



LONG PRESTON DEEPS, RIBBLESDALE, NORTH YORKSHIRE

Archaeological Watching Brief



Oxford Archaeology North

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SUMMARY

The Environment Agency commissioned Oxford Archaeology North (OA North) to undertake a watching brief, and to record bank profiles, during ground works associated with the modification of flood alleviation embankments to the east of the river Ribble at Long Preston Deeps, which lies to the south-west of Settle, North Yorkshire (NGR SD 8110 6090). The pre-existing embankments were constructed prior to 1851, when they were depicted on the first edition Ordnance Survey mapping, and are, therefore, of local significance as elements of the historic landscape. The ground works entailed the mechanical removal of portions of two perpendicular stretches of flood embankment and the watching brief was undertaken on the 16th September 2011.

The banks were constructed by mounding alluvial silts, which subsequently became grassed over. A lack of any finds from the banks means that it was not possible to refine the date of establishment for the banks beyond that provided by the cartographic sources. There were no indications of any structural elements that might have revetted, retained, or strengthened the banks, and portions of the bank had become badly eroded. However, the longevity of the structures for over 160 years demonstrates that the form and character of the banks represented an extremely successful and durable design.

ACKNOWLEDGEMENTS

Oxford Archaeology North would like to thank Alison Whalley, the project manager for the Environment Agency, for commissioning the project. OA North is also grateful to Sam Boyd and Andy Harrison of Askam Construction, and to their on-site staff, for their assistance and cooperation.

The watching brief was undertaken by Alastair Vannan, who also wrote the report. Emily Mercer managed the project and edited the report, which was illustrated by Mark Tidmarsh.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 The Environment Agency commissioned Oxford Archaeology North (OA North) to undertake a watching brief during ground works associated with the modification of flood alleviation embankments to the east of the river Ribble at Long Preston Deeps (NGR SD 8110 6090; Fig 1), which lies to the south-west of the town of Settle, North Yorkshire. Although the course of the river in this area is naturally dynamic and has altered slightly over the preceding two hundred years, the extensive flood embankments have contributed to restricting the extent of such shifts, in addition to managing the extent of localised flooding. The pre-existing embankments were constructed prior to 1851, when they were depicted on the first edition Ordnance Survey mapping, and are, therefore, of local significance as elements of the historic landscape. Due to the current works necessitating the removal of portions of the embankments, the watching brief was undertaken in order to record information relating to the character and construction style of these historic structures.

1.1.2 The ground works entailed the mechanical removal of portions of two perpendicular stretches of flood embankment (Fig 1). The watching brief was undertaken on the 16th September 2011.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 The site lies on the northern floodplain of the river Ribble to the north-west of Long Preston and to the south of Settle, at approximately 130m (aod). This area is situated at the extreme north-eastern edge of the Bowland fringe and is immediately adjacent to the beginning of the Yorkshire Dales (Countryside Commission 1998). The surrounding landscape, beyond the flood plain, is undulated and rolling, and is mainly used as agricultural land for the grazing of cattle and sheep (*ibid*). This portion of the floodplain is also in pastoral use. The landscape is transitional in character, lying between the Bowland Fells and the Yorkshire Dales (*ibid*). The Ribble Valley eroded through the areas of mudstone and limestone that are soft in comparison to the Millstone Grit rock that forms the surrounding fells (*ibid*). The local drift geology is dominated by alluvial silts that overlie river gravel.

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.3.1 The study area lies within a flat-bottomed portion of the upper Ribble Valley (Plate 1), where expansive flood plains that, in places, exceed 1km in width have formed around the 130m contour. These broad flood plains are, therefore, vulnerable to increases in the water level of the river, which occupies a relatively shallow channel in this area. This area was clearly subject to inundations in the past and, as early as 1851, Ordnance Survey maps recorded extensive curvilinear flood alleviation banks in the vicinity of the river. The whole of the present network of banks appears to have been established by 1851, and the more detailed map that was produced in 1894 depicted additional elements to the system that are not shown on current mapping. Although they were established prior to 1851, in the absence of

comprehensive documentary research, the precise date of the formation of the embankments is not clear.

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 The watching brief was undertaken during the removal of two portions of the flood embankment and was conducted specifically in order to record profiles of this feature. Although ground disturbance during the course of the overall works will have affected additional areas, the remit of the present work was limited to the recording of sections of a specific portion of the flood embankments. The programme of field observation recorded the locations of the areas that were affected by the ground works in these specific areas and the extent and character of all surviving features and deposits of archaeological interest in these areas. The ground works were carried out by a 25 tonne mechanical excavator and two large dumper trucks.

2.2 ARCHAEOLOGICAL RECORDING

2.2.1 The 'preservation by record' of the flood embankments was achieved by the generation of a comprehensive archive, in accordance with the standard and guidance for archaeological watching briefs produced by the Institute for Archaeologists (2008). All of the features identified during the watching brief were recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage, with accompanying graphic documentation (plans, sections, and digital photographs and monochrome print photographs, both of individual contexts and overall site shots from standard view points). Photography was undertaken with 35mm cameras on archivable black-and-white print film, all frames including a visible, graduated metric scale. Digital photography was used extensively throughout the course of the fieldwork for presentation purposes. Photographic records were also maintained on photographic *pro-forma* sheets.

2.3 ARCHIVE

2.3.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current guidelines (English Heritage 2006; UKIC 1990). The original record archive of the project will be deposited with the North Yorkshire County Record Office, in Northallerton.

2.3.2 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3. RESULTS

3.1 INTRODUCTION

3.1.1 Although, historically, the presence of the embankments has restricted the extent of localised flooding associated with the River Ribble and prevented the course of the river channel from shifting beyond the confines of the embankment corridor, the banks at the eastern side of the river have become severely eroded as the river has gradually pushed eastwards (Plate 2). During the course of the watching brief, it was these eroded banks that were removed, in order to reposition the flood defences further to the east and increase the extent of the available flood plain.

3.1.2 Two portions of banking were removed, and were recorded as Sections 1-3 (Figs 1-4). One of these (**101=105**) ran approximately north/south; parallel to the eastern side of the river, and was approximately 240m long (Plates 3 and 4). The second portion of banking (**103**) ran north-east/south-west and was perpendicular to the river (Plate 5). This portion was 28m long. Both of the embankments were reduced by a machine with a toothed bucket down to the same level as the surrounding ground level of the grassed fields.

3.2 WATCHING BRIEF

3.2.1 **Embankment 101=105:** this embankment lay immediately adjacent, and parallel to, the river Ribble, and the western edge had become severely eroded as a result of periods of raised river levels (Plate 6; Fig 1). In some places the whole of the bank had been washed away and the remaining portions of banking had been reduced in width by erosion by up to a third of their former extents. The remaining portions measured between 9m and 13.5m wide and between 1.4m and 2.1m high. Cross-sections were recorded through the central and southern portions of this bank (Figs 2 and 4), both of which demonstrated that it had been formed by mounding huge quantities of mid-brown silt (**102=104**). There were no inclusions of stone, or mixed deposits of topsoil, sand, or clay, which suggests that the very pure silt was formed by alluvial action associated with the river, and it may have been dredged from the river or dug from the surrounding flood plain.

3.2.2 The top of the silt levels at the highest point of the bank was relatively flat for approximately 1m, demonstrating that the bank had originally featured a flat-topped profile (Fig 4). The subsequent build-up of topsoil (**106**) and the growth of grass disguised this characteristic and gave the impression that the bank was relatively uniform and convex.

3.2.3 The topsoil (**106**), which overlay the silt (**104**), measured an average of approximately 0.2m to 0.25m thick. However, at the southern end of the embankment (**105**), where the full western extent of the bank remained *in-situ*, successive flood events had deposited large quantities of debris, such as drift wood and branches, over the western side of the bank, and the topsoil in this area was up to 0.45m thick (Fig 4; Plate 7). This suggests that soil that had been eroded from the surrounding area was immediately re-deposited over this portion of the embankment. However, a significant lack of debris within the topsoil suggests that either this was not a successive

occurrence that would have led to previously deposited debris being trapped by the soil build-up, or that the drift debris is more dynamic and shifts with each successive flood event, whereas at least some of the soil must remain and gradually accumulate.

3.2.4 **Embankment 103:** this low bank measured 6.8m wide and 0.78m high and featured a gently rounded profile (Fig 3; Plate 5). This bank had also been formed with pure mid-brown alluvial silt (**102**) and was overlain by a thin layer of topsoil (**106**) measuring approximately 0.1m thick.

4. CONCLUSION

4.1 DISCUSSION

4.1.1 The lack of any finds from the banks means that it is not currently possible to refine the date of establishment for the banks beyond that provided by the cartographic sources, which demonstrate that they were present by 1851 (OS 1851). There were no indications of any structural elements that might have revetted, retained, or strengthened the banks and, therefore, they were highly vulnerable to erosion. Therefore, it is unsurprising that the high degree of erosion that was visible at the western edge of bank **101=105** had occurred. Erosion may also have been partly responsible for the extremely low profile of bank **103**, which was not high enough to have been effective in retaining any significant flooding. Bank **103** was, however, significantly lower than bank **101=105**, and might have been constructed purposefully lower, as it occupied a secondary role to the function of restricting the immediate flow of the river.

4.1.2 However, it should be recognised that the banks survived for over 160 years without any evidence for consolidation or reinforcement. There were no buried turf lines within the recorded sections that might have suggested the addition of further quantities of silt, and there were no indications of different materials, such as sand, clay, stone, or topsoil having been used to reinforce the banks. It should, therefore, be concluded that, although apparently elementary structures, the form and character of the banks represented an extremely successful design in terms of durability in the face of regular riverine erosion.

5. BIBLIOGRAPHY

5.1 PRIMARY AND CARTOGRAPHIC SOURCES

OS, 1851 *Yorkshire Sheet*, first edition 6" to 1 mile

OS, 1851 *Yorkshire Sheet*, first edition 25" to 1 mile

5.2 SECONDARY SOURCES

Countryside Commission, 1998 *The Character of England's Natural and Man-made Landscape, Volume 3: Yorkshire and the Humber*, Cheltenham

English Heritage, 2006 *Management of Research Projects in the Historic Environment (MoRPHE)*, London

Institute for Archaeologists (IFA), 2008 *Standard and Guidance for an Archaeological Watching Brief*

United Kingdom Institute for Conservation (UKIC), 1990 *Guidelines for the preparation of archives for long-term storage*

6. ILLUSTRATIONS

6.1 FIGURES

Figure 1: Location map

Figure 2: Section 1, north-west-facing profile through embankment **101**

Figure 3: Section 2, south-west-facing profile through embankment **103**

Figure 4: Section 3, south-east-facing profile through embankment **105**

6.2 PLATES

Plate 1: The Ribble flood plain looking eastwards towards the site

Plate 2: The result of severe riverine erosion, which has truncated a portion of embankment **101=105**, looking north

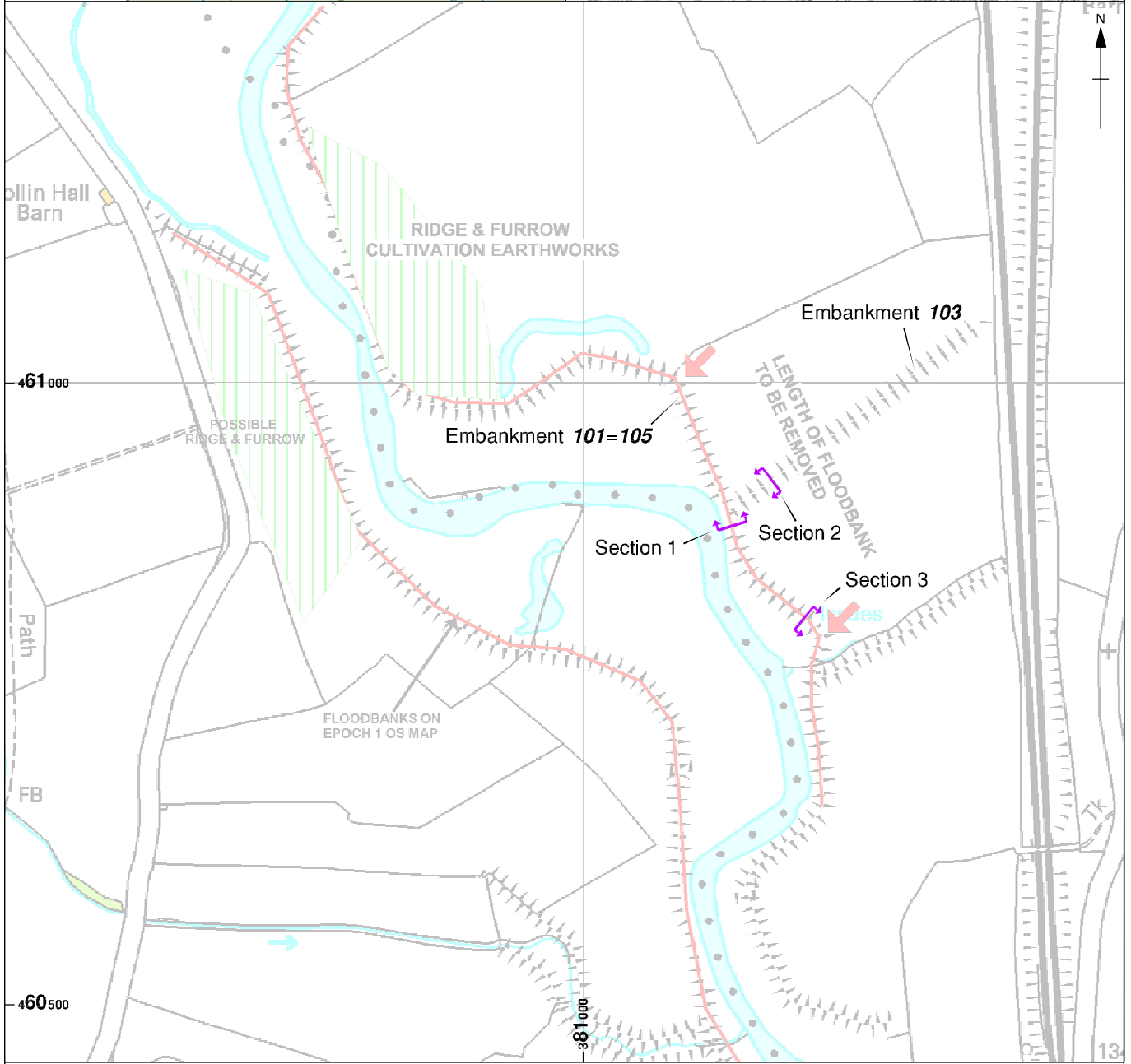
Plate 3: Embankment **105**, looking south-west

Plate 4: The area adjacent to the River Ribble following the removal of most of embankment **101**, looking north-west

Plate 5: Embankment **103** during ground works, looking south-east

Plate 6: Cross-section through embankment **101**, looking south

Plate 7: Cross-section through embankment **105**, looking north



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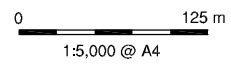


Figure 1: Site location

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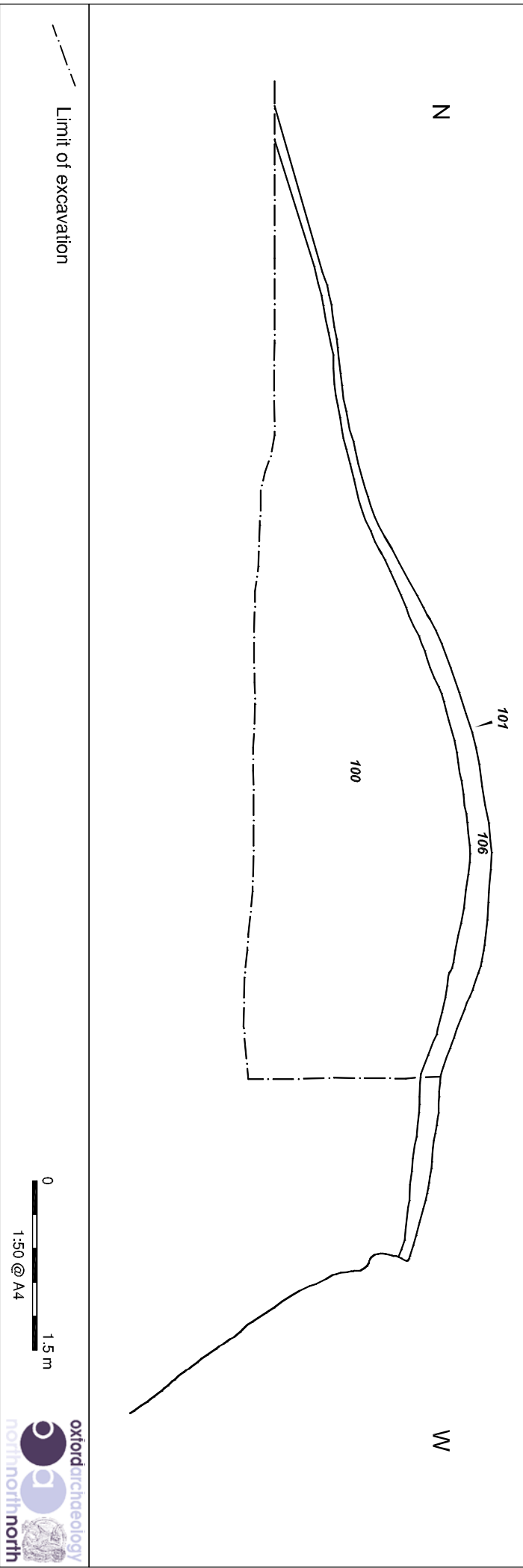
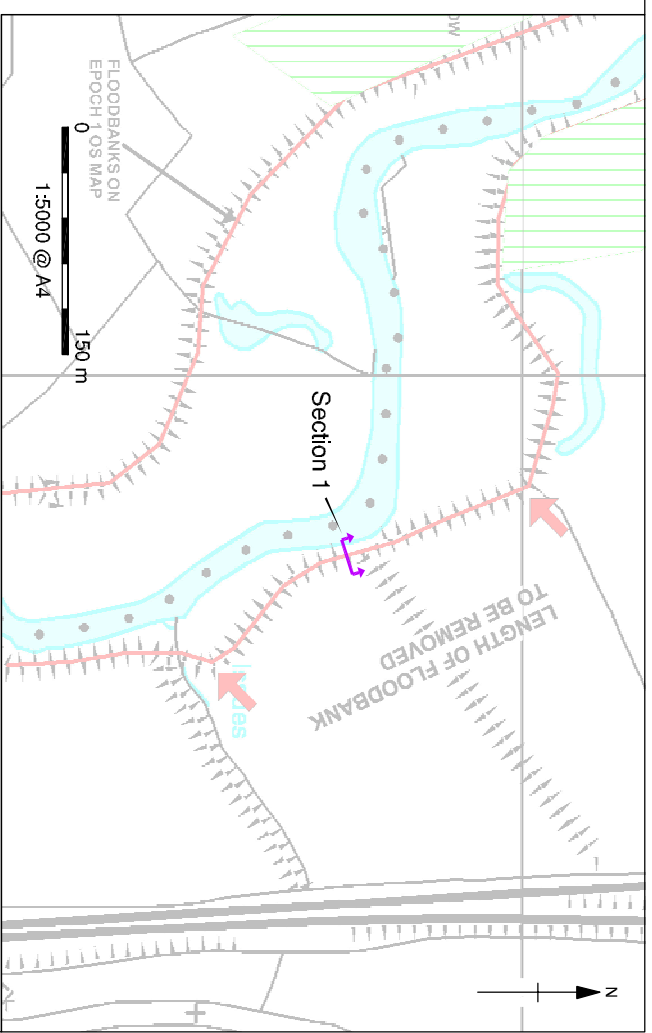
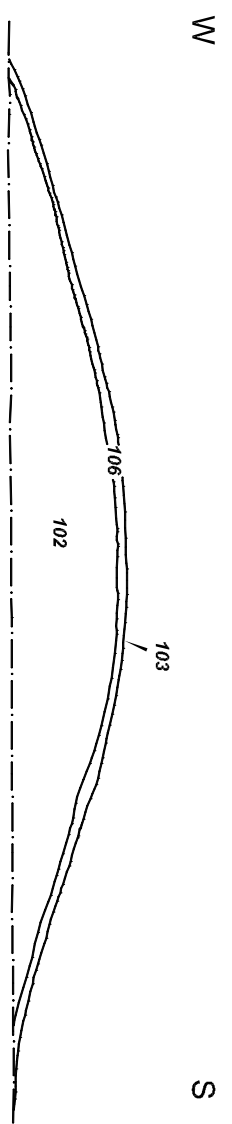
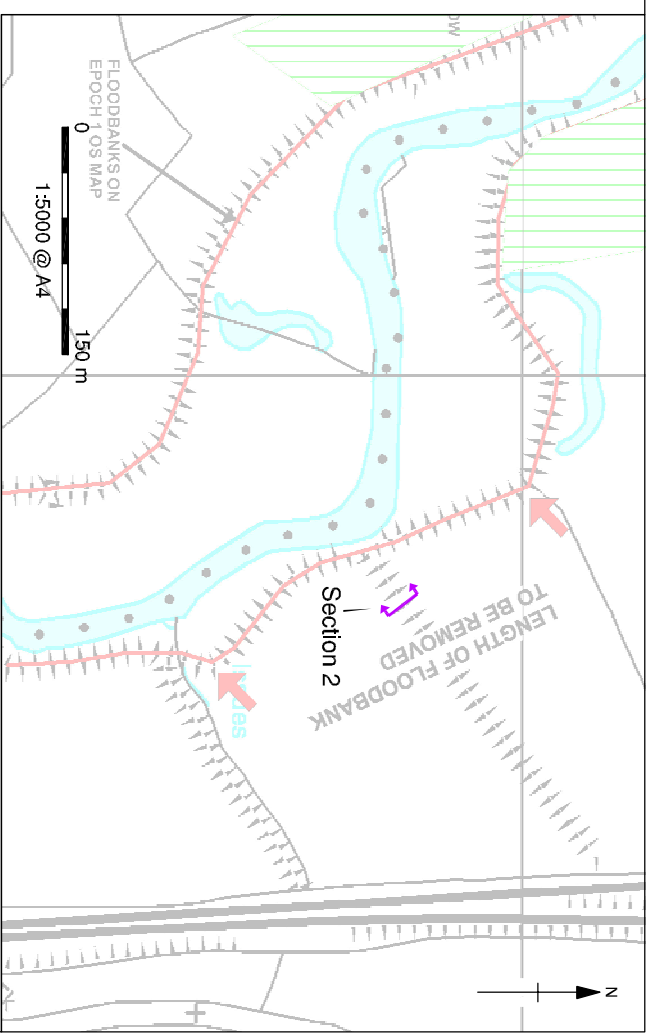


Figure 2: Section 1, north-west-facing profile through embankment 101



Limit of excavation

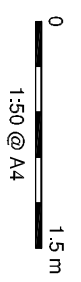
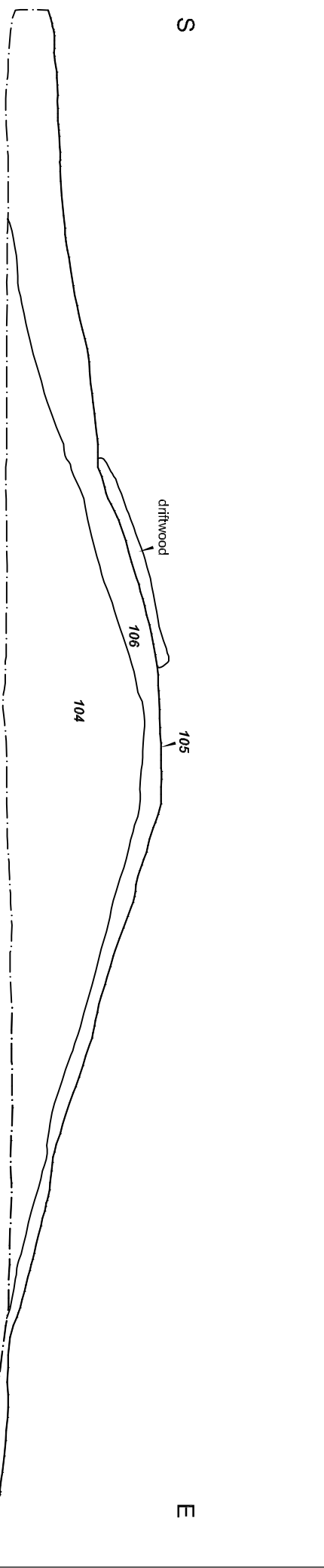
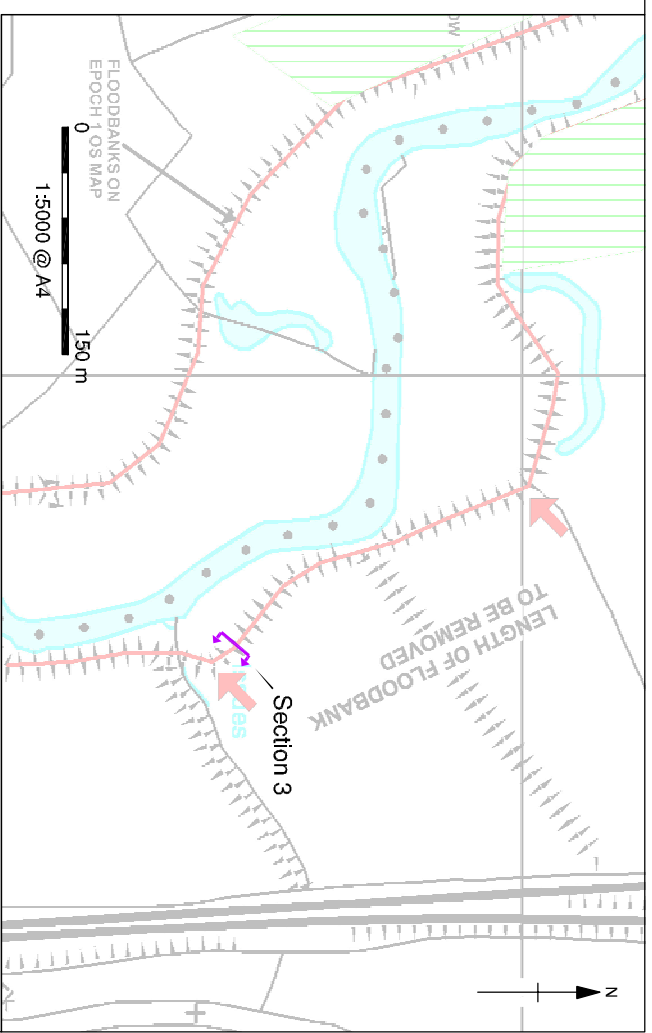


Figure 3: Section 2, south-west-facing profile through embankment 103



Limit of excavation

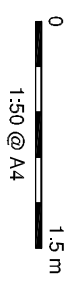


Figure 4: Section 3, south-east-facing profile through embankment 105

7. PLATES



Plate 1: The Ribble flood plain, looking eastwards towards the site



Plate 2: The result of severe riverine erosion, which has truncated a portion of embankment **101=105**, looking north



Plate 3: Embankment **105**, looking south-west



Plate 4: The area adjacent to the river Ribble following the removal of most of embankment **101**, looking north-west



Plate 5: Embankment **103** during ground works, looking south-east



Plate 6: Cross-section through embankment **101**, looking south



Plate 7: Cross-section through embankment **105**, looking north