



Josephine Westlake, Mark G. Macklin, John Lewin

Lincoln Centre for Water and Planetary Health (LCWPH), School of Geography, University of Lincoln (UK) (JWestlake@Lincoln.ac.uk)

Introduction

- Lincoln is situated at the confluence of the River Witham and the Fossdyke canal, an artificial waterway connecting the River Trent to the Witham via Brayford Pool. (Fig. 1).
- It is generally believed the Fossdyke was constructed during the Roman Period^{[1][2][3]} but this is solely on the basis of limited archaeological evidence.
- New research, based on remote sensing (LiDAR) and carbon-14 dating of sediments infilling an old river channel near Burton Waters, indicates pre-Roman river engineering could have been more widespread and on a larger scale than hitherto appreciated.

Research Objectives

- To collate existing documentary and archaeological evidence.
- To record and interpret evidence within sediment deposits.

The Sedimentary Record

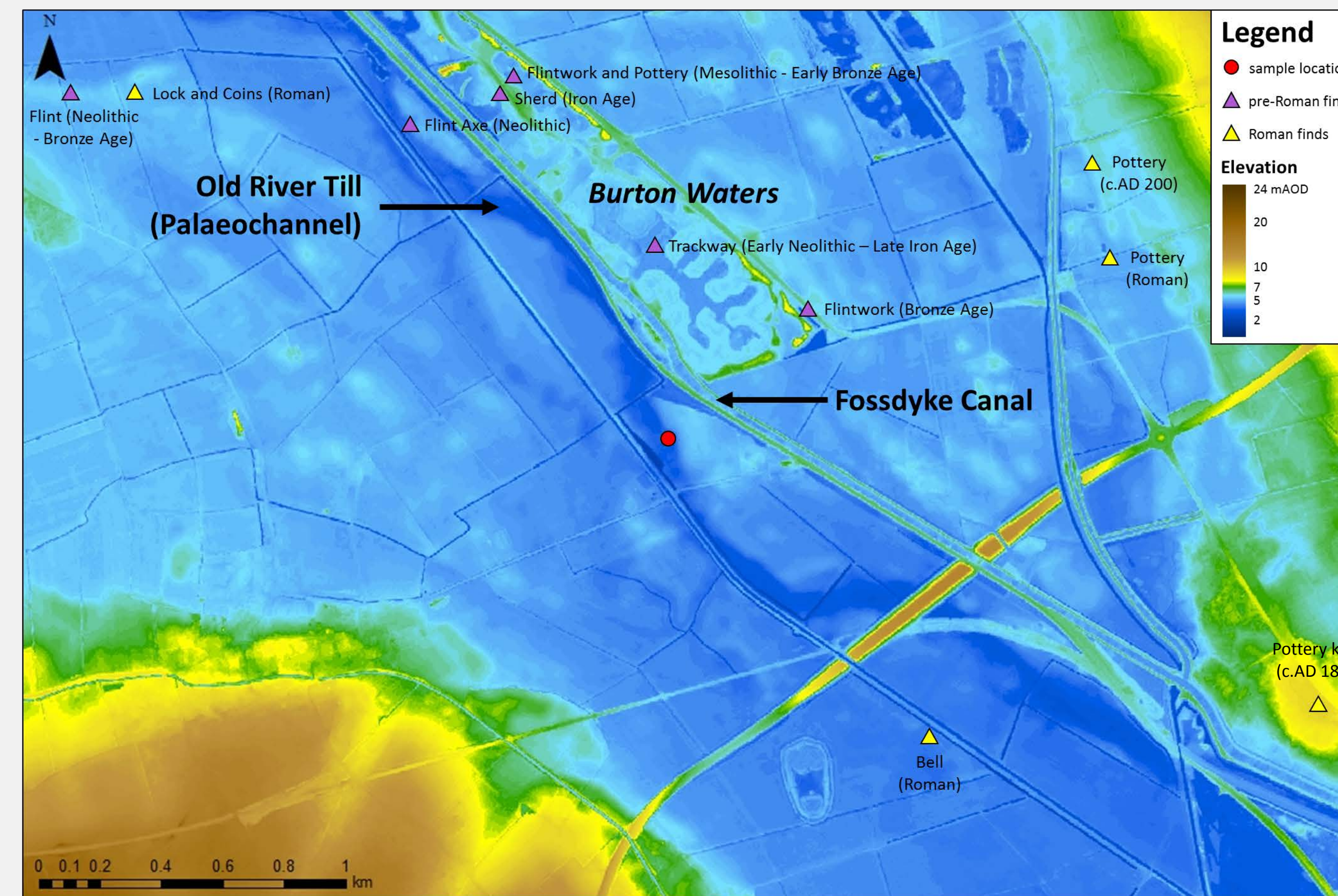
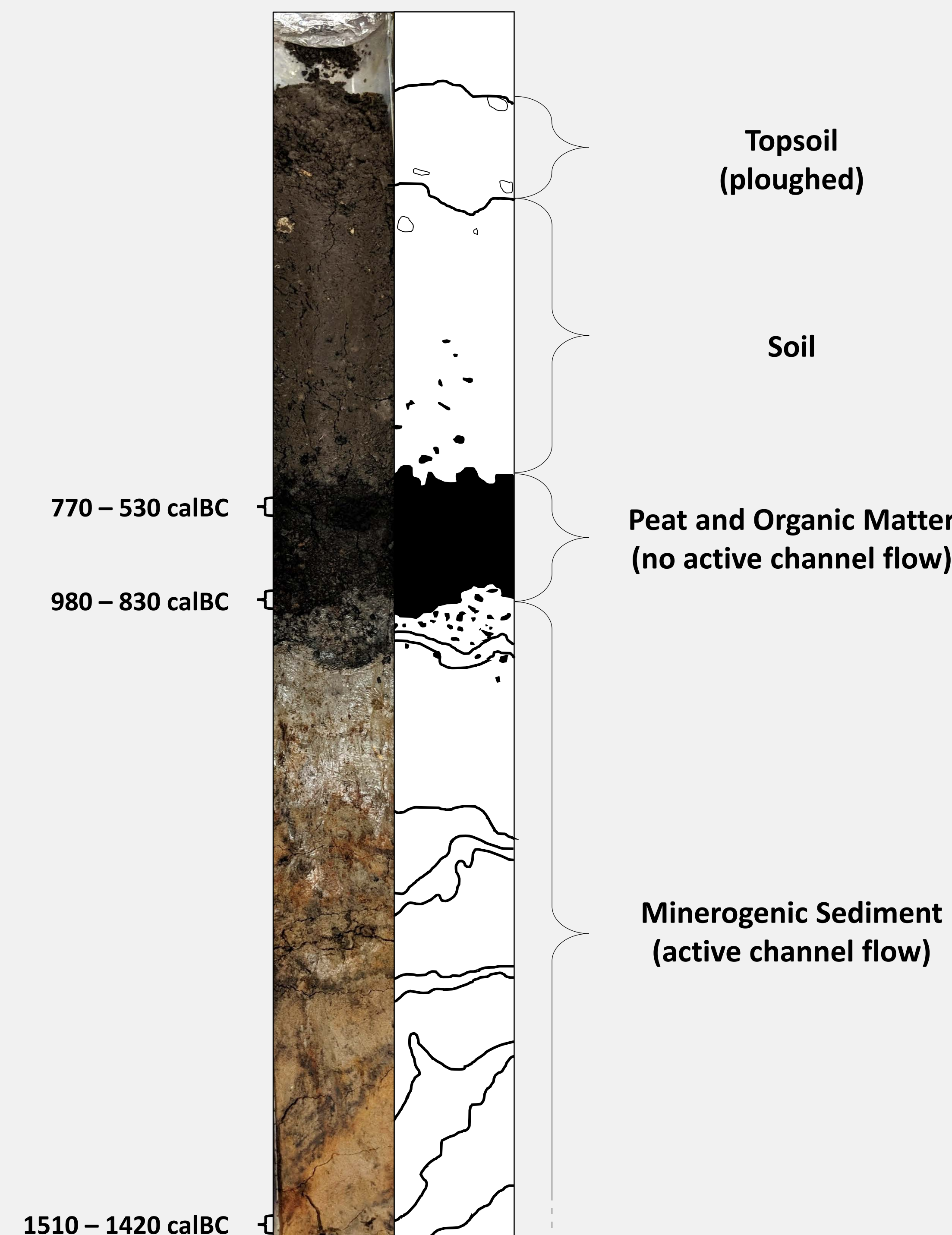


Figure 3. Fossdyke canal and River Till palaeochannel (old river channel). A core sample was extracted from the old channel which was cutoff and disconnected from the River Till. The meandering palaeochannel can be seen running parallel to the straighter modern Fossdyke canal.

Figure 4. Top 1 metre of sediment core extracted from the River Till palaeochannel (Fig. 3). Visible structures and carbon-14 dates are given alongside the main sediment horizons.



Methodology

This paper originated from an ongoing investigation of Holocene and historical flood histories of the River Witham. Sediment cores were extracted adjacent to the Fossdyke using the University's Dando Terrier Mk2 percussion drill rig including a single core from within a palaeochannel of the River Till (Fig. 3). Professors Macklin and Lewin identified a sedimentary sequence within the core indicating a change in depositional environment from active river flow to wetland (Fig. 4). This implied a diversion of flow from the River Till into the new canal.

Current Knowledge <ul style="list-style-type: none"> Literature review Consultation with archaeologists 	Historical Literature <ul style="list-style-type: none"> Database and archive search 	Archaeological <ul style="list-style-type: none"> Database search Consultation with archaeologists 	Geomorphological (Fig. 4) <ul style="list-style-type: none"> Detailed photography, logging and sampling of sediment core Carbon-14 dating of organic sediments to bracket change in depositional environment
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Findings

- Most researchers propose construction occurred in the Roman Military or Colonial era^{[1][2][3]}.
- Researchers agree on the significance of the Lincoln Gap as a pre-Roman religious and cultural centre of significance^[6].
- No documentary evidence prior to medieval period.
- Within the modern channel: no pre-Roman, two Roman (Fig. 1b) archaeological finds.
- Adjacent to the Fossdyke: 15 pre-Roman finds (Fig. 1b) (indicate concentrated settlement).
- Sedimentary Evidence**
 - LiDAR – single, clear palaeochannel (implies this channel was the only alternative flow prior to the Fossdyke construction) (Fig. 3).
 - Sedimentary log – change from minerogenic to organic depositional environment (implies change from active flow to wetland environment) (Fig. 4).
 - Carbon-14 dating – confirms this change occurred during the early Iron Age (Fig. 4).
 - Research indicates water tables were high during the 9th century BC^[7] (indicates the lack of flow was not a result of falling water tables).

Conclusions

Historical and documentary evidence is currently insufficient to date the Fossdyke. This study of sedimentary archives suggests the construction of the Fossdyke may have occurred in the early Iron Age and highlights the importance of considering sedimentary archive evidence.

Should the Fossdyke prove to be of pre-Roman construction, this will be by far the oldest human-made watercourse in the UK. Perceptions of prehistoric engineering capabilities throughout the UK may need to be re-examined in light of an earlier dating of the Fossdyke.

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Documentary and Archaeological Evidence

- The earliest documented record of the Fossdyke is in Symeon of Durham's c.AD 1129 *Historia Regum Anglorum et Dacorum*^[4].
- Discovery of a Roman statuette^[5] (Figs. 1b, 2), amphora (Fig. 1b), and possible Roman quay^[3] near the Brayford support an earlier date of construction.
- Pre-Roman finds (Fig. 1b) adjacent to the Fossdyke indicate areas of intensive settlement at Torksey and Burton Waters during the Iron and Bronze ages.



Figure 2. Romano-British bronze Figurine of Mars Gradivus Found on the Foss Dyke during clearing of the Fossdyke prior to AD 1774^[5].

- Dated: AD 150
- Location: Fossdyke channel, Saxilby, Lincolnshire (SK8975)
- Excavated: 18th century, pre-1774
- Inscription: *To the god Mars and the Deities of the Emperors the Colasuni, Bruccius and Caratius, presented this at their own expense at a cost of 100 sesterces; Celatus the coppersmith fashioned it and gave a pound of bronze made at the cost of 3 denarii.* [Latin Translation]

Acknowledgements

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