichols cites Mr Lee’s investigation of the Raw Dykes dimensions in 1759 (Nichols Vol 1, Pt 2, 4). Eleven sample widths between bank tops were taken and those nearest Leicester averaged 19.1m and those furthest away 22.6m. This indicates that the channel width narrows as it travels north and the possibility that the box-lined conduit in the ‘curious notch’ leaves the dyke and strikes north on a separate route to Bath Lane – see **Figure 27**. The sample locations reported by Mr Lee are not identified. Mr Lee also makes it clear that the Dyke ran from a location near what later became known as Infirmary Square – thus confirming Frizelle’s report – see **Figure 22**.

The third question – why is the ditch so large? - is more complicated.

There are two schools of thought as to its origin – one says prehistoric and the other says Roman. Looking at Stukeley's etching it is not too difficult to agree with his idea that it was prehistoric – it is long and huge – truly monumental. It is also difficult to imagine that the Romans would go to such trouble when there was a much simpler solution such as that achieved with the longer aqueduct at Dorchester or the even longer ones on Continental Europe. However, the engineering would have been more easily achievable if it was only an aqueduct, but it is far too large to be just for water supply alone. Dry sections of Car Dyke would look exactly like Stukeley's Raw Dykes if it was without hundreds of years of silting and erosion and that probably functioned as a canal, which was in this case, supplementary to its main purpose as a drainage ditch. If you have ever seen the Grand Union Canal empty, then its size is equally impressive. And, of course, it is known that the bottom of Stukeley's Raw Dykes was used as a highway until it was replaced by a toll road; possibly part of the reason why its profile looks so crisp.

There are hundreds of linear earthworks in this country. The English Heritage publications confess that very little is known about them – what they were for, who built them or when or simply how many and even how to classify them.<sup>15</sup> This gives us a blank canvas to imagine, as Stukeley did, that the Raw Dykes was really a *cursus* or prehistoric racing track. Or The Victoria County History for Leicestershire believing that it was an Iron Age boundary ditch (Page 1907, 181). However, by carefully looking at the structure of the ditch and banks it is possible to tease out some facts.

Firstly, Kenyon's dyke was built in what appears to be two levels. The upper level was most probably a transport canal sized aqueduct – making a convincing case for this is the purpose of this paper. After all it was lined with clay and was perfectly level along its length as well as wide enough for two boats to pass. There is, therefore, a high degree of confidence that the aqueduct/canal is Roman in origin as there are numerous worked examples of aqueducts all over the Roman Empire with impeccable archaeological evidence. Normally such a feature is very hard to date precisely. Kenyon claimed that Raw Dykes was Roman because she retrieved Roman artefacts (coins) from the excavation of the upcast banks. This has been questioned by Jean Mellor (Clay and Mellor, 1985, 29) on the basis that the finds were from disturbed ground but conceded that 'a pre-Roman date can probably be discounted'. However, this upper level can be dated to AD 145 to 150 using Wachter's chronology.

Turning now to the lower level. The most obvious feature is the 'curious notch' buried under 2m of brown clay (of which at least 500mm to 1000mm would be a normal channel lining). As already mentioned, linear ditches are poorly understood but after inspecting the published evidence available

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<sup>15</sup> Historic England 2018 Prehistoric Linear Boundary Earthworks: Introductions to Heritage Assets. Swindon. Historic England. See also Historic England 2018 Linear Frontiers: Introductions to Heritage Assets. Swindon. Historic England). 550 linear earthworks estimated. 'The project will redress the scholarly neglect of linear earthworks by including, for the first time, all known examples across Britain. We define the earthworks for study by their monumental characteristics, compared to more functional features such as drainage ditches and field boundaries. Our project has the following objectives: i) To produce the first definitive atlas of linear earthworks across Britain. ii) To quantify the construction of these monuments by applying newly developed methods for labour estimation. iii) To produce new theoretical models of social organization and complexity based on empirical data.' [Monumentality and Landscape: Linear Earthworks in Britain \(linear-earthworks.com\)](https://www.linear-earthworks.com) Accessed June 2022.

we could find no examples with a 'curious notch' in the bottom. The shape of this notch as with the ditch running down to the early baths (the 'fortlet') could be loosely described as 'punic'. The term 'punic' is used by archaeologists to describe the shape of the ditch named after a type of defensive ditch designed during the Punic wars. This design maximised the chance of incapacitating the enemy attack before they could reach the fort. The key features of a 'punic' ditch are its overall depth and width with a narrow channel at the bottom – the ankle-breaker. But most importantly it cannot be jumped across – it is too wide.

When Jean Mellor described the West Bridge ditch as 'punic' she qualified her statement with her opinion that it was 'hardly a very formidable obstacle'. It was 3'6" (1.07m) deep and about 6' (1.8m) across. After inspecting her cross-section, the width of the top of the channel is less than 6' because erosion has widened it – probably nearer to 1.6m (5'3"). A nine-year old can clear this distance with a running jump!

So why does the 'curious notch' appear in the bottom of a huge dyke (a double bank and ditch monument)? According to Wachter the aqueduct was fed from a reservoir about 300m south (see **Early water supply**) and then flows along an open leat (the 'curious notch') which he claims, 'concentrates the flow' and prevents flooding. He also proposes that water from the aqueduct would need to have been lifted into the Jewry Wall baths by some means. This is a not entirely satisfactory explanation and an alternative one is proposed in this paper.

Even the presence of the supposed open leat within the Raw Dykes is a curiosity. For instance, if the aqueduct proposed by Keay and Wachter had issued from the conjectured dam over the Knighton Brook at just over 56m AOD it could be expected that its course would have followed - and gently descended from - the 56m AOD contour. This contour runs closer to the River Soar to the west of the Raw Dykes. Instead, the open leat appears to have been cut into the bottom of the Raw Dykes Scheduled Monument channel which, from Kenyon's excavation, is clearly below natural ground level. Excavating such an open leat would have incurred a lot of extra work, for little obvious benefit. It therefore appears possible that the Raw Dykes channel might already have been in existence when the Romans were creating their canal/aqueduct, and that advantage might have been taken to adopt a more direct route for the canal/aqueduct into *Ratae*. This does raise again the possibility that the Raw Dykes Scheduled Monument might originally have been part of a prehistoric *cursus*, as proposed by Stukeley, or maybe, as suggested by the VCH as well as Grahame Appleby (G. Appleby, *pers. comm.*), part of a pre-Roman boundary such as those at the Iron Age *oppida* at Bagendon and Colchester. If so, it would appear possible that the Romans had employed this earthwork relic (a) to conduct an open leat aqueduct along its bottom in the first phase and (b) then to contain a transport canal within its banks in a later phase.

From Kenyon's excavation of the Raw Dykes, it appears that the banks of the original channel had been built up. This seems likeliest to have been to accommodate rises in the water level of the proposed transport canal in time of flood (up to 0.6m). To judge from the red clay which was used to raise the eastern bank at the Raw Dykes, construction of the proposed transport canal would seem to have been conducted from south to north. This is because the red clay is considered to have come from the Croft area, and the easiest way to transport such material to the construction face would have been by boat along that part of the canal which was already in water.

Constructing the proposed transport canal over the conjectured dam across the Knighton Brook would have presented little difficulty, since the bed of the proposed canal would probably have stood some 2 m or more above the top of the dam. **The question would have been 'what to do with the water in the Knighton Brook and its associated reservoir?' This question is addressed by Poulter in the printed version of this article.**

To the north of the Raw Dykes, it appears likely that Keay and Wachter's proposed aqueduct would have veered off to the west, away from the line of the transport canal, to service bath suites towards the Bath Lane area of *Ratae*. See **Figure 27**. This area, closer to the River Soar, appears to have experienced the most intensive development in the earlier years of the Roman occupation of *Ratae* (G. Appleby, *pers. comm.*), and the pottery assemblage from it is predominantly AD 60 to 125. This suggests that Keay and Wachter's aqueduct leat could be provisionally dated to the first century AD. In contrast, it is considered that construction of the proposed transport canal would have been completed by or before AD 150 - see **The Route to a canal basin**, and that its construction would have blocked and closed the earlier watercourse if it had not already been abandoned.

Shortly to the north of the Raw Dykes the width of the proposed transport canal has been found to narrow slightly, to around 19m. See **Note 14**. There could have been several reasons for this, but the critical point is that the channel would still need to have been wide enough for two boats to pass at the times of normal water level, and from the excavated sections this appears to have been the case.

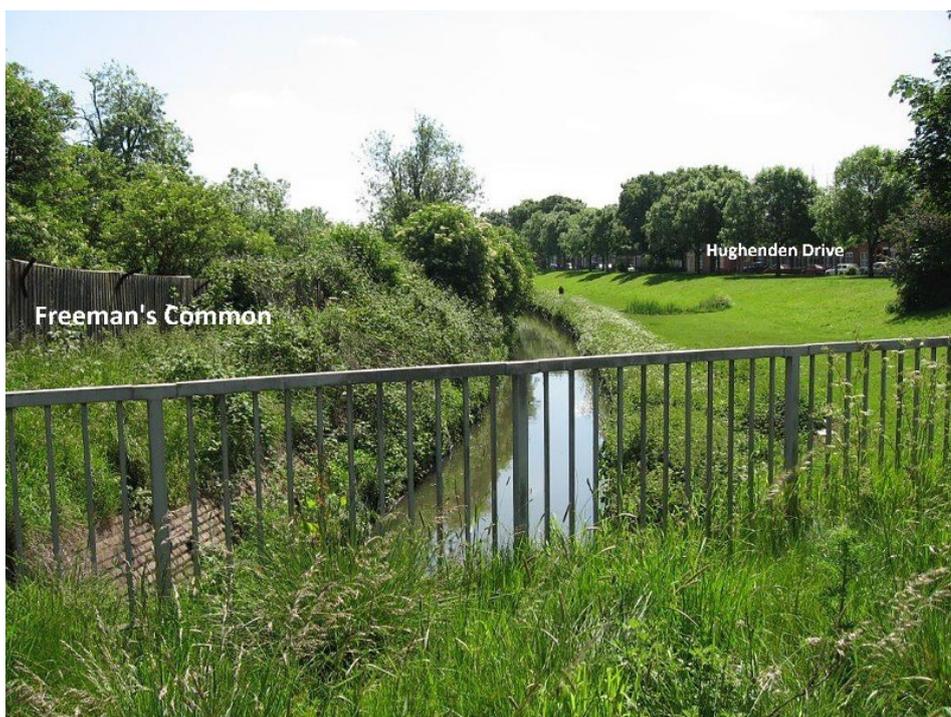
At about this same point, the 61m contour veers off to the east, whereas it is perceived that the course of the proposed canal would have continued more directly towards the Jewry Wall baths – see **Figure 40**. To cross the intervening lower ground on the level, it is therefore likely that the embankments of the proposed canal would need to have been raised across this ground by some 2 metres or more.

## Part Two: The evidence

Part One has addressed the problem of ‘the paradigm of waterless *Ratae*’. It has been demonstrated that substantial volumes of water could flow into the centre of *Ratae* and some of the confusion around the archaeology at the Jewry Wall baths has been explained. Part Two follows the route which the Roman transport canal is believed to have taken from the Raw Dykes Scheduled Monument to the Fosse Way.

### From the Raw Dykes Scheduled Monument to Aylestone

As with the search for the route to Jewry Wall the proposed canal is most likely to have hugged a tight corridor of opportunity which is defined by the 200’ contour (61m AOD). That is until it meets Knighton Brook (SK 8175 2200) which flows in a well-defined valley across the projected line of the canal. As we have seen above, the Knighton Brook may have been dammed to provide an early water supply into *Ratae*. Hence the canal would probably have had to cross the top of the existing dam embankment (suitably adapted) rather than take a tight detour along the Knighton Brook valley or build a completely new embankment.



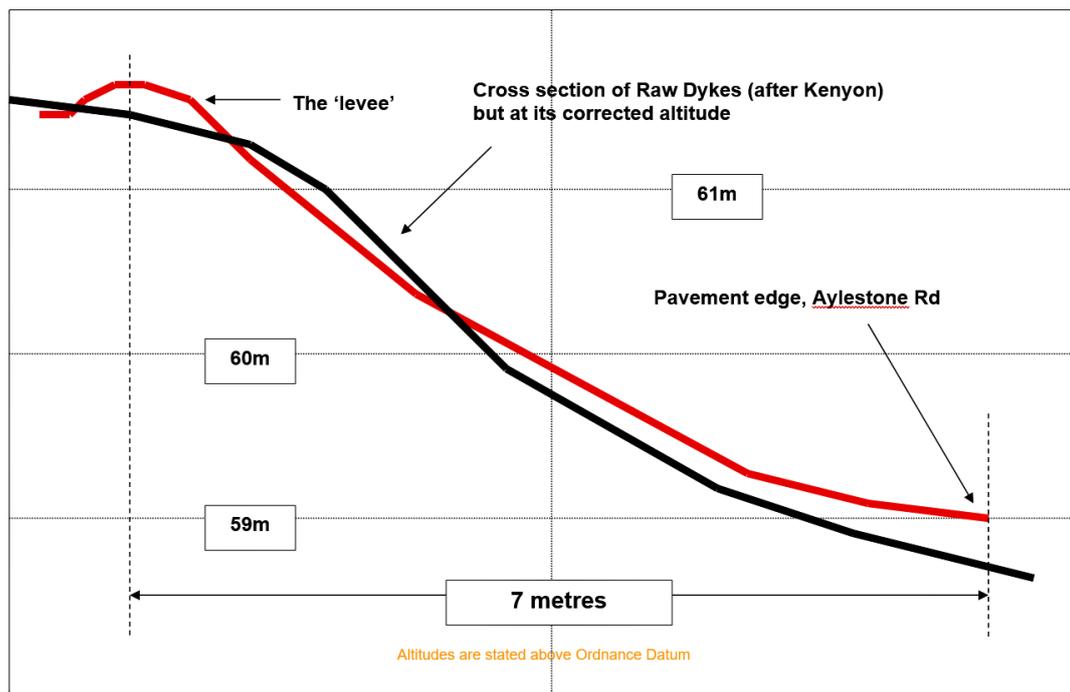
**Figure 30:** The Knighton Brook looking east. The canal probably narrows to half-width when crossing this on an earth bank, the enlarged and remodelled version of the earlier dam. The brook was conceivably thought to be the source of the box-lined conduit supply into *Ratae*. © Steve Mitchell

It then appears to have carried on along the eastern edge of what is now the Aylestone Road except for a short stretch where it follows a loop in the contour near Grace Rd (SK 5800 0168). As the contour re-joins the edge of Aylestone Road we meet the first possible surviving evidence of the eastern bank of the transport canal in the Parkhill area. The bank at Parkhill Court (SK 5777 0146) matches the profile of

the Raw Dykes Scheduled Monument but the western bank has completely disappeared as is the case along the route already discussed.



**Figure 31:** A view of Parkhill Court from the Aylestone Road looking north. The slope of the garden is probably the east bank of the transport canal. © Steve Mitchell



**Figure 32:** Mitchell's survey of the bank shows that it matches the profile of Kenyon's section of the Raw Dykes Scheduled Monument. © Steve Mitchell

The route taken from Parkhill is not clear but following the 60/61m AOD contour takes us into Old Aylestone. From here it is a short walk to Grimmer's farm and passing under the former railway bridge (SK 5683 0083) we arrive in Grimmer's field opposite the lock house at King's Lock (SK 5667 0075) on the Grand Union Canal (GUC).



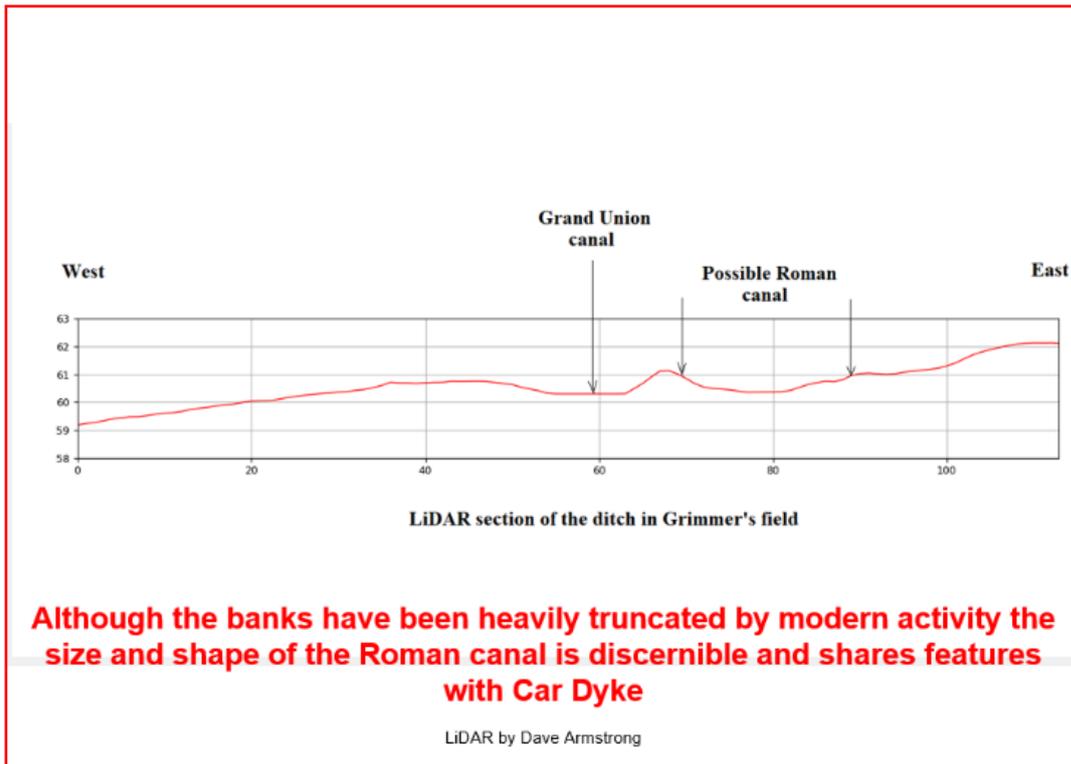
**Figure 33:** A view of Grimmer's ditch looking north-east towards King's Lock, GUC. The ranging pole is 2m. © *Steve Mitchell*



**Figure 34:** A view of Grimmer's ditch looking south-west towards Soar Valley Way and Blue Bank Lock. The GUC is on the right. © *Steve Mitchell*

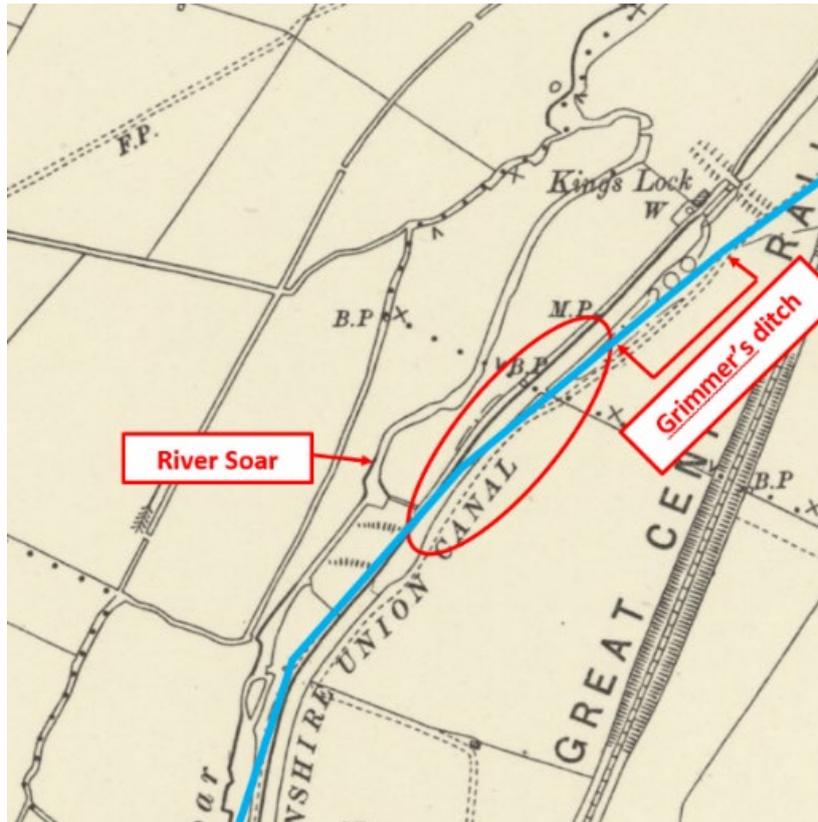
The ditch in Grimmer's field could well be a surviving waterless section of the proposed transport canal although the banks appear to have been heavily truncated at some time in the past. The ditch does still hold water after rain and floods which suggests that the clay lining is intact. After a survey by the author in 2002 the profile of the remaining ditch matched that of Raw Dykes however the altitude reading proved to be less accurate and this survey has now been superseded by Lidar readings. See **Figure 35** below.





**Figure 35:** A cross-section of the Soar Valley, GUC and Grimmer's ditch using lidar data courtesy of Dave Armstrong. The vertical scale is AOD and the horizontal scale is Metres.

The line of the ditch merges with the GUC which suggests that it crosses its course somewhere close to its southern end. It is possible that a short section of the GUC was incorporated into the existing ditch – see **Figures 36, 37, & 38** below. There is also the possibility that the ditch was recorded as passing through the Parish of Glen Parva where it was known as Le Roudic<sup>16</sup> in the fourteenth century, a field name which according to the English Place-name Survey is cognate with Raw Dykes (EPNS: Leicestershire, Glen Parva) However, the location of Le Roudic is not known for certain and the boundary to Glen Parva is possibly too far south although there is short section within the parish that could qualify. See **Figure 39**.



**Figure 36:** The 'crossing zone' (circled) of the 200' (61m AOD) contour. This is not the point at which the river feeds the transport canal – that is further south see **Figures 40 & 42**. (OS 6" map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence)

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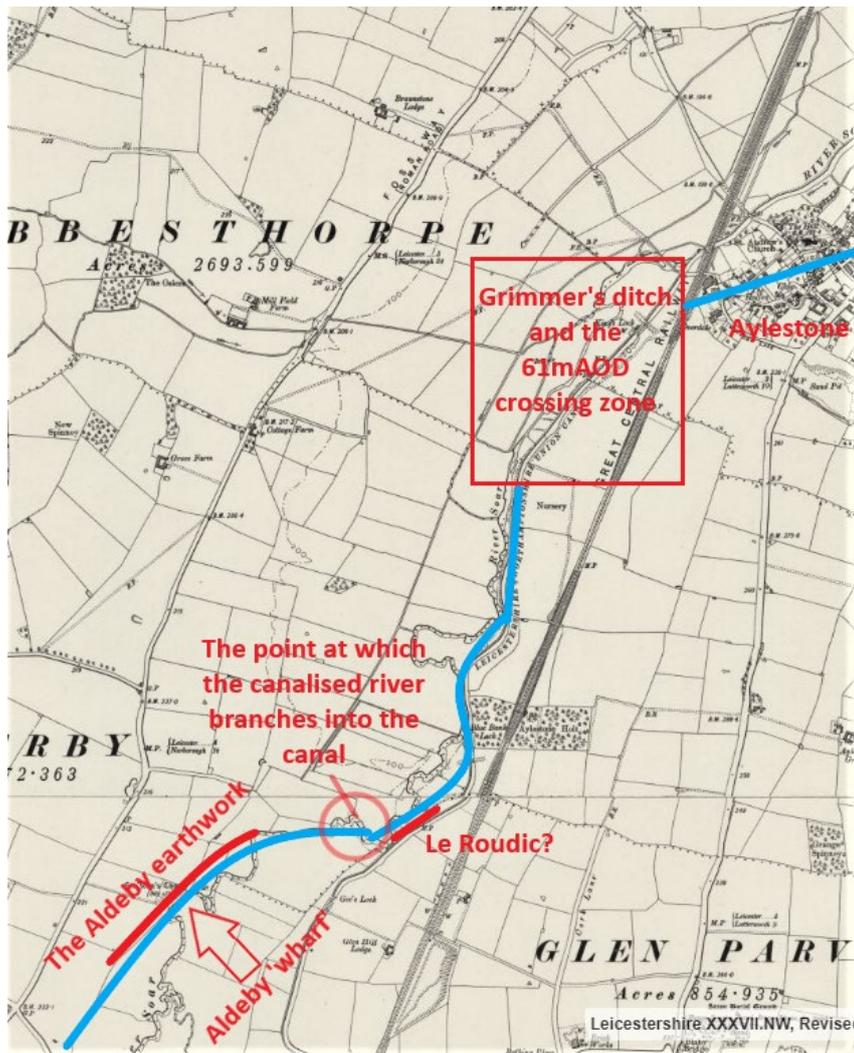
16. Steve Mitchell: 2022, *The meaning of Raw in Raw Dykes: the place-name evidence* analyses the probability of the place-name element 'Raw' meaning 'red'. Unpublished



**Figure 37:** An aerial view of Grimmer's ditch. The remnant ditch, which is flooded, lies between two sections of ridge and furrow. It has been protected because the ridge and furrow stop short along its length. For extant ridge & furrow field patterns see (Hartley 1989, 78). The water level in the ditch is approximately the same altitude as the level in the GUC. From its general spatial disposition, it is easy to see that the two water courses merge somewhere a little to the south. The remnant water course on the left of the GUC is 15m from bank top to bank top with a nominal channel width of 10m. This was the River Soar on the 1888 OS map, but its profile, dimensions and lower altitude suggest that it could be an earlier canal or canalised river. The date is unknown but could be at any time between Roman and modern. © Google Earth Pro 2022: Image by Maxar Technologies.



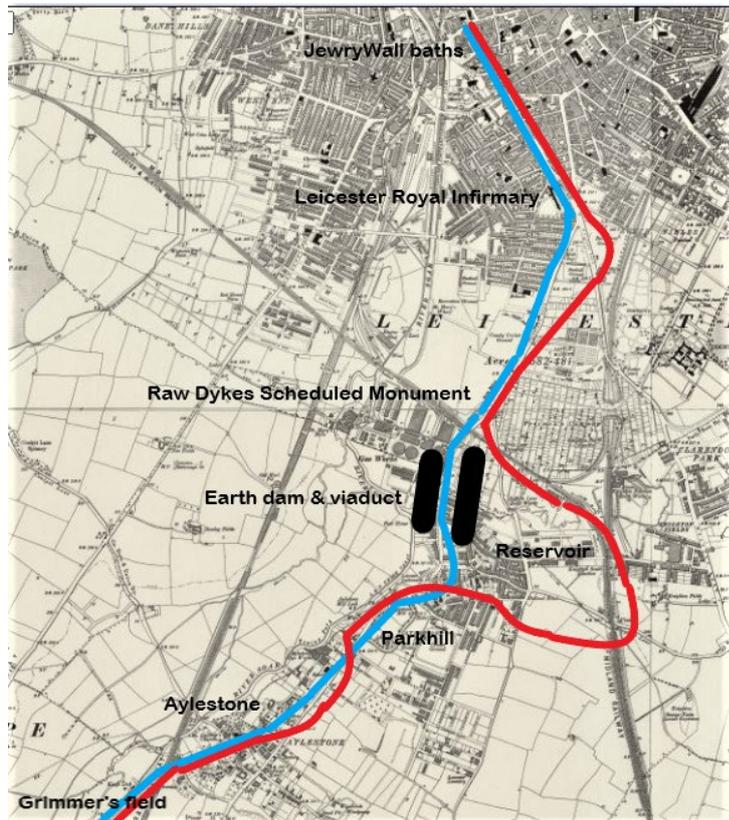
**Figure 38:** A lidar scan of Grimmer's ditch and the point at which the 61m AOD contour crosses the canal into the river valley (circled) reveals a complex of earthworks of different dates. It also shows a palimpsest of water courses across the Soar valley which are difficult to date. River valley archaeology is still in its infancy (Blair 2007, 1-10). Courtesy of Dave Armstrong. Lidar data © Environment Agency copyright and/or database right 2020. All rights reserved.



**Figure 39:** The conjectured transport canal has traversed Old Aylestone into the ‘crossing’ zone near Grimmer’s ditch and proceeds to the area immediately south of Le Roudic (the ‘Raw Dyke’) in Glen Parva parish. The minor place-names no longer exist but their possible location is shown at the extreme western edge of the parish. This is the most likely point at which the transport canal is fed by the river. It then crosses the valley as a canalised river to Aldeby ‘wharf’. OS 6” map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.

### From Grimmer’s ditch to Aldeby?

The modern River Soar hugs the 200’ (61m AOD) contour and the GUC as far as Blue Bank Lock (SP 5620 9953) about 1000m south from the Crossing Point of the GUC and the proposed transport canal and then starts to rise away in a south-westerly direction towards Aldeby. The first visual evidence of a continuation of the proposed transport canal emerges in Palmer’s field (SP 555 992) on the other side of the valley, where there is a faint thin ridge, less than 150mm high and about 30m long matching the smudgy dark line first spotted on the RAF Brampton sortie photo. See **Figure 4**.



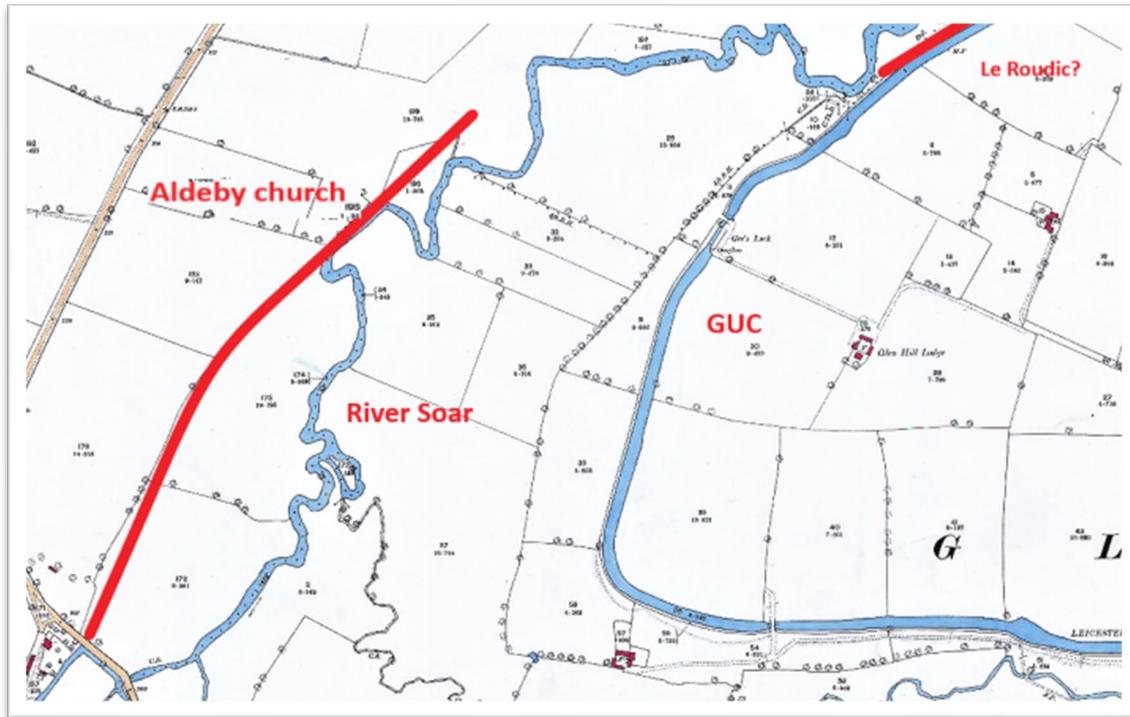
**Figure 40:** An overview of the route of the proposed transport canal from the Jewry Wall baths to Grimmer's field. The conjectured line of the transport canal is shown in blue. The 200' (61m AOD) contour is shown in red. Notice how the two contour levels begin to diverge north of the Raw Dykes Scheduled Monument. The red route would take a longer way round to arrive at the same point by the baths. *OS 6" map (1888-1913). Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.*

The same feature is also apparent in the next field along (Kitchin's field: SP 554 991) where it crosses on the same line until it meets the edge of Aldeby 'wharf' but unfortunately it could not be detected on the ground. Then there is the short section fronting the Aldeby church site which was seen in 1999. There was a tumble of dressed stone and rubble at the northern end (SP 55387 99075) and behind it a 'shouldered' bank. The stone 'wharf' may have nothing to do with the Roman era. The 'shouldered' bank appears to lie behind the stonework and on a slightly different line.

The 'wharf' is almost invisible, and access at the time of writing is impossible. The Aldeby church site of St John is discussed by Historic England (in HE List Entry Number: 1005048 UID: LE 196. SP 5533 9910). Recent lidar scans reveal that the apse is more likely to be at the west end of the building which rules out the theory that it was originally a church.<sup>17</sup> Its proximity to the granite outcrop at Coal Pit Lane, Enderby suggests that this could have formed an early transshipment point for granite into *Ratae*. The 'shouldered' bank running through the St John's area could have been a dock wall where loading took place. This is now labelled as the 'Aldeby earthwork'. See **Figure 39**. See also **Figures 4 to 9**.

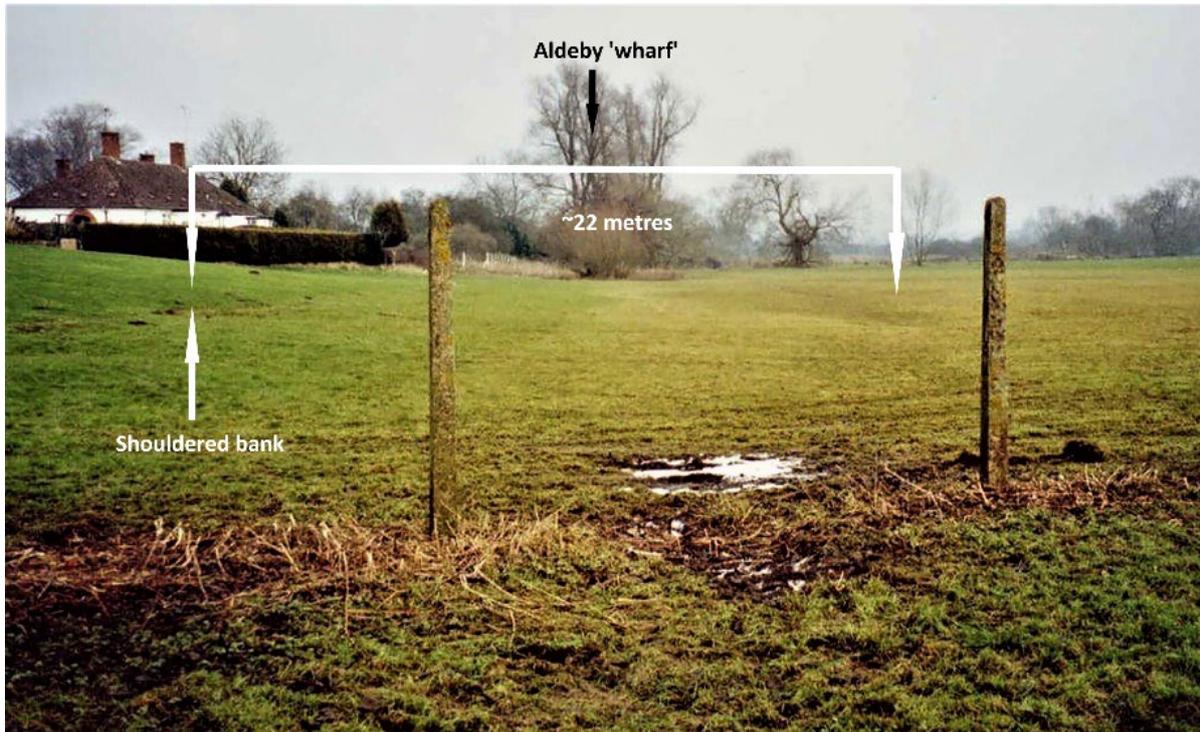
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17. An excavation in the early 1950s revealed the church's ground plan. 'There appears to be ... a square-ended chancel replacing an earlier apsidal chancel' however, a close inspection of the lidar images strongly suggest that the apse is at the opposite end.



**Figure 41:** The red lines indicate where the canalised river could have run. This is also supported by evidence from aerial photos and lidar scans, field work observations and ground surveys. It seems that the canalised river has crossed the Soar valley and joined the conjectured course of the canal proper which runs north into Grimmer's field and eventually connects with the Raw Dykes. The junction between the canalised river and the canal proper is possibly towards northern end of Glen Parva parish. *OS 25" map (1885) Sheet XXXVII.9. Reproduced with the permission of the National Library of Scotland under (CC-BY) licence.*

Moving south along the valley edge there is an open area in what is now Jubilee Park, Enderby which slopes up to a playground (SP 552 989). The top of the 'shouldered' bank in front of this play area is visible and in wet weather the profile of a ditch is also visible in front of this bank.



**Figure 42:** The banks of the former hypothesised canalised river (arrowed) in Jubilee Park looking north. The colour change in front of the 'shouldered' bank indicates the site of a Raw Dykes sized ditch, a very wet depression about 22m wide which appears to be the infilled (silted up?) transport canal. The playground is up the slope on the left. © Steve Mitchell



**Figure 43:** A view of the 'shouldered' bank (between the arrows) at the bottom of the playground slope in Jubilee Park. The 'shoulder' stands proud of the natural slope and has a shallow gully behind it probably caused by rainwater run-off erosion. The colour change in front of the bank is caused by waterlogging of the infilled (silted-up?) ditch of the canalised river (part of the conjectured transport canal). © Steve Mitchell

The ditch is over 20m wide in front of the 'shouldered' bank. The 'shouldered' bank is angled back against the slope so that soil erosion behind it has resulted in the formation of a small dip or gully which has been captured on a lidar cross-section of the valley (*Pers. comm.* Dave Armstrong). The 'shouldered' bank is obviously made of more durable material and lidar also captures it running along the slope in Jubilee Park.

### Jubilee Park to Enderby Mill

If the line of the 'shouldered' bank is followed along the edge of the slope to the entrance to Jubilee Park, it then meets the road B582. Crossing straight over the road one can see a channel in water which if followed south leads directly to the site of Enderby Mill (SP 5496 9843. This might be mistaken

for the mill leat but it is far too large. In any case the water discharging from the mill ran away at an angle and within a short distance joined the modern River Soar. This channel is, therefore, more likely to be a remnant of the canalised River Soar. At present the channel flows up to the road and then (now culverted) makes a right angle turn south where it joins the modern course of the River Soar. See **Figure 41**.



**Figure 44:** A view of the Enderby pack-horse bridge looking north. The Enderby watermill and the edge of the canal can be seen in the middle ground. The bridge is built of granite and has a HE end-date of A D 1540 along with the pack-horse bridge in Aylestone. The date of the photo is not known but the mill was still working in 1957 and demolished between 2000 and 2006. It is also shown on Prior's map of 1777. (Leicestershire HER: search Enderby watermill). *Photo courtesy of the Enderby Heritage Group. Source of image is not known.*

### **Enderby Mill to the soccer pitch**

Enderby Mill<sup>18</sup> can be approached from the B582 by a footpath which crosses the 'packhorse' bridge (SP 550 983). The land rises towards the mill site (now demolished) and within short distance a foot bridge crosses this channel above and to the left of the site of the former wheel housing. Immediately to the left of the bridge there is a short section of the mill leat which is still in water although heavily silted and measures about 20m across. This is much too large for a conventional mill leat and therefore a possible candidate for being part of the proposed transport canal. See **Figure 45**.

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18. Leicestershire HER: search Enderby Mill SP 549 984. SLE 156 (p56-58): Had 14' undershot wheel. Also shown on Prior's map 1777 as the River Soar (Welding 1984, 36).





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**Figure 45:** A heavily silted section of a former Enderby mill leat. It is over 20m wide and continues past the mill towards the B582 where it appears likely to have crossed over to form the now dry route of the possible canalised river in Jubilee Park. It is shown on Prior's map of 1777 as the River Soar. This could be only one of two surviving intact stretches of the original Roman watercourse – the other runs along the Aldeby 'wharf'. © Steve Mitchell

Moving south this channel narrows because of modern horticultural reclamation as it runs along the back of dwellings. Each house has quite a long garden and some fifteen metres back from the west bank of this narrow channel it is possible to see a scarp about 0.5m high. This sudden rise in the ground level carries on south through adjacent gardens. It appears that this scarp is the remnant of the west bank, and the original channel would have been at least 20m wide.



**Figure 46:** The canalised River Soar looking north. The channel (a former mill leat) has been reduced because the gardens on the left of the picture have reclaimed some of the water course. © Steve Mitchell



**Figure 47:** The former mill leat is about 10m wide at this point and about 15m into the gardens there is a low scarp (marked by arrows) which would have been the other bank of the River Soar canalised by the Romans. © Steve Mitchell

Just beyond the gardens it is more difficult to see the scarp for foliage. The course passes close to the edge of Narborough Bogs (SP 549 978), a wilderness which is now a nature reserve. The presumed line now enters playing fields (soccer pitches) where there are no surface clues. However, an aerial photo reveals a tell-tale long straight patch of waterlogged ground of the right width which can be interpreted as part of the former channel of the canalised river. See **Figure 48** below.



**Figure 48:** A line of discolouration (about 20m wide) down the centre of the soccer pitch is probably due to waterlogging (yellow rectangle). This is on the conjectured line of the canalised river with the site of Enderby Mill and the gardens backing on to the former canalised river just to the north (yellow line). The wooded area to the east is the Narborough Bogs Nature Reserve and the area immediately to the south are allotments and motorway. © Google Earth Pro 2000: Image by Infoterra Ltd. & Bluesky 2022.

The course of the proposed canal disappears at the entrance to allotments (SP 5472 9784) and a modern embanked motorway (M1), railway line and industrial buildings cross the conjectured route. The next visible evidence is in Littlethorpe.

### Littlethorpe to Fosse Way

There is a linear wooded copse which runs parallel to Sycamore Way, Littlethorpe on an east-west orientation. On entering the copse from the south by a public footpath (SP 53949 97096) there is a 10 to 12m wide ditch which is about 1.5m deep. This is followed by some heavily degraded and intermittent clay banks which might be remnants of the original clay bank of the proposed canal or canalised river. This jumble of features lies within a width of around 22m.



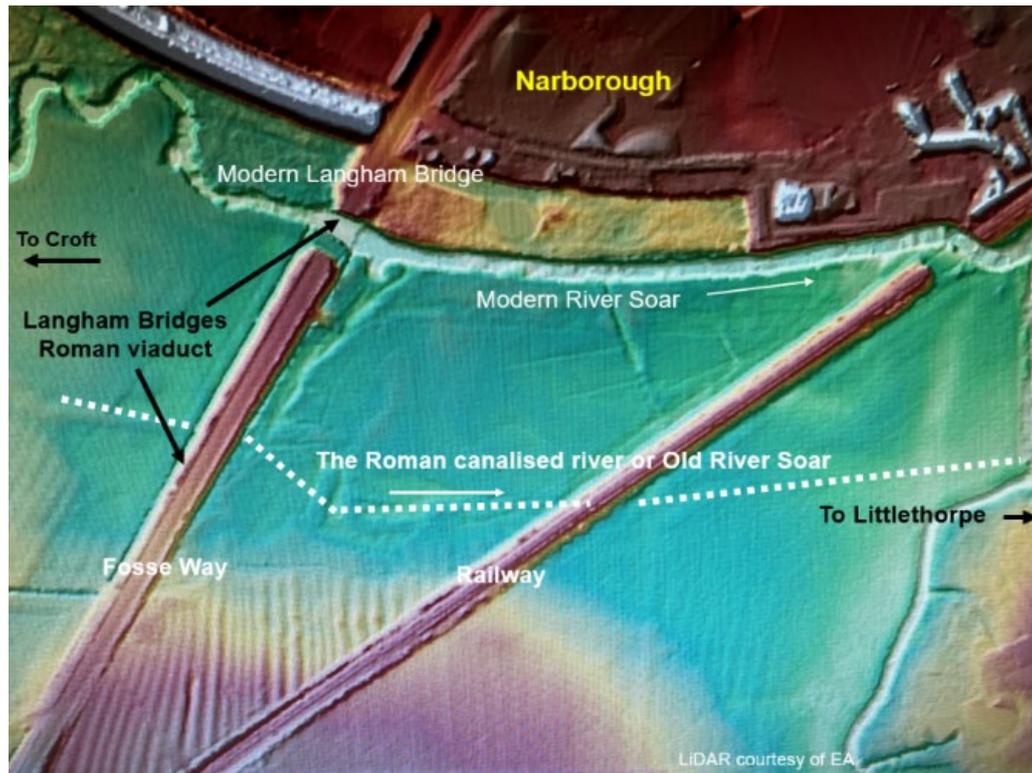
**Figure 49:** the linear copse in Littlethorpe in 2002, looking east. Some of these features are disappearing like the clay bank on the left foreground, as the space, a community recreation area, is increasingly being used as the village grows rapidly. © Steve Mitchell

Further on there is a heavily silted channel which runs north-east towards the centre of Narborough. This the remains of a mill leat which serviced Narborough Watermill.<sup>19</sup> This channel is shown on Prior's map of 1777 (Welding 1989, 36) and is recorded as the River Soar.<sup>20</sup> The channel is in water for a short section to the west of the mill leat and then disappears. The copse continues westward and is too overgrown to make sense of it.

19. Leicestershire HER: Narborough Mill SP 540 973. SLE 156 (p113): Domesday lists mill in Littlethorpe. Stood on site of railway goods yard. Possible mention in a thirteenth century source. MLE 245/244: marked on a railway map with pond and leat about 550m (?) upstream from river.

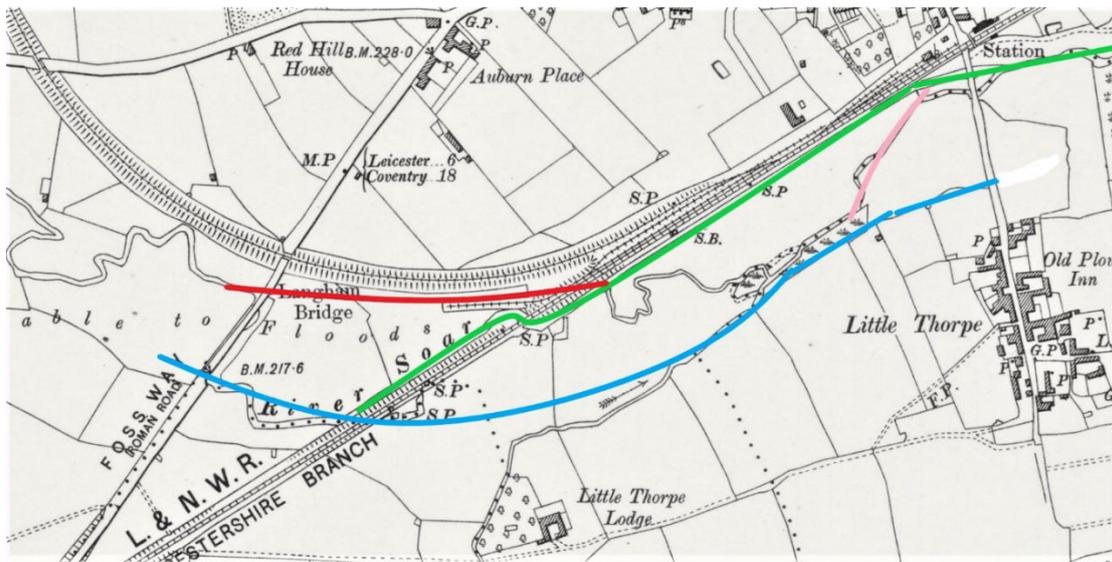
20. Prior's map of A D 1777 (Welding 1984, 36) shows the canalised River Soar crossing under the Fosse Way at Langham Bridges. This is about 100m south of the present Langham Bridge which was built in the first half of the twentieth century. The Sparkenhoe Hundred boundary which was instituted before c.1125 (Cox 1971-2, 18) follows the west bank of the river. The boundary diverts north to Narborough Mill which is mentioned in the Domesday Book as Littlethorpe. The modern Langham Bridge and new water course were created at this time and the Fosse Way was also lowered and widened in c.1935 (Jarrett 2021, 7).

Directly west of the linear copse there are open fields, and a footpath passes under a railway bridge (SP 53091 96691) which leads directly to the Fosse Way. It is quite apparent that there was a water course crossing this area as the shallow ditch meanders and forms a nascent ox bow. Again, Prior's map of 1777 and the 1885 OS map show this as the River Soar. The former River Soar meets the Fosse Way at a point about 100m south (SP 53130 96904) of the modern Langham Bridge (SP 5319 9700) which crosses the modern River Soar. It then crosses under the Roman road and can be seen on lidar for a short distance on the other side. The Langham Bridges is described in Nichols<sup>21</sup> and the footings were last seen in 1935 (Jarrett, 7). A picture of this important feature has not been discovered.



**Figure 50:** A reconstruction of the route of the canalised river. The modern River Soar flows under the north end of the former viaduct called Langham Bridges (now Langham Bridge). The earlier course, which passed under the viaduct at its southern end, had broken its banks and had formed meanders and the start of an oxbow. This part of the Fosse Way had become unusable, and it is worth noting that Prior's map of 1777 shows the Soar and its tributaries flowing across the road. Stukeley describes having to force his horse through a quagmire at this point. Lidar composite 1m DTM 2020 © Environment Agency copyright and/or database right 2020. All rights reserved.

21. Nichols description of Langham Bridges (Nichols Vol 1, Pt 2, 12). 'These bridges as they are called, or rather bridge are an object of some note. They are built over a swampy part of the Foss and extend over two acres of ground. They, for their simplicity must be regarded as the most ancient work of labour except for the Foss itself between Newark and High Cross. The arches are built of Forest Stone (granite) without much design but that of durability. They are narrow and without fence or wall on either side and in some places they so resemble the rock itself, peeping through the moss and rushes, jointed with much admirable mortar, exhibiting through age the same features as the stone, that you are at a loss to know whether they are not some apertures in rock naturally favourable to the passage of a stream.' In 1797 Throsby describes them as extending 'like a chain along the Fosse' (Jervoise, 43).



**Figure 51:** A schematic plan of the various channels and dates. **Blue** = the conjectured course of the Roman canalised river (transport canal). **Green** = the course of the blue channel diverted by the building of the railway line and sidings. **Red** = the post-1935 course of the River Soar under the new Langham Bridge. **Pink** = a mill leat to the former Narborough Mill (could be pre-Conquest). The **Blue** course of the old River Soar (canalised river) can be traced from the west side of the Fosse Way. This trace disappears just to the east of the Littlethorpe to Narborough road. Due to modern development, it cannot be traced but reappears in the field with the Soccer pitches (see **Figure 48**). OS 6" map (1888-1913) Reproduced with the permission of the National Library of Scotland under (CC-BY) licence).



**Figure 52:** Lidar scan helps to find a faint trace of the Roman canalised river, but modern developments have obliterated it in places. Courtesy of David Ratledge. Lidar data © Environment Agency copyright and/or database right 2020. All rights reserved.

The conjectured transport canal (Roman canalised River Soar) is thought to proceed to Croft where it is possible that the Romans would have quarried granite (Liddle 1982, 43). It is possible that they also mined Stoney Cove for granite (Liddle 1982, 43).<sup>22</sup> This lies about one and three-quarter miles (approx.

22. Granites from Groby, Croft, Sapcote and Stoney Stanton . Stoney Cove straddles both parishes although most of the other outcrops are in Stoney not Sapcote). Mountsorrel, Enderby and Markfield granites have all been identified both at Jewry Wall and the Forum (Liddle, 1982, 43). For distribution of granite outcrops ('local exposures') in Leicestershire see (Sylvester-Bradley & Ford, 1968, 43). There is an abundance of red clay at Stoney (there is also a deposit red clay at Croft (*pers.comm.* members of the Leicestershire Fieldworkers). Red clay tops a succession of layers at the Raw Dykes Scheduled Monument which is chronologically logical if this was the latter stage of canal building. Red clay also tops the Raw Dykes at the recent excavations on the south side of Brazil Street. Mitchell's analysis of the place-name 'Raw' equates it with 'red' see **Note 14** above.

2.5km) further south but how the transport of this stone was achieved is a puzzle that remains unsolved. By any metric this was a large and complex project completed at speed and scale which would be the envy of modern-day builders. The reasons why this monument has been 'lost' for such a long time has been analysed and demonstrated. It is hoped that this paper will, by setting the record straight, enable the monument to be re-evaluated and restored to its rightful place of historical significance alongside Hadrian's Wall and the Car Dyke. However, further research is needed to test and prove the theory and it is hoped that this paper will help initiate this.

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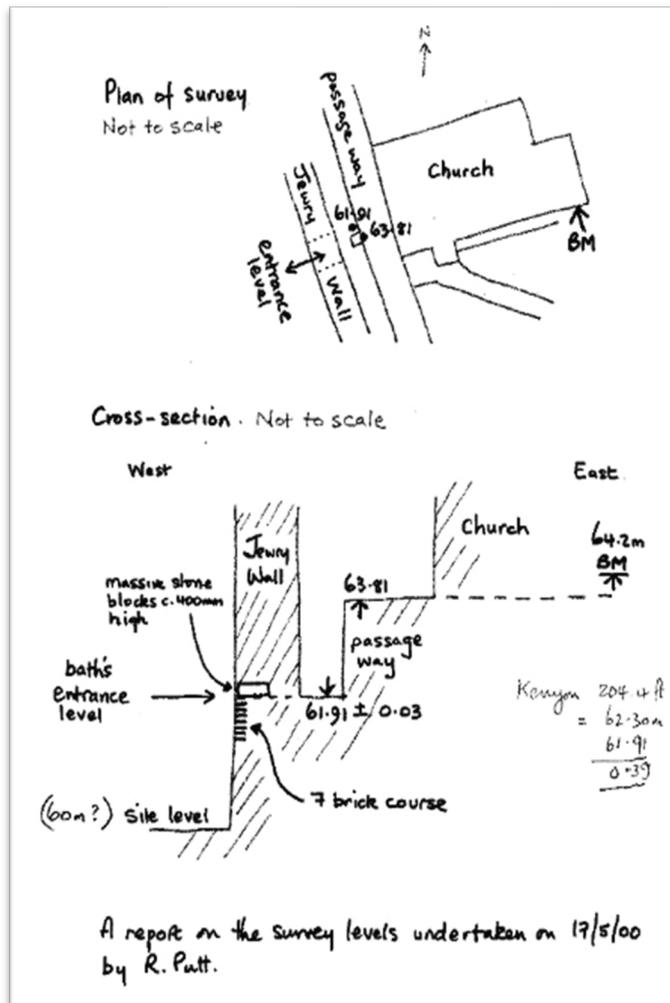
## Appendix A

### *Calculating the water level in the Raw Dykes Scheduled Monument*

It is estimated that, as part of a navigable canal into *Ratae*, the level of the water at the Raw Dykes in normal Roman times would have been at about 60.5m AOD. As Poulter argues (see the **Analysis** section in the printed version of this article) this would have allowed for a rise in water level of up to 0.6m in time of flood without overtopping the banks of the earthwork. The mean height of the bottom of the channel at the Raw Dykes is 58.51m AOD, which means that the depth of water at the Raw Dykes would have been about 2m in normal times. Such a depth of water would have been ample to float loaded boats. Roman craft were probably double ended caravel-built with a shallow curved bottom, wide beam, flared sides and minimal keel (<https://www.britannica.com/technology/boat/Greek-and-Roman-boats> accessed June 2022). (The flared sides are suited to a gently angled dock wall as this allows the gunnel to rub as it rises and falls without fouling but allowing easy loading). Brayford Mere is a statutorily controlled channel in the Fosdyke at Lincoln. It is 35' (10.7m) wide and 5' (1.5m) deep. It takes boats up to a maximum of length of 74' 6" (22.7m) and 15' 2" (4.6m) beam by 5' (1.5m) draught. The age of the statute is not known but it is thought to have been based on Roman dimensions (L.A.Edwards, 1962, 107). Based on measurements taken from Kenyon's cross-section (Kenyon 1948, Plate XXXIII) (see **Figure 3**), a depth of water of 2m would allow a minimum channel width of 16m. Thus, if we apply these maximum dimensions to the Raw Dykes channel, then two boats would have been able to pass one another in the channel.

### *Calculating the water level at Jewry Wall*

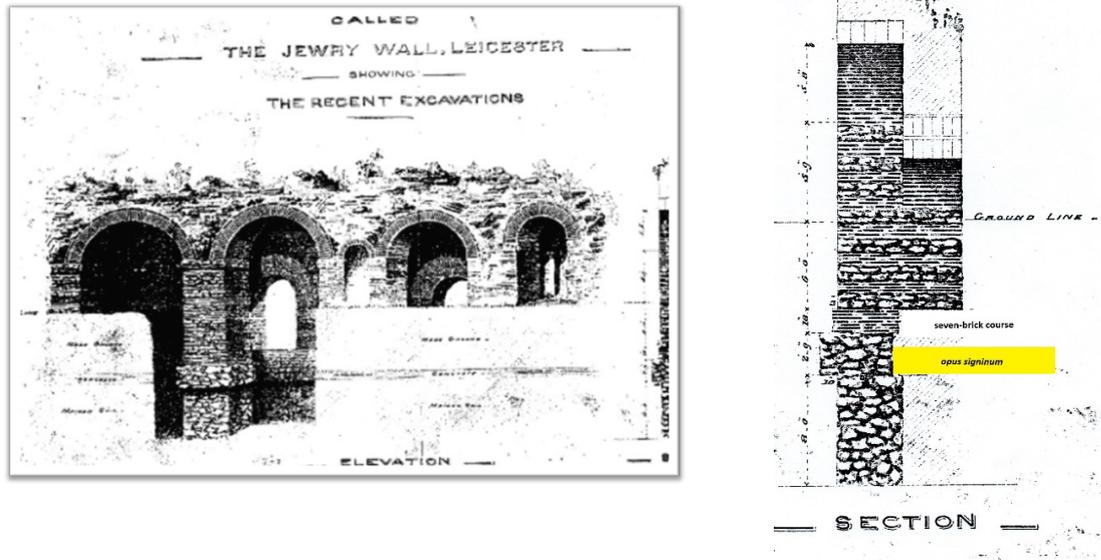
This calculation is complex and relies on height measurements from surveys that may or may not have reliable datum points. Firstly, the one level we do know. The level doorsill of the southern doorway in the Jewry Wall was professionally surveyed at 61.91m AOD (see **Figure 53**).



**Figure 53:** A schematic diagram of the survey method and results of the level of the sill in the southern doorway. The description of the bath's entrance and site level are conjectural. The position of the seven brick-course is approximate. © Steve Mitchell

Kenyon established her site datum on top of a seven-brick course which appears to be the same thing, but which may not be so since Kenyon uses the terms 'doorsill' and 'top of the seven-brick course' interchangeably. It depends on whether she hammered a nail into the wall on top of the seven-brick course or used the level doorsill, because there is a difference between them of up to 200mm (2 or 3 courses of brick and each course averaging 65mm – see below). Whatever, as a starting point we can now estimate that the top of the seven-brick course was at 62.1m AOD (61.91 + 0.2).

Before Kenyon's work, a little-known excavation had been carried out in the nineteenth century by Henry Goddard, between St Nicholas church and the eastern elevation of the Jewry Wall, under the auspices of the Leicestershire Architectural and Archaeological Society (LAAS). He had not used a datum point but had recorded a measurement of an *opus signinum* floor some 15 inches (0.38m) thick. He had also found that the depth of the aforementioned seven-brick course was 18" (0.46m). (Each brick course therefore averages 65mm thick. This value has been found by taking Goddard's measurement and dividing by 7.) See **Figure 54**.



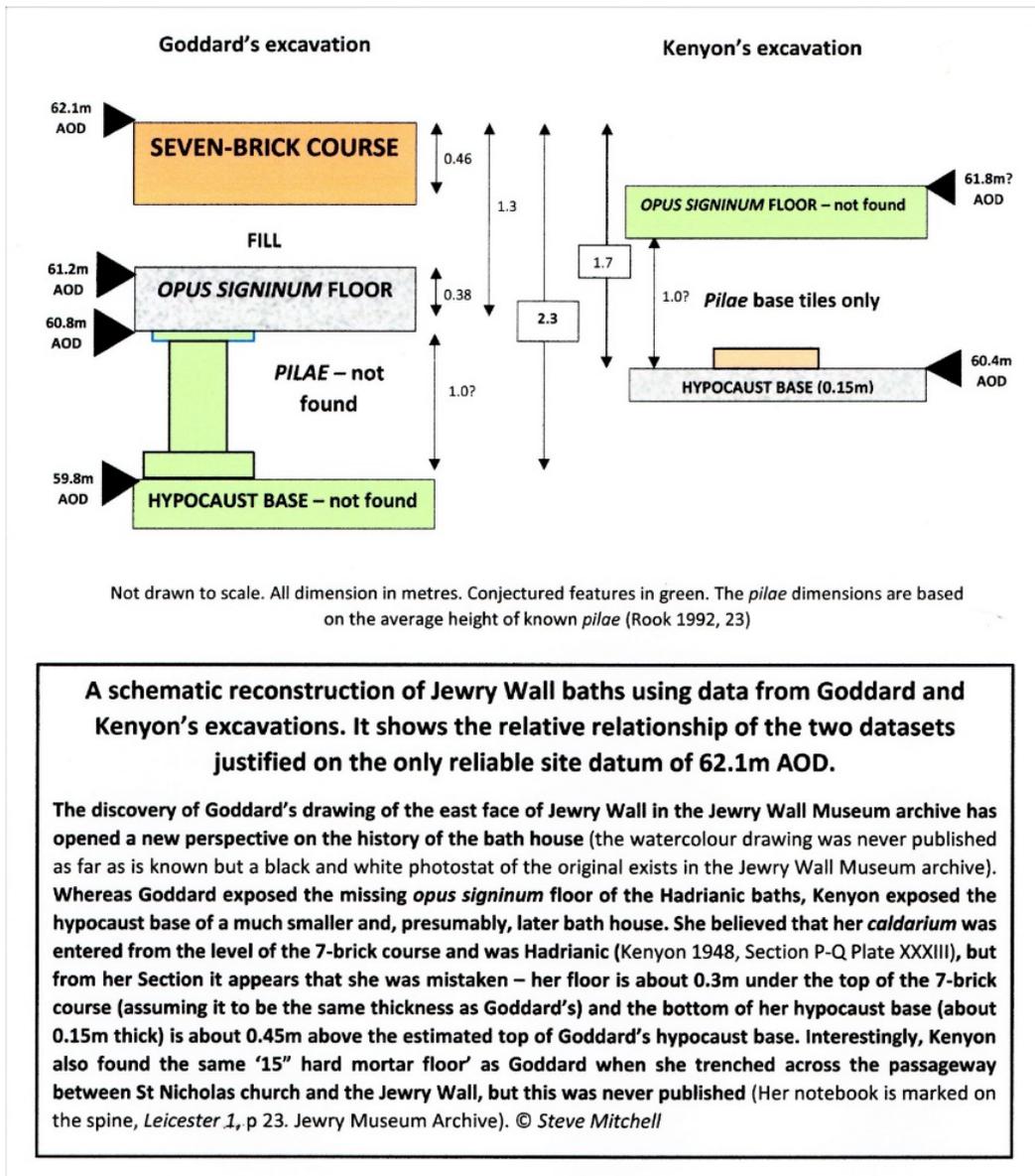
**Figur 54:** A watercolour drawing *Roman remains called the Jewry Wall, Leicester showing the recent excavations* by J Goddard shows the eastern elevation of Jewry Wall in 1863 after an excavation by H. Goddard under the auspices of the Leicestershire Architectural and Archaeological Society (AAS) which exposed enough of the lower part of the wall to reveal some key dimensions (see blow-up detail). It was reported by Henry Goddard in their Transactions Vol 2, 1870. This is probably the first time that the existence and context of the *opus signinum* floor has been fully discussed in the subsequent archaeological literature. This illustration is thought to have been shown at a meeting of the AAS in 1863 and this copy was retrieved from the Jewry Wall Museum archive. The key dimensions are shown along the right-hand edge (blown-up). The yellow line indicates the position and depth of the *opus signinum* floor. © J and H. Goddard.

However, as can be seen from **Figure 55** below, Goddard's and Kenyon's measurements cannot be reconciled when plotted together, and it is conceivable that they were not examining the same part of the Roman remains. Indeed, it is possible that what Goddard had been examining had been part of the Hadrianic structure whilst Kenyon had been investigating the remains from a later period.

Either way, if the floor of the Jewry Wall baths had stood at 61.91m AOD (the level of the southern doorsill) or 62.1m AOD (the top of the seven-brick course), or at 61.2m AOD (derived from Goddard's measurements), it is apparent that water arriving at the baths at 60.5m OD would not have been able to flow into the baths with sufficient head to supply fountains or possibly to reach boilers above the furnace stoke holes. As Wachter has suggested (Wachter 1975, 345), some form of lifting mechanism is likely to have been applied to raise the water to the desired height. Indeed, if the baths had been equipped with fountains it is possible that lifting mechanisms would have been required to raise the water to two levels, since the fountains would have required a greater head of water than the baths needed for bathers. One possibility is that the water from the canal would have been directed into the underground cistern which the author proposes (see **Part One**), and then lifted from there.

**Figure 55**





## Appendix B

### The Roman road to *Tripontium*?

Over the years a case has been made for the Roman road between *Ratae* and *Cave's Inn (Tripontium)* on Watling Street (A5) near the village of Shawell (Liddle 1982, 31)/Margary 1967, 217). Both Liddle and Margary assign the road as probable (Margary gives it the number RR572), and Liddle conjectures the route along the Aylestone Road (A426) out of Leicester (Liddle 1982, 28). Leicestershire HER reports eight sightings none of which have been professionally recorded or validated. There are three in Shawell (Leicestershire HER: search Shawell) and the remainder in Lutterworth (Leicestershire HER: search Lutterworth) where they occur in a N-S line on the west side of the High Street. Nothing has been found between Lutterworth and *Ratae*. However, despite repeated claims made by archaeologists that the Roman road running south out the town is 'the Roman road to *Tripontium*' the conjectured route along the modern Aylestone Road is improbable as demonstrated in this paper. In addition, no archaeological evidence has been found and there are no lidar traces. The road to *Tripontium*, if it exists, must take a different route out of *Ratae* than the one being proposed currently.

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### Access to the evidence

At present (May 2023) there is no public access to the Jewry Wall and the Roman baths in Leicester, however this is temporary. Most of the west side of the Aylestone Road has now been built over including the location of sites visible when Mitchell first searched in the early 2000's. These include the roadside section of the former County Cricket Ground, the electricity board offices, car park and bowling green. There is no public access to the following sites controlled by public bodies mentioned in the text: the site of the church of St John, Aldeby (field gate padlocked and overgrowth obscures any archaeology); access to the church site from the Soar valley is not possible as there is a narrow strip of land between it and the river under private ownership which is also overgrown. Visibility from the Jubilee Park is now extremely difficult and the features such as the 'wharf' are no longer visible because of overgrowth. The Raw Dykes Scheduled Monument is not open to the public but can be viewed from a fenced entrance leading from the Aylestone Road. The authors asked for permission in 2022 but have not been granted access to Grimmer's field. However, most of the valley from Aylestone to the Fosse Way is open to the public.

## ACKNOWLEDGEMENTS

My fieldwork was assisted by people who volunteered their time and expertise. Richard Clark, now County Archaeologist, allowed unfettered access to the Jewry Wall site and the archive in the Jewry Wall Museum. The late Barrie Shore who had spent a lifetime researching Roman roads and alignments in the Soar valley area south of Leicester demonstrated the complex morphology of the Clevis ridge at Croft and introduced the theory of the lost northern route of the Fosse Way into Leicester. The late Richard Putt, who undertook three field surveys which unlocked the key ground levels without which this paper would not have been born. Tom Burton who piloted his powered glider to photograph the Soar valley. Tony Rook and Bryan Scott of Welwyn Archaeological Society who were asked for their special expertise to help understand the Jewry Wall baths site. Their enthusiastic contribution went far and above what was hoped for. The late Alan McWhirr, who helped in the attempt to put the 'canal' theory in front of professional archaeologists. Lastly, the landowners who granted access to their land, especially the late Mr Palmer who provided local knowledge of St John's and further introductions. There were many others who gave encouragement along the way – much needed as the first idea about whether it was possible that Raw Dykes could have been a canal sized aqueduct occurred over 23 years ago.

More recently, Grahame Appleby, City Archaeologist for Leicester, kindly spent time with myself and John Poulter, and provided useful maps and information about excavations which had not yet been published. The lidar images, sections and levels provided by David Ratledge and Dave Armstrong of the Roman Roads Research Association have been instrumental in verifying the feasibility of the course of the proposed canal. My thanks must go to Rob Entwistle, Editor of *Itinera*, for his unfailing interest and encouragement in the preparation of our joint article and allowing this solo effort to appear on their website.

Lastly, but not least, my colleague John Poulter whose expertise and patience helped organise and explain the vast body of work I have accumulated. It seems fitting that this and our joint paper should appear as the Jewry Wall Museum and the site of the Hadrianic bathhouse is in the final stages of preparation ready to be unwrapped after years of building work and conservation.

## BIBLIOGRAPHY

### Abbreviations:

LMARS = Leicestershire Museums, Art Galleries & Records Service.

TLAHS = Transactions of the Leicestershire Archaeological and Historical Society.

ULAS = University of Leicester Archaeological Services.

Bazley, K and Carew, T., 2006: *The Former EMEB Sports Field Site, Aylestone Rd., Leicester: An Archaeological Evaluation Report*, AOC Archaeology Ltd., Twickenham (forthcoming)

Beydoyere, de la, G. 2001: *The Buildings of Roman Britain*, Tempus, Stroud

Blair, J. 2007: 'Introduction'. In J. Blair (ed.), *Waterways and Canal Building in Medieval England*, Oxford University Press, Oxford, 1-10

Bond, J. 2007: 'Canal Construction in the Early Middle Ages: An Introductory Review'. In J. Blair (ed.), *Waterways and Canal-building in Medieval England*, Oxford University Press, Oxford, 153-206

Buckley, R. and Lucas, J. 1987: *Leicester town defences: Excavations 1958-1974*, LMARS, Leicester

Burgers, A. 2001: *The Water Supplies and Related Structures of Roman Britain*, BAR British Series 324, Oxford

Clay, P and Mellor, J.E. 1984: *Excavations in Bath Lane, Leicester*, LMARS, Leicester

Clay, P. and Pollard, R. 1994: *Iron Age and Roman Occupation in the West Bridge Area, Leicester, Excavations 1962-1971*, LMARS, Leicester

Connor, A. and Buckley, R. 1999: *Roman and Medieval Occupation in Causeway Lane, Leicester, Excavations 1980 and 1991*, Leicester Archaeology Monographs 5, ULAS, Leicester

Cooper, N. J. and Buckley, R.: 'Recent, and not so recent, work in Roman Leicester.' In Bowman, P. and Liddle, P. (eds) 2004: *Leicestershire Landscapes*, Leicestershire Museums Archaeological Fieldwork Group, Monograph 1, Leicester, 51-62

Courtney, P. 1998: 'Saxon and Medieval Leicester: The Making of an Urban Landscape', *TLAHS*, Vol 73, Leicester, 110-45

Cox, B.H. 1971-2: 'Leicestershire Moot-sites: the Place-name evidence', *TLAHS*, Vol XLVII. 14-21

Davies, H. 2002: *Roads in Roman Britain*, Tempus, Stroud

Edwards, L. A. 1962: *Inland Waterways of Great Britain and Ireland*, Imray, Laurie, Norie & Wilson, London

Frere, S.S. 1967: *Britannia, a History of Roman Britain*, Routledge & Kegan Paul, London

Frere, S.S. 1987: *Britannia, a History of Roman Britain*, Pimlico, London

- Frizelle, E. R. 1988: *The Life and Times of the Royal Infirmary at Leicester: the making of a teaching hospital 1766-1980*, Leicestershire No 1 Hospital Management Committee, 1971, Leicester
- Goddard, H. 1870: *The Jewry Wall, Leicester*, Trans. Leicestershire Architectural and Archaeological Soc. Vol 2, Leicester, 202
- Hall, J. and Merrifield, R. 1986: *Roman London*, Museum of London, London
- Hartley, R. F. 1989: *The Medieval Earthworks of Central Leicestershire*, Leicestershire Museums Publication 105, LMARS, Leicester
- Haverfield, F. J. 1918: 'Roman Leicester', *Archaeology Journal* 25, 1-46
- Jarrett, V.N & R.P. 1981: *The History of Narborough and Littlethorpe*, Narborough Parish Council
- Jarvis, W. 2021: *An archaeological Evaluation for land at the former Sturgess Garage, 115, Aylestone Rd., Leicester*, ULAS, Leicester
- Jervoise, E. 1932: *The Ancient Bridges of Mid and Eastern England*, London
- Jones, G. 2015: 'The origins of Leicestershire churches, territories, and landscapes'. In Elkin, K. (ed.), *Medieval Leicestershire*, Monograph 3, Leicestershire Fieldworkers, Leicester, 13-39
- Kenyon, K. M. 1948: *Excavations at the Jewry Wall Site, Leicester*, Society of Antiquaries of London, Research Report 15, London
- Kenyon, K. Undated: Notebooks marked on the spine, *Leicester 1, Leicester J1, Leicester Raw Dykes/Sanvey Gate*. Jewry Wall Museum Archive
- Liddle, P. 1982: *Leicestershire Archaeology the Present State of Knowledge, Vol 1 to the end of the Roman Period*. Archaeological Report No 4, LMARS, Leicester
- Liddle, P. 1982: *Leicestershire Archaeology the Present State of Knowledge, Vol 2 Saxon & Medieval Period*, LMARS, Leicester
- Margary, I. D. 1973: *Roman Roads in Britain*, John Baker, London
- McLeish, A., 2021: *An Archaeological Evaluation on land West of Aylestone Road, Leicester*, ULAS, Leicester (forthcoming)
- McWhirr, A. D. 1970: 'The Early Military History of the Roman East Midlands', *TLAHS*, 15 (1969-70) 1-19
- Mellor, J.E. 1989: 'Excavations in Leicester 1965-1968', *TLAHS*, Vol XLIV 1-10
- Mitchell, S & Poulter, J.: 'The case for a possible Roman transport canal into Leicester', *Itinera*, 3, (2023), 105-144
- Morris, M., Buckley, R. and Codd, M. 2011: *Visions of Ancient Leicester*, ULAS, Leicester

Nichols, J. 1810: *The History and Antiquities of the County of Leicester*, Vols 1-4 (Digital version of original by Heart of Albion Press)

Page, W. (ed). 1907: *Victoria County History of Leicester*, Vol 1

Ramsey, D. 2002: 'Roman roof slates recovered from the Narborough/Huncote area'. In *Leicestershire Historian*, 38, 24, Leicestershire Archaeological and Historical Society, Leicester

Rook, T (A. G.) 1992: *Roman Baths in Britain*, Shire Archaeology Series, Princes Risborough

Simmons, B & Cope-Faulkner, P. 2006: *The Car Dyke*, The Heritage Trust of Lincolnshire. Sleaford.

Stukeley, W. 1776: *Itinerarium Curiosum* (second edition, with additions), London

Sylvester-Bradley, P. C. and Ford, T (eds) 1968: *The Geology of the East Midlands*, Leicester University Press, Leicester

Taylor, M. and Goodchild, R. 1949: 'Kenyon Kathleen M., Excavations at The Jewry Wall Site, Leicester (Reports of the Research Committee of the Society of Antiquaries of London, no. xv). The Society of Antiquaries of London and the Corporation of the City of Leicester', *Journal of Roman Studies*, 39(1-2), 142-145

Thompson, F.H. 1954: 'The Roman Aqueduct at Lincoln'. In *Archaeology Journal*, Vol III, 106-28

Wacher, J. S. 1975: *The Towns of Roman Britain*, Batsford, London

Wacher, J. 1995: *The Towns of Roman Britain*, BCA, London

Welding, J.D.(ed). 1984: *Leicestershire in 1777, An edition of John Prior's Map of Leicestershire with an introduction and commentary by members of the Leicestershire Industrial History Society*, Leicestershire Libraries and Information Service, Leicester

White, R. and Barker, P. 1998: *Wroxeter, Life & Death of a Roman City*, Tempus, Stroud