

Rymes Reedbed,
Holme,
Huntingdonshire
Wetland Creation Project
(Great Fen Project)



**Archaeological Preliminary
Evaluation Report**



February 2013

**Client: Bedfordshire, Cambridgeshire
and Northamptonshire Wildlife Trust**

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Rymes Reedbed, Holme, Huntingdonshire
Wetland Creation Project (Great Fen Project)

Archaeological Preliminary Evaluation Report

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Summary

As part of the Great Fen Project Oxford Archaeology East carried out a preliminary archaeological evaluation in advance of a scheme for wetland creation (the Rymes Reedbed). This scheme covers c145 hectare of land lying to the north and west of Holme Fen Nature Reserve, Cambridgeshire. The evaluation was carried out in January 2013

The evaluation aimed to locate and sample the original course of the Medieval Yaxley Lode (Jackslade) in the north of the site and to evaluate the potential for archaeological remains to be present along the western edge of Whittlesey Mere. This comprised the machine-digging of five test-pits, the cleaning and recording of a section of a modern dyke, a borehole survey and the excavation of a trial trench.

The presence of alluvial deposits in BH4 and BH5 confirmed the course of the medieval Yaxley Lode as indicated from the desk study. However, these deposits were heavily truncated and found to be completely truncated in the dyke and trench sections making an exact plot of the former course impossible.

The test pits excavated on the western margins of the pre-existing Whittlesey Mere recorded the significant thickness of Upper Peat in this part of the site, overlying and protecting Barroway Drove Beds and a Lower Peat sequence which retains the potential to yield buried surfaces and archaeology from the Mesolithic, Neolithic and early Bronze Age periods.

The borehole survey has resulted in a detailed picture of how the environment across area has changed over the past 6000 years and provides a valuable addition to the body of work on the environmental history of this site.

No archaeological features were identified.

1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 A preliminary archaeological evaluation was conducted at land north and east of Holme Fen, Holme, Cambs. This comprised the machine-digging of five test-pits, the cleaning and recording of a section of a modern dyke and the excavation of a trial trench. A borehole survey was also undertaken by Steve Boreham of the University of Cambridge Geography Department.
- 1.1.2 The scheme is for a wetland reedbed creation (the Rymes Reedbed project) covering 145 hectare of land lying to the north and east of Holme Fen Nature Reserve and is part of the larger Great Fen project, a scheme to recreated almost 4,000 hectares of wetland. The location of the scheme and current study area is presented in Figure 1. The work will include the excavation of new pools, the re-profiling and backfilling of existing dykes and the excavation of new channels. These works will also include (and result in) the creation of wet woodland, wet grassland and reedbeds in designated areas.
- 1.1.3 The current work builds on previous survey work carried out in 2007 consisting of new borehole sampling, examination of aerial photographs, a walkover survey and landscape mapping (radar, LIDAR, reviewing existing borehole data, peat C14 dating, peat redox assessments, geology and soil survey information). The results were assessed and written up by CAMARC (now Oxford Archaeology East) and can be found in CAM ARC report 1007 (Begg, Boreham and Macaulay 2008).
- 1.1.4 The current work was undertaken in accordance with a brief issued by Kasia Gdaneic of Cambridgeshire County Council Historic (CCC; Planning Application 1200/729/FUL), supplemented by a specification prepared by OA East.
- 1.1.5 The work was designed to attempt to identify and provide preliminary data to characterise any archaeological deposits which may be impacted by the ground works and by wetland creation across the site. The success of these trial methods will then be used to inform what, if any, further evaluation work can be undertaken prior to ground works and re-watering being carried out or if monitoring during ground works is the most suitable mitigation technique.
- 1.1.6 This work has been carried out in accordance with the guidelines set out in *National Planning Policy Framework* (Department for Communities and Local Government March 2012). The results will enable decisions to be made by CCC, on behalf of the Local Planning Authority, with regard to the treatment of any archaeological remains found.
- 1.1.7 The site archive is currently held by OA East and will be deposited with the appropriate county stores in due course.

1.2 Geology and topography

- 1.2.1 The geology of the Holme Fen/Whittlesey Mere area exhibits a somewhat complex series of Holocene sediments overlying late-Glacial sediments and Jurassic bedrock. To the south-west near Holme village, Jurassic bedrock Oxford Clay forms higher ground at the fen-edge. Associated with the bedrock surface (rockhead) are thin sandy and gravelly deposits of presumed late-Glacial age. Near Holme Farm and Top Farm,

although not mapped by the BGS, these sediments occur capping ridges and 'islands', but to the north and east they are buried beneath the Holocene fen sediments.

- 1.2.2 The earliest Holocene deposit from this area is usually thought to be the basal or 'Lower' peat, associated with frequent 'bog oaks', which is generally taken to represent deposition in a damp woodland environment during Mesolithic and Neolithic times. Overlying the 'Lower' peat in the north and east of the area is a unit of intertidal saltmarsh, mudflat and tidal creek deposits assigned to the 'Barroway Drove Beds' representing the mid-Bronze Age marine incursion into this part of fenland that is thought to have persisted until at least 3400 calendar years BP.
- 1.2.3 Overlying much of the 'Barroway Drove Beds' is an overgrowth of organic deposits usually referred to as the 'Nordelph' peat. These sediments are a mixture of freshwater reed-swamp (*Phragmites*) peats and acid raised-bog (*Sphagnum*) peats dating from the late Bronze Age and Iron Age. In several locations, including the former sites of Whittlesey Mere, Trundle Mere and Ugg Mere, lake sediments of various types (including 'shell marl') are present overlying the 'Nordelph' peat indication large areas of standing water from the late Iron Age onwards. In other locations there was no such inundation by extensive open water, and raised bog peat accumulation continued unabated until the mid-19th Century.
- 1.2.4 The drainage of Whittlesey Mere and surrounding areas in 1850 led to a rapid desiccation and shrinkage of the organic sediments, including their internal breakdown through microbial processes. Hutchinson's (1980) study of the peat 'wastage' around Holme Fen post shows the initially rapid and then ongoing lowering of the local ground surface amounting to almost 4m in 130 years.

1.3 Archaeological and historical background

- 1.3.1 A desk-based assessment was undertaken in 2002 which outlined the known archaeological and historical background for the Great Fen project area at that time (Casa Hatton 2002). The Fenland project Volume 6 (26-32) and the Victoria County History of Huntingdonshire Volumes 1 and 3 give a good background to the archaeology and history respectively. A brief summary is given below.
- 1.3.2 The proposed development area has been peat fen since the later Bronze Age with the margins being slightly higher (and thus dryer) land prior to the peat development. The area has been subject to long term borehole survey principally, the published work undertaken by Godwin and Vishnu-Mittre's (1975), Hutchinson's (1980) and Waller (1994) forming the basis of these records. More recent borehole surveys (Boreham, S in Begg et al 2008) have demonstrated that the low lying fen floor is at a depth where archaeology may survive (e.g. Must Farm, Whittlesey). These remains can be at a great depth and thus undetectable until deep excavation has been carried out. It is thus possible that Mesolithic, Neolithic and Bronze Age archaeology may be present within the development area, although such remains would not be detectable on the surface.
- 1.3.3 The later freshwater meres e.g. Whittlesey, Trundle, Ugg and Dray were important areas for later Prehistoric, Roman and particularly Medieval activity. In the Medieval period these features became vital economic assets of the fen religious houses of Peterborough, Thorney, Ramsey, Sawtry and, through estate ownership, also Ely (VCH Huntingdonshire). Surface archaeology (notably Medieval fishing wharves e.g. ECB657) have been recorded on the edges of these features. It is therefore possible that archaeology of these later periods might be present and visible closer to the

surface. However, these features are unlikely to exist away from the lake edges and fen-edge, due to the wet conditions of the area.

- 1.3.4 A former course of the Yaxley Lode can be seen clearly on aerial photographs as a linear deposit of marly alluvium to the northwest of the East Coast railway line, to the south-west of its present course (Plate 5). This feature was recorded in 1227 as *Jackeslada* (Hall, 1992, 22) and is noted on Speed's 1662 map (Fig 5) and is potentially recorded on later 19th century maps such as Samuel's Map of 1829 (Fig 7) and Lenny's Map of 1833 (Fig 8). As it enters the investigation area, to the east of the railway line, it appears to fork into two routes before joining Trundle Mere (Fig 2). These possible routes have been plotted by the Fenland Project (Hall, 1992, 22, 24).

1.4 Acknowledgements

- 1.4.1 OA East would like to thank Lorna Parker - Great Fen Project Officer for the Wildlife Trust - who commissioned the work. The staff at Cambridge and Huntingdon Archives and the Wildlife Trust Office were very helpful in locating historic maps and other information. OA East site staff were Graeme Clarke, Jemima Woolverton and Kate Clover. The borehole survey was carried out by Steve and Julie Boreham of Cambridge University Geography Department. Site survey was carried out by Gareth Rees of OA East. The project was managed by Stephen Macaulay.

2 AIMS AND METHODOLOGY

2.1 Aims

- 2.1.1 The evaluation sought to establish the character, date, state of preservation and extent of any archaeological remains within the proposed wetland creation area.
- 2.1.2 The aims of this preliminary evaluation were twofold. The first was to determine if dyke cleaning, test-pitting and boreholes could identify archaeological remains that might be affected by the groundworks associated with the reedbed creation. The second was to ascertain if these remains could be evaluated in advance, or if monitoring and recording whilst groundworks were being carried out was the only practical solution to recording archaeology.
- 2.1.3 Specific areas for this phase of work as outlined in the CCC Brief (K. Gdaneic 2012) include examination of the former course of Yaxley Lode. A modern dyke (scheduled to be backfilled as part of the wetland creation scheme) which appears to have been cut through the projected routes of the Old Yaxley Lode was cleaned using the machine, followed by hand cleaning. Any riverine deposits showing in the section were recorded to confirm or disprove this hypothesis.
- 2.1.4 In addition, the low level evaluation of the western margins of Whittlesey Mere was undertaken to prove the depth of the underlying peat deposits and evaluate the potential for archaeological remains beneath this part of the site .

2.2 Methodology

- 2.2.1 Although a Desk-Based-Assessment has already been carried out (Casa-Hatton 2002), a more detailed search of the available cartographic data and written material was undertaken as part of this project. The Cambridge and Huntingdon Archives hold archives of the Middle Level Commissioners and drainage boards, and also survey information prior to drainage. These records were consulted, along with books held at the Wildlife Trust office in Cambourne, and information was used to inform the location of the test-pits. A full list of all maps, books and documents consulted can be found in Appendix C of this report. All relevant historic maps have been reproduced as Figures 5 to 11.
- 2.2.2 The locations of Trenches 1 and 2 and Test Pits 1 to 5 excavated during this phase of work are shown on Figures 2 to 4. Eighteen boreholes were sited in the location of the proposed ponds, the course of the new channel and on the edges of Whittlesey, Trundle and Dray Meres. They were also sited along the possible course of the Medieval Yaxley Lode. The location of the boreholes are presented in Figure 1 of Appendix B.
- 2.2.3 'Trench' 1 was a length of modern dyke that was targeted for hand-cleaning in order to see if the former course of Yaxley Lode was visible in section. A further trench, Trench 2, was excavated to target the possible route of this Medieval Lode where it entered the northernmost extent of the investigation area. A series of five test pits were excavated by machine around the western margins of the pre-existing Whittlesey Mere.
- 2.2.4 Machine excavation was carried out under constant archaeological supervision with a tracked backhoe excavator using a toothless ditching bucket.
- 2.2.5 The site survey was carried out by Gareth Rees using a Leica 1200 GPS.

- 2.2.6 All archaeological features and deposits were recorded using OA East's *pro-forma* sheets. Trench locations, plans and sections were recorded at appropriate scales and colour digital photographs were taken of all relevant features and deposits.
- 2.2.7 No bulk environmental samples were taken.
- 2.2.8 Site conditions were poor, with snow and bad lighting levels.

3 RESULTS

3.1 Introduction

- 3.1.1 The upper horizon above ordnance datum (OD) of each deposit encountered is presented in Appendix A. The report of the borehole survey on the Lithology and Stratigraphy of Sediments at Rhymes Reedbed by Steve Boreham is presented in Appendix B.

3.2 Trench 1

- 3.2.1 Trench 1 exposed a 139m long section of the northern bank of this dyke.
- 3.2.2 The natural deposits exposed may be summarised below, from lowest to uppermost, in four units.

Organic Lake Deposit (organic detritus mud): comprising compact black and red organic silt, encountered along the base of the entire length of the drain.

Marl Lake Deposit: comprising grey calcareous silt with frequent shell and shell fragments. This was encountered at the southwestern end of the cleaned dyke section with a maximum thickness of 0.4m. This deposit extended for 52m to the northeast and gradually thinned to 0m thickness. The marl then reappeared 97m from the southwestern end and gradually thickened towards the northeastern end of the section. These deposits are considered to be the 'shell marl' indicative of standing water described in section 1.2.3 and associated with the pre-existing Trundle Mere from the Iron Age period onwards.

Weathered Marl Lake Deposit: comprising compact reddish brown clayey silt with occasional shells. This was encountered at the southwestern end of the cleaned dyke section overlying the marl. The maximum thickness was 0.4m, gradually thinning to 0m thickness at 31m along the dyke to the northeast.

Topsoil: comprising un-compact dark grey silt, encountered along the surface of the entire length of the dyke.

- 3.2.3 No evidence for fluvial deposits to confirm the former course of the Yaxley Lode were encountered.
- 3.2.4 No archaeological features were identified or artefacts recovered from the dyke.

3.3 Trench 2

- 3.3.1 Trench 2 was excavated 45m long and was positioned to reveal the former course of Yaxley Lode, where it appears to enter the field from the northwest (as seen from aerial photographs; Plate 5). Peat was encountered along the entire length of the trench underlying the topsoil. No evidence for the former course of the Lode was encountered.
- 3.3.2 No archaeological features were identified or artefacts recovered from the trench.

3.4 Test Pits 1 to 5

3.4.1 The natural deposits beneath this part of the site are summarised below, from lowest to uppermost.

Oxford Clay: comprising stiff green clay with shell fossils, encountered in all test pits.

Pre-Flandrian Deposit: comprising soft light grey silty clay, encountered in all test pits. These deposits may be equated to the thin sandy and gravelly deposits of presumed late-Glacial age described in section 1.2.1. Evidence of a palaeochannel was encountered with a silty sand and frequent flint gravel in the southwestern corner of Test Pit 1 between -6.59m and -6.29m OD.

Lower Peat: comprising red/black/orange/yellow firm fibrous peat, encountered in all test pits. A 'bog oak' was encountered in Test Pit 3 confirming a basal peat sequence from a damp woodland environment during Mesolithic and Neolithic times as illustrated in section 1.2.2.

Fen Clay: comprising very soft light brown silty clay, with a sharp upper and lower horizon, encountered in Test Pits 3, 4 and 5, of thickness 0.1m, 0.05m and 0.01m respectively. This deposit may be equated to the 'Barroway Drove Beds' representing the mid-Bronze Age marine incursion described in section 1.2.2.

Upper Peat: comprising layers of red/ black/ orange/ yellow firm fibrous peat, encountered in all test pits. This deposit may be equated to the 'Nordelph' Peat referred to in section 1.2.3.

Topsoil: comprising un-compact dark grey silt, encountered in all test pits.

3.4.2 The deposits encountered beneath this part of the site are consistent with the previous investigations undertaken by Steve Boreham (Begg et al. 2008) in the area and summarised in section 1.2.

3.4.3 No archaeological features were identified or artefacts recovered from any of the test pits.

3.5 Finds Summary

3.5.1 No finds were retrieved.

4 DISCUSSION AND CONCLUSIONS

4.1 Medieval Yaxley Lode (Jackeslada)

- 4.1.1 The investigation hoped to be able to detect the old Medieval course of the Yaxley Lode. Extrapolating its route, it was possible that the channel would have been visible in the section of the modern dyke after it had been cleaned (Trench 1).
- 4.1.2 The section recorded (Trench 1) did not encounter any alluvial deposits. The lack of alluvial deposits combined with the presence of marl lake deposits confirms that the modern dyke was cut through deposits relating to Trundle Mere and not the old course of Yaxley Lode. The old course of the Lode would seem to lain further to the northwest (Fig 2).
- 4.1.3 There is an observable drop in the land to the northwest of the modern dyke (Trench 1), suggesting that the intersection of the old course of the lode and Trundle Mere was at this position. This intersection may be best described as a delta which may not be evident as a large river 'cut' but as distributerries of small streams (Boreham pers. comm.).
- 4.1.4 As part of the borehole survey of the site (Appendix B), boreholes BH4 and BH5 (which were located to the northwest of Trench 1) encountered a thin upper alluvial silty clay at the top of the sequence. This confirms the course of the Medieval Yaxley Lode where it entered Trundle Mere as indicated in Hall 1992, page 24 and as presented in Figure 2.
- 4.1.5 The surface elevation of boreholes BH4 and BH5 were extrapolated from the contour survey of the site undertaken by Oxford Archaeology to be -1.78m and -1.77m OD respectively. The alluvial deposit was therefore observed between -2.17m and -2.26m OD.
- 4.1.6 Trench 2 did not intercept the former course of the Lode. There are two possible explanations, the first being that the trench was sited in the wrong position to encounter it. The second explanation is that the former course of Yaxley Lode may have been ploughed out in the recent past due to the gradual wastage of the land surface. The ground level at Trench 2 is -1.99m OD. Disturbed topsoil in this trench was encountered to an elevation of -2.39m OD, which is at a lower elevation than the the alluvial deposits observed in boreholes BH4 and BH5.

4.2 Archaeological potential of peat deposits along western edge of Whittlesey Mere

- 4.2.1 No archaeological deposits were encountered in the test pits along the western margins of the pre-existing Whittlesey Mere.
- 4.2.2 Three of the test pits (Test Pits 3 to 5) revealed a thin marine clay lense which may, on the basis of previous investigation of the area, be 'Barroway Drove Beds' attributed to the mid-Bronze Age marine incursion (Begg et al. 2008) (see section 1.2.2). These results confirm that the marine incursion extended to exactly this area as denoted on Figure 3 of Begg et al 2008.
- 4.2.3 These test pits on the western margins of the pre-existing Whittlesey Mere prove a significant thickness of Upper Peat (up to 1.4m) in this part of the site, overlying and protecting Barroway Drove Beds and a Lower Peat sequence with potential to yield surfaces and archaeology from the Mesolithic, Neolithic and early Bronze Age periods.

4.3 Significance

- 4.3.1 The presence of alluvial deposits in BH4 and BH5 confirms the presence of the former course of the Yaxley Lode (*Jackeslada*). However, these deposits have been either heavily or completely truncated making an exact plot of the former course impossible.
- 4.3.2 The borehole survey has resulted in a detailed picture of how the environment across Rhymes Reedbed has changed over the past 6000 years and provides a valuable addition to the body of work on the environmental history of this site.

4.4 Recommendations

- 4.4.1 Recommendations for any future work based upon this report will be made by the County Archaeology Office.

APPENDIX A. TRENCH DESCRIPTIONS AND CONTEXT INVENTORY

Trench 1						
General description				Orientation		SW-NE
Cleaning of north side of a modern dyke to locate the possible course of the medieval Yaxley Lode. Consists of topsoil overlying intermittent marl over black and red organic silt lake deposits.				Avg. depth (m)		1.2
				Width (m)		5
				Length (m)		139
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-1.85	Topsoil	-	-
-	Layer	-	-2.3	Weathered marl lake deposit	-	-
-	Layer	-	-2.65	Marl lake deposit	-	-
-	Layer	-	-2.9	Organic lake deposits	-	-
Trench 2						
General description				Orientation		N-S
Trench targeting possible former course of Yaxley Lode in NW corner of evaluation area. Consists of topsoil overlying peat.				Avg. depth (m)		1.2
				Width (m)		2
				Length (m)		45
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-1.99	Topsoil	-	-
-	Layer	-	-2.39	Peat	-	-
Test Pit 1						
General description				Orientation		-
Test pit on western edge of Whittlesey Mere. Consists of topsoil overlying (upper and lower) peat over soft grey silty clay underlain by Oxford Clay.				Avg. depth (m)		3.6
				Width (m)		2
				Length (m)		4
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-2.99	Topsoil	-	-
-	Layer	-	-3.39	Upper Peat	-	-
-	Layer	-	-4.39	Lower Peat	-	-

-	Layer	-	-5.39	Pre-Flandrian Deposit	-	-
-	Layer	-	-5.99	Oxford Clay	-	-
Test Pit 2						
General description					Orientation	-
Test pit on western edge of Whittlesey Mere. Consists of topsoil overlying (upper and lower) peat over soft grey silty clay underlain by Oxford Clay.					Avg. depth (m)	3.6
					Width (m)	2
					Length (m)	4
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-2.99	Topsoil	-	-
-	Layer	-	-3.39	Upper Peat	-	-
-	Layer	-	-4.39	Lower Peat	-	-
-	Layer	-	-5.49	Pre-Flandrian Deposit	-	-
-	Layer	-	-6.29	Oxford Clay	-	-
Test Pit 3						
General description					Orientation	-
Test pit on western edge of Whittlesey Mere. Consists of topsoil overlying upper peat over a thin soft grey silty clay lense over lower peat, underlain by soft grey silty clay over Oxford Clay.					Avg. depth (m)	4.1
					Width (m)	2
					Length (m)	4
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-2.7	Topsoil	-	-
-	Layer	-	-3.1	Upper Peat	-	-
-	Layer	-	-3.9	Fen Clay	-	-
-	Layer	-	-4	Lower Peat	-	-
-	Layer	-	-5.6	Pre-Flandrian Deposit	-	-
-	Layer	-	-6.6	Oxford Clay	-	-
Test Pit 4						
General description					Orientation	-
Test pit on western edge of Whittlesey Mere. Consists of topsoil overlying upper peat over a thin soft grey silty clay lense over lower peat, underlain by soft grey silty clay over Oxford Clay.					Avg. depth (m)	3.7
					Width (m)	2
					Length (m)	4
Contexts						

context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-2.63	Topsoil	-	-
-	Layer	-	-3.03	Upper Peat	-	-
-	Layer	-	-3.63	Fen Clay	-	-
-	Layer	-	-3.68	Lower Peat	-	-
-	Layer	-	-5.33	Pre-Flandrian Deposit	-	-
-	Layer	-	-5.63	Oxford Clay	-	-
Test Pit 5						
General description					Orientation	-
Test pit on western edge of Whittlesey Mere. Consists of topsoil overlying upper peat over a thin soft grey silty clay lense over lower peat, underlain by soft grey silty clay over Oxford Clay.					Avg. depth (m)	3.7
					Width (m)	2
					Length (m)	4
Contexts						
context no	type	Width (m)	Height Upper Horizon (m OD)	comment	finds	date
-	Layer	-	-2.62	Topsoil	-	-
-	Layer	-	-3.02	Upper Peat	-	-
-	Layer	-	-3.62	Fen Clay	-	-
-	Layer	-	-3.63	Lower Peat	-	-
-	Layer	-	-5.32	Pre-Flandrian Deposit	-	-
-	Layer	-	-5.52	Oxford Clay	-	-

APPENDIX B. BOREHOLE REPORT

**Report on the Lithology and Stratigraphy of Sediments at Rymes
Reedbed, Holme Fen, Cambridgeshire.**

Steve Boreham BSc. PhD.

Introduction

This study focuses on the lithology and stratigraphy of sediments obtained from 18 boreholes sunk at strategic locations across the proposed site of Rymes Reedbed near Holme Fen, Cambridgeshire (see Figure 1). Previous studies in this area have included Godwin and Clifford's (1938) study of fen-edge deposits, Godwin and Vishnu-Mittre's (1975) paper on the Flandrian (Holocene) deposits of the fenland margin at Holme Fen and Whittlesey Mere, Hutchinson's (1980) paper on peat wastage at the Holme Fen Post, and Martyn Waller's (1994) Fenland Project report. More recently, the Quaternary Research Association published a Field Guide to the Nene Valley (2004) where Martyn Waller wrote a reappraisal of the Holocene deposits of Holme Fen and Whittlesey Mere.

Methodology

The 18 survey boreholes for this project were sunk using a combination of a 'Dutch' auger, narrow gouge auger and 'Russian' corer. In each case the boreholes were geolocated using a handheld GPS unit (accuracy $\pm 3\text{m}$). The ploughsoil was removed to a depth of c.30cm with a spade and the borehole was sunk below this depth. In some cases a second borehole was sunk at the same location when recovery of material was incomplete. The lithology was recorded in the field, and photographs were taken where appropriate. Boreholes were terminated when they reached stiff Oxford Clay bedrock. On one occasion lying snow meant that the drilling equipment was deployed using a wooden sledge with metal runners. On other occasions a wheelbarrow was used to transport equipment. Boreholes for palaeoenvironmental and archive purposes were sunk using a 'Russian' corer to avoid contamination. The cores were wrapped and labelled in the field and returned to the Geography Science Laboratories, University of Cambridge where they were stored in the dark at 4°C.

The 18 survey boreholes were arranged in six transects (T1-6) to provide a good coverage of the Rymes Reedbed site. The closely-spaced boreholes (BH1-5) in T5 & T6 were requested by the archaeologists in an attempt to find the location that a previous course of 'The Jackslade' flowed into Whittlesey Mere. Other boreholes were sited to attempt to detect the presence of other water bodies such as Dray Mere and Trundle Mere, or water courses such as Stilton Dyke and Caldecote Dyke. Additional boreholes from the BGS archive and the GFP Project (Boreham 2008) have been included here. Boreholes from Godwin and Vishni-Mittre's (1975) survey in this area are problematic and have not been included at this stage. Note that surface elevation has not been surveyed in the field, but that digital elevation model (DEM) data suggests that the land surface is close to 0m DO across most of the site. A key to the lithology of sediments in the survey boreholes appears in Figure 7.

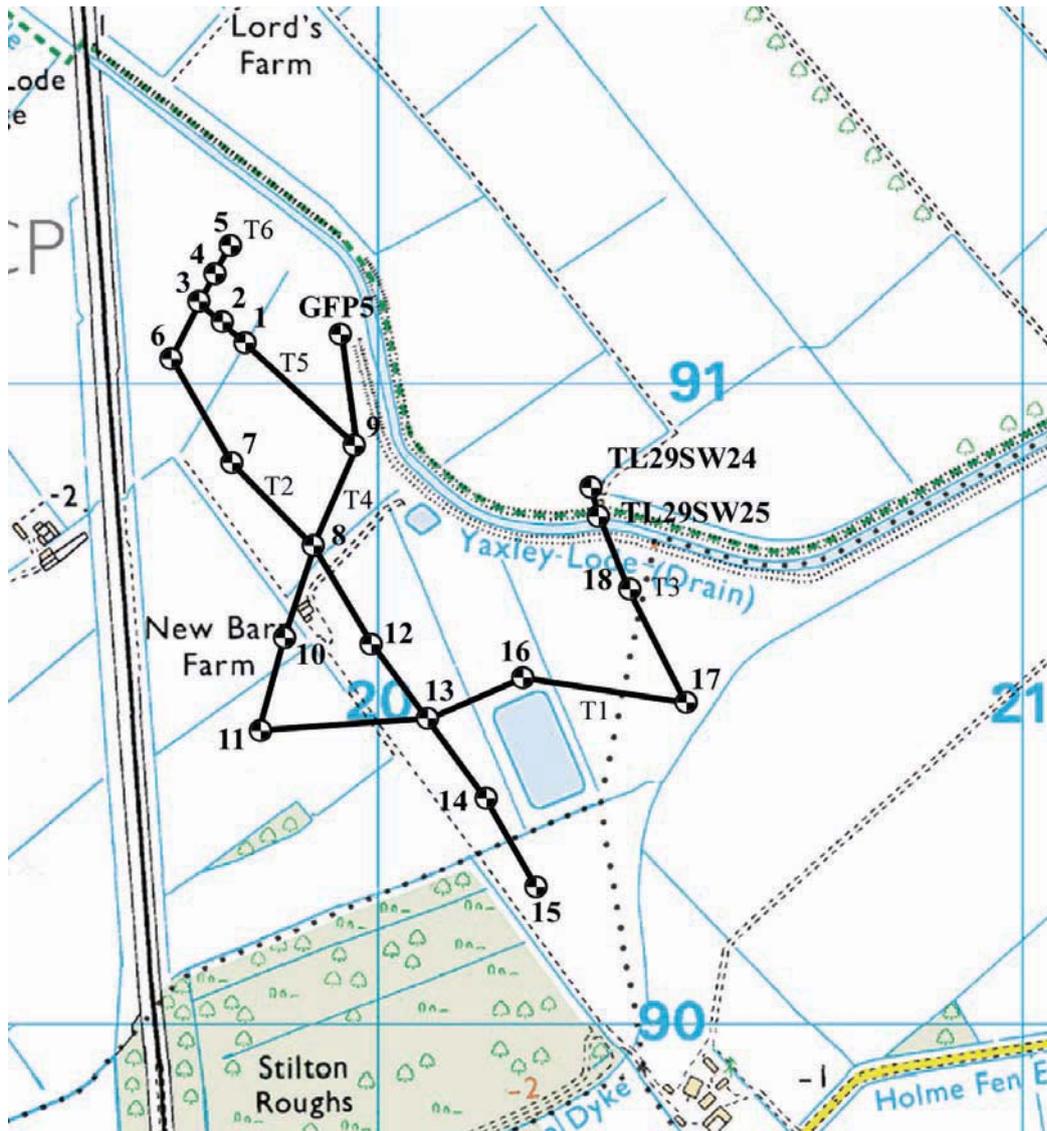


Figure 1 – Map of the Rymes Reedbed area showing transects T1 – T6, and the location of the boreholes (1 - 18) investigated in this study. The locations of other boreholes previously investigated (BGS TL29SW24/25) and (Boreham 2008 GFP5) are also shown.

Stratigraphy and lithology

The stratigraphy and lithology of sediments from the Rymes Reedbed borehole survey is shown as six transects in Figures 2-7 and as borehole logs in Appendix 1.

In general, the sediment sequence comprised Oxford Clay bedrock often overlain by a thin organic silt unit which graded into the overlying organic deposits. These sediments were often about 3 metres thick and comprised alternating sequences of detritus mud (fen deposits), reed peat (reedswamp deposits) and wood peat (carr deposits). Often one or more bands of *Sphagnum* peat (raised bog) were encountered, and bands of fine-grained organic gyttja (lake mud) sometimes occurred. To the south and east of the site, there were thin beds of silty clay interdigitated with the organic sediments representing the early Bronze Age marine transgression in this area. Above this, the lake marl of the later Whittlesey Mere/Trundle Mere complex was sometimes encountered. Particularly in the northern part of the site, an upper alluvial silty clay unit representing the sediments of 'The Jackslade' and other watercourses was occasionally detected.

Transect 1

Transect T1 (Figure 2) runs W-E from BH11 to BH17 across the southern part of the site. The Holocene sequence here is between 227cm and 287cm thick. To the west the sequence mostly comprises detritus mud, reed peat and wood peat, with a thin band of *Sphagnum* peat at 104-107cm. To the east the sequence is more complex with significant bands of gyttja (lake mud), *Sphagnum* peat, and at BH17 a thin band of Bronze Age marine silty clay and an upper lens of lake marl marking the western extent of Whittlesey Mere. It is notable that BH16 records multiple interdigitated layers of *Sphagnum* peat and detritus mud, which must represent a raised bog that formed the limit of both the marine transgression and the later Whittlesey Mere.

Transect 2

Transect T2 (Figure 3) runs NW-SE from BH6 to BH15 along the middle of the site. The Holocene sequence here is between 227cm and 273cm thick. For the most part the sequence comprises detritus mud, reed peat and wood peat, with a thin and impersistent band of gyttja (lake mud), and bands of *Sphagnum* peat. To the south the sequence is more complex at BH15, with two thin bands of Bronze Age marine silty clay. Lake marl from Whittlesey Mere is not seen in this transect.

Transect 3

Transect T3 (Figure 4) runs SE-NW from BH17 to TL29SW24 at the western edge of the site. The Holocene sequence here is between 257cm and 475cm thick. To the southeast at BH17 the sequence comprises detritus mud, reed peat and wood peat, with significant bands of gyttja (lake mud), *Sphagnum* peat, a thin band of Bronze Age marine silty clay and an upper lens of lake marl. BH18 has multiple interdigitated layers of gyttja (lake mud), detritus mud and *Sphagnum* peat, which must have formed a raised bog at the northern edge of Whittlesey Mere. Although the two BGS boreholes TL29SW24/25 record a long organic sequence that must include lake deposits from Trundle Mere, the driller's description simply refers to the deposits as 'bear's muck'. In other words, fine-grained brown organic material.

Transect 4

Transect T4 (Figure 5) runs roughly S-N from BH11 to GFP5 in the northern part of the site. The Holocene sequence here is between 227cm and 350cm thick. The sequence in the southern part of the transect for the most part comprises detritus mud, reed peat and wood peat, with a thin and impersistent bands of *Sphagnum* peat. However, at BH9 an upper alluvial silty clay overlaid thin lake marl. This alluvial unit may represent the course of Stilton Dyke. In

contrast at GFP5 lake marl overlaid a thick band of Bronze Age marine silty clay. A band of gyttja (lake mud) was present in both BH9 & GFP5. This lake mud has been radiocarbon dated to the late Neolithic-Bronze Age boundary (Boreham 2008) at GFP5, and the basal organic sediments have been radiocarbon dated to the late Mesolithic.

Transect 5

Transect T5 (Figure 6) runs NW-SE from BH3 to BH9 at the northern edge of the site. The Holocene sequence here is between 274cm and 314cm thick. The sequence in the northern part of the transect for the most part comprises detritus mud, reed peat and wood peat, with a thin bands of *Sphagnum* peat. Both BH1 and BH9 record lake marl, which appears to terminate against a bank of *Sphagnum* peat at BH2. At BH9, a thin band of gyttja (lake mud) was present at 220-227cm depth, and there was an upper unit of alluvial silty clay.

Transect 6

Transect T6 (Figure 7) runs SW-NE from BH6 to BH5 at the northern edge of the site. The Holocene sequence here is between 252cm and 352cm thick. The sequence for the most part comprises detritus mud, reed peat and wood peat, with a thin bands of *Sphagnum* peat. Both BH4 and BH5 have a thin upper alluvial silty clay at the top of the sequence that probably represents the course of 'The Jackslade' where it once entered Trundle Mere.

Discussion & Conclusions

Taken together, these survey boreholes describe the changing palaeoenvironments across the Rymes Reedbed site for at least the past 6000 years. It is quite clear that very few locations at the site have remained unchanged during that time, and that most have experienced rising and falling water levels of various kinds. The concept that this landscape must have been a constantly changing mosaic of different vegetation types is an important one when the significance of these 'heritage' sediment sequences is considered. In addition to the compelling environmental and archaeological story of lakes, reedswamps, woodlands, heathlands, raised bogs and marine inundation that these organic sediments hold, this was *the* place where Professor Sir Harry Godwin began to first unravel the signals of climate and environment change stored like pages of a book beneath the ground.

From these boreholes it may be possible to construct a series of maps showing how environments changed across the Rymes Reedbed site through archaeological time. Detailed work on two key sediment sequences will provide crucial tie-points and palaeoenvironmental data from which correlations with previously published work can be made. In the northern part of the site, BH7 (T2) was chosen for palaeoenvironmental coring, largely because of its location, diversity of sediment types and thickness. In the southern part of the site, BH16 (T1) was chosen because it offers the chance to investigate a raised bog sequence at the edge of Whittlesey Mere, and also get a glimpse an earlier lake (a proto-Whittlesey Mere) of probable Neolithic age. Radiocarbon dating and pollen analysis should provide an excellent basis from which the past environmental history of the Rymes Reedbed site can be reconstructed.

Dr Steve Boreham 19-02-2013

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Appendix 1 – Lithology & Stratigraphy of boreholes from Rymes Reedbed

GFPBH5	TL	519928	291089
0 - 30cm	Ploughsoil: brown organic silt		
30 - 40cm	Grey-brown silty clay with shells		
40 - 50cm	Mottled orange/grey slightly marly silt		
50 - 60cm	As above; with shell fragments		
60 - 80cm	Grey silty clay; mottled orange/brown		
80 - 90cm	Bands of grey and brown silty clay (water table)		
90 - 100cm	As above; slightly greyer		
100 - 110cm	Dark grey slightly organic silt		
110 - 120cm	Dark grey organic detritus mud		
120 - 130cm	As above; with shell fragments		
130 - 150cm	Black crumbly organic-transition at 130 has shell fragments		
150 - 180cm	Soft crumbly-fine grained organic detritus mud		
180 - 190cm	As above, slightly browner, more rootlets		
190 - 220cm	Chocolate brown, organic detritus mud		
220 - 230cm	Golden brown lake mud (gyttja)		
230 - 240cm	• Gelatinous basal lake mud (gyttja)-(230-240cm ¹⁴ C sample)		
240 - 244cm	Gelatinous lake mud (gyttja)		
244 - 300cm	Brown fibrous reed peat		
300 - 315cm	Brown Wood peat		
315 - 320cm	Black fine-grade organic silt.		
320 - 330cm	• Dark grey organic silt - (320-330cm ¹⁴ C sample)		
330 - 340cm	Light grey silt with some organic		
340 - 350cm	As above; grey sandy silt, occasional rootlets.		
350 - 360cm	Stiff grey clay		
360cm	Borehole stopped on bedrock clay		

TL29SW24	TL	520340	290800
0 –75cm	Black peat		
75 – 100cm	Light brown [marly] silt with pebbles		
100 – 175cm	Soft black peat		
175 – 425cm	Soft 'bear's muck' [organic detritus mud & gyttja]		
425 – 550cm	Firm green-grey clay		
550cm	Borehole stopped on bedrock clay		

TL29SW25	TL	520330	290840
0 –50cm	Black peat		
50 – 475cm	Soft 'bear's muck' [organic detritus mud & gyttja]		
475 – 675cm	Firm green-grey clay		
675cm	Borehole stopped on bedrock clay		

BH1 **TL** **519774** **291080**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 40cm Black crumbly 'rotted' peat
40 – 62cm Grey-buff lake marl
62 – 75cm Brown *Sphagnum peat*
75 – 100cm Orange-brown Reed peat
100 – 125cm Grey-brown silty detritus mud
125 – 150cm Orange-brown Reed peat
150 – 175cm Brown Reed peat with rootlets and wood fragments
175 – 250cm Grey brown silty organic detritus mud
270 – 280cm Orange *Sphagnum peat*
280 – 300cm Grey brown silty organic detritus mud
300 – 355cm Grey clay
355cm Borehole stopped on bedrock clay

BH2 **TL** **519738** **291115**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 40cm Black crumbly 'rotted' peat
40 – 62cm Orange *Sphagnum peat*
62 – 108cm Orange-brown Reed peat
108 – 121cm Grey-brown silty organic detritus mud
121 – 145cm Orange-brown Reed peat
145 – 200cm Grey-brown silty organic detritus mud
200 – 205cm Orange *Sphagnum peat*
205 – 240cm Orange-brown Reed peat
240 – 250cm Grey-brown silty organic detritus mud with reed stems
250 – 274cm Grey brown silty organic detritus mud
274 – 290cm Grey clay
290cm Borehole stopped on bedrock clay

BH3 **TL** **519703** **291146**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 70cm Black crumbly 'rotted' peat
70 – 98cm Orange-brown Reed peat
98 – 112cm Grey-brown silty Reed peat
112 – 150cm Orange-brown Reed peat
150 – 200cm Grey-brown organic detritus mud
200 – 202cm Brown Wood peat
202 – 232cm Grey-brown organic detritus mud
232 – 244cm Grey brown silty organic detritus mud with reed stems
244 – 275cm Grey-brown organic detritus mud
275 – 282cm Grey-brown organic silt
282 – 300cm Grey clay
300cm Borehole stopped on bedrock clay

BH4 **TL** **519728** **291186**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 40cm Black crumbly 'rotted' peat
40 – 48cm Stiff grey silty clay
48 – 84cm Grey-brown silty organic detritus mud
84 – 85cm Buff coarse sand
85 – 149cm Grey-brown silty organic detritus mud
149 – 155cm Orange-brown Reed peat
155 – 156cm Orange *Sphagnum peat*
156 – 190cm Orange-brown Reed peat
190 – 196cm Grey silty organic detritus mud
196 – 210cm Black-brown organic detritus mud
210 – 235cm Orange *Sphagnum peat*
235 – 250cm Grey-brown organic detritus mud
250 – 275cm Brown organic detritus mud with rootlets, wood fragments and
reed stems
275 – 280cm Orange *Sphagnum peat*
280 – 288cm Grey silty organic detritus mud
288 – 289cm Orange *Sphagnum peat*
289 – 352cm Brown organic detritus mud with rootlets and reed stems
352 – 375cm Grey clay
375cm Borehole stopped on bedrock clay

BH5 **TL** **519747** **291228**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 40cm Black crumbly 'rotted' peat
40 – 49cm Grey organic silt
49 – 115cm Black Reed peat
115 – 182cm Brown organic detritus mud with rootlets, wood fragments and
reed stems
182 – 207cm Orange-brown organic detritus mud
207– 238cm Brown organic detritus mud with rootlets and reed stems
238 – 247cm Brown Wood peat
247 – 266cm Soft brown organic detritus mud with reed stems
266 – 284cm Brown-black Wood peat
284 – 298cm Grey-black silty organic detritus mud
298 – 350cm Grey clay
350cm Borehole stopped on bedrock clay

BH6 **TL** **519663** **291051**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 55cm Black crumbly 'rotted' peat
55 – 115cm Brown-black Reed peat with rootlets
115 – 142cm Orange-brown organic detritus mud with rootlets and reed stems
142 – 152cm Orange-brown Sphagnum peat
152 – 220cm Chocolate brown organic detritus mud with rootlets and plant fragments
220 – 244cm Soft brown organic detritus mud
244 – 247cm Brown Wood peat
247 – 252cm Grey-brown silty organic detritus mud
252 – 275cm Grey clay
275cm Borehole stopped on bedrock clay

BH7	TL	519755	290884
0 – 30cm	Ploughsoil-black crumbly 'rotted' peat with rootlets		
30 – 40cm	Black crumbly 'rotted' peat		
40 – 45cm	Brown-black detritus mud		
45 – 102cm	Black-brown detritus mud with reed stems		
102 – 122cm	Orange-brown <i>Sphagnum peat</i>		
122 – 142cm	Orange-brown Reed peat with some detritus mud		
142 – 148cm	Orange-brown <i>Sphagnum peat</i>		
148 – 166cm	Buff-brown gyttja (organic lake mud)		
166 – 174cm	Black-brown detritus mud with reed stems		
174 – 185cm	Orange-brown Reed peat with some detritus mud		
185 – 205cm	Black-brown detritus mud with reed stems		
205 – 208cm	Orange-brown Wood peat		
208 – 250cm	Black-brown detritus mud with reed stems		
250 – 253cm	Orange-brown Wood peat		
253 – 266cm	Black-brown detritus mud with reed stems		
266 – 273cm	Grey-black silty detritus mud		
273 – 280cm	Grey clay		
280cm	Borehole stopped on bedrock clay		

BH8	TL	519888	290746
0 – 30cm	Ploughsoil-black crumbly 'rotted' peat with rootlets		
30 – 35cm	Black crumbly 'rotted' peat		
35 – 51cm	Brown-black detritus mud with reed stems		
51 – 63cm	Brown-black detritus mud		
63 – 104cm	Brown-black detritus mud with reed stems		
104 – 107cm	Orange-brown <i>Sphagnum peat</i>		
107 – 115cm	Brown detritus mud		
115 – 121cm	Orange-brown Reed peat with some detritus mud		
121 – 124cm	Orange Wood peat		
124 – 145cm	Brown-black detritus mud with reed stems		
145 – 148cm	Orange Wood peat		
148 – 185cm	Brown-black detritus mud with reed stems		
185 – 188cm	Orange-brown Reed peat		
188 – 223cm	Brown-black detritus mud with reed stems		
223 – 226cm	Brown Wood peat		
226 – 233cm	Brown-black detritus mud with reed stems		
233 – 235cm	Brown Wood peat		
235 – 242cm	Brown detritus mud		
242 – 244cm	Brown Wood peat		
244 – 257cm	Brown detritus mud		
257 – 263cm	Brown detritus mud with reed stems		
263 – 266cm	Grey-black organic silt		
266 – 273cm	Grey-black silty detritus mud		
273 – 280cm	Grey clay		
280cm	Borehole stopped on bedrock clay		

BH9	TL	519951	290910
0 – 30cm	Ploughsoil-black	crumbly	'rotted' peat with rootlets
30 – 35cm	Black	crumbly	'rotted' peat
35 – 60cm	Grey organic silt		with shells and plant debris
60 – 77cm	Grey-buff silty marl		with shells
77 – 131cm	Brown	detritus	mud
131 – 133cm	Orange	Wood	peat
133 – 183cm	Brown-black	detritus	mud
183 – 191cm	Orange-brown	<i>Sphagnum</i>	peat
191 – 203cm	Brown	detritus	mud with reed stems
203 – 207cm	Orange	Wood	peat
207 – 220cm	Brown-black	detritus	mud with reed stems
220 – 227cm	Buff-brown	gyttja	(organic lake mud)
227 – 241cm	Brown-black	Reed	peat with moss fragments
241 – 309cm	Black-brown	detritus	mud
309 – 314cm	Grey-black	silty	detritus mud
314 – 370cm	Grey	clay	
370cm	Borehole	stopped	on bedrock clay

BH10	TL	519841	290599
0 – 30cm	Ploughsoil-black	crumbly	'rotted' peat with rootlets
30 – 40cm	Black	crumbly	'rotted' peat
40 – 65cm	Brown-black	detritus	mud
65 – 75cm	Orange-brown	<i>Sphagnum</i>	peat
75 – 109cm	Grey-black	detritus	mud with reed stems
109 – 115cm	Orange-brown	<i>Sphagnum</i>	peat
115 – 120cm	Brown	detritus	mud
120 – 183cm	Brown-orange	detritus	mud with reed stems
183 – 194cm	Orange	Wood	peat
194 – 200cm	Brown	detritus	mud
200 – 203cm	Orange	Wood	peat
203 – 222cm	Brown	detritus	mud
222 – 227cm	Grey-black	silty	detritus mud
227 – 255cm	Grey	clay	
255cm	Borehole	stopped	on bedrock clay

BH11 **TL** **519800** **290452**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 40cm Black crumbly 'rotted' peat
40 – 51cm Brown-black detritus mud with reed stems
51 – 65cm Brown-black detritus mud
65 – 104cm Brown-black detritus mud with reed stems
104 – 107cm Orange-brown *Sphagnum peat*
107 – 119cm Orange-brown detritus mud with reed stems
119 – 127cm Orange-brown Reed peat
127 – 132cm Orange-brown Wood peat
132 – 146cm Brown organic detritus mud with rootlets
146 – 149cm Orange-brown Reed peat
149 – 162cm Brown organic detritus mud with rootlets
162 – 163cm Orange-brown Wood peat
163 – 208cm Brown detritus mud with reed stems
208 – 216cm Brown Wood peat
216 – 223cm Brown detritus mud
223 – 225cm Orange-brown Wood peat
225 – 233cm Grey-brown silty detritus mud
233 – 290cm Grey clay
290cm Borehole stopped on bedrock clay

BH12 **TL** **519979** **290591**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 84cm Brown-black detritus mud with rootlets
84 – 105cm Orange-brown *Sphagnum peat*
105 – 126cm Brown-black detritus mud with reed stems
126 – 133cm Buff-brown gyttja (organic lake mud)
133 – 160cm Orange Reed peat
160 – 212cm Brown-black detritus mud
212 – 215cm Orange Wood peat
215 – 219cm Brown-black detritus mud
219 – 222cm Orange Wood peat
222 – 233cm Brown-black detritus mud with reed stems
233 – 243cm Grey-black silty detritus mud
243 – 295cm Grey clay
295cm Borehole stopped on bedrock clay

BH13 **TL** **520072** **290471**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 50cm Black crumbly 'rotted' peat
50 – 85cm Brown-black detritus mud
85 – 96cm Orange-brown *Sphagnum peat*
96 – 103cm Orange-brown detritus mud with reed stems
103 – 133cm Orange-brown Reed peat with some detritus mud
133 – 144cm Orange-brown *Sphagnum peat*
144 – 153cm Brown organic detritus mud with rootlets
153 – 156cm Orange-brown Reed peat with wood fragments
156 – 214cm Orange-brown detritus mud with reed stems
214 – 216cm Brown Wood peat
216 – 226cm Grey-black silty detritus mud
226 – 227cm Brown Wood peat
227 – 245cm Grey clay

245cm Borehole stopped on bedrock clay

BH14 TL 520163 290341
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 65cm Black crumbly 'rotted' peat
65 – 92cm Brown-black detritus mud
92 – 95cm Orange-brown *Sphagnum peat*
95 – 96cm Grey laminated silt band
96 – 105cm Black-brown detritus mud with reed stems
105 – 117cm Orange-brown Reed peat with some detritus mud
117 – 120cm Orange-brown *Sphagnum peat*
120 – 130cm Brown organic detritus mud with reed stems and rootlets
130 – 133cm Buff-brown gyttja (organic lake mud)
133 – 143cm Chocolate brown detritus mud with reed stems
143 – 205cm Brown Reed peat
205 – 212cm Black-brown detritus mud with reed stems
212 – 214cm Brown Wood peat
214 – 223cm Black-brown detritus mud with reed stems
223 – 236cm Grey-black silty detritus mud
236 – 275cm Grey clay
275cm Borehole stopped on bedrock clay

BH15 TL 520242 290198
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 65cm Black crumbly 'rotted' peat
65 – 75cm Brown-black detritus mud
75 – 83cm Black-brown detritus mud with reed stems
83 – 84cm Grey laminated silt band
84 – 90cm Black-brown detritus mud with reed stems
90 – 106cm Orange-brown *Sphagnum peat*
106 – 108cm Grey laminated silt band
108 – 117cm Orange-brown *Sphagnum peat*
117 – 125cm Orange-brown Reed peat with some detritus mud
125 – 135cm Buff-brown gyttja (organic lake mud)
135 – 145cm Orange-brown Reed peat with some detritus mud
145 – 175cm Black-brown detritus mud with reed stems
175 – 228cm Orange-brown Reed peat with some detritus mud
228 – 245cm Grey-black silty detritus mud
245 – 280cm Grey clay
280cm Borehole stopped on bedrock clay

BH16 **TL** **520221** **290536**
0 – 35cm Ploughsoil-black crumbly 'rotted' peat with rootlets
35 – 39cm Brown-black detritus mud
39 – 40cm Orange-brown *Sphagnum peat*
40 – 45cm Brown-black detritus mud
45 – 46cm Orange-brown Reed peat
46 – 50cm Brown-black detritus mud
50 – 59cm Brown-black detritus mud with reed stems
59 – 65cm Orange-brown *Sphagnum peat*
65 – 77cm Brown-black detritus mud with reed stems
77 – 88cm Orange-brown *Sphagnum peat*
88 – 106cm Brown-black detritus mud
106 – 132cm Orange-brown *Sphagnum peat*
132 – 155cm Brown-black detritus mud
155 – 157cm Orange-brown Wood peat
157 – 187cm Orange-brown detritus mud with reed stems
187 – 218cm Buff-brown gyttja (organic lake mud)
218 – 241cm Brown-black detritus mud with reed stems and wood
241 – 244cm Brown Wood peat
244 – 251cm Brown-black detritus mud with reed stems and wood
251 – 258cm Brown-black detritus mud
258 – 260cm Orange-brown Reed peat
260 – 282cm Brown-black detritus mud
282 – 285cm Grey-brown silty detritus mud
285 – 287cm Grey-black organic silt
287 – 300cm Grey clay
300cm Borehole stopped on bedrock clay

BH17 **TL** **520478** **290498**
0 – 30cm Ploughsoil-black crumbly 'rotted' peat with rootlets
30 – 45cm Black crumbly 'rotted' peat
45 – 50cm Grey silty lake marl
50 – 63cm Brown-black detritus mud with reed stems
63 – 66cm Grey-brown silt
66 – 78cm Brown-black detritus mud with reed stems
78 – 89cm Brown-black Reed peat
89 – 103cm Brown-black detritus mud with reed stems
103 – 105cm Orange-brown *Sphagnum peat*
105 – 107cm Brown-black detritus mud with wood fragments
107 – 145cm Orange-brown *Sphagnum peat*
145 – 184cm Buff-brown gyttja (organic lake mud)
184 – 192cm Brown-black detritus mud with reed stems
192 – 205cm Brown-black detritus mud
205 – 247cm Brown-black detritus mud with reed stems
247 – 251cm Grey-brown silty detritus mud
252 – 257cm Grey-black organic silt
257 – 275cm Grey clay
275cm Borehole stopped on bedrock clay

BH18 TL	520392	290681
0 – 30cm	Ploughsoil-black crumbly 'rotted' peat with rootlets	
30 – 40cm	Black crumbly 'rotted' peat	
40 – 60cm	Brown-black detritus mud with reed stems	
60 – 62cm	Grey-brown silt	
62 – 68cm	Brown-black detritus mud with reed stems	
68 – 72cm	Brown-black Reed peat	
72 – 75cm	Brown-black detritus mud	
75 – 83cm	Brown-black Reed peat	
83 – 100cm	Brown-black detritus mud	
100 – 103cm	Brown-black detritus mud with reed stems	
103 – 105cm	Buff-brown gyttja (organic lake mud)	
105 – 107cm	Brown-black detritus mud	
107 – 113cm	Orange-brown <i>Sphagnum peat</i>	
113 – 116cm	Orange-brown detritus mud with reed stems	
116 – 127cm	Orange-brown <i>Sphagnum peat</i>	
127 – 129cm	Buff-brown gyttja (organic lake mud)	
129 – 135cm	Orange-brown <i>Sphagnum peat</i>	
135 – 141cm	Brown-black Reed peat	
141 – 143cm	Orange Wood peat	
143 – 155cm	Brown-black detritus mud with reed stems	
155 – 157cm	Orange Wood peat	
157 – 172cm	Orange-brown <i>Sphagnum peat</i>	
172 – 177cm	Brown detritus mud	
177 – 186cm	Buff-brown gyttja (organic lake mud)	
186 – 200cm	Orange-brown <i>Sphagnum peat</i>	
200 – 218cm	Brown-black detritus mud with reed stems	
218 – 223cm	Orange Wood peat	
223 – 235cm	Orange-brown detritus mud with reed stems	
235 – 242cm	Brown-black Wood peat	
242 – 258cm	Brown-black detritus mud with reed stems	
258 – 266cm	Grey-brown silty organic detritus mud	
266 – 275cm	Grey-black organic silt	
275 – 300cm	Grey clay	
300cm	Borehole stopped on bedrock clay	

Figure 2

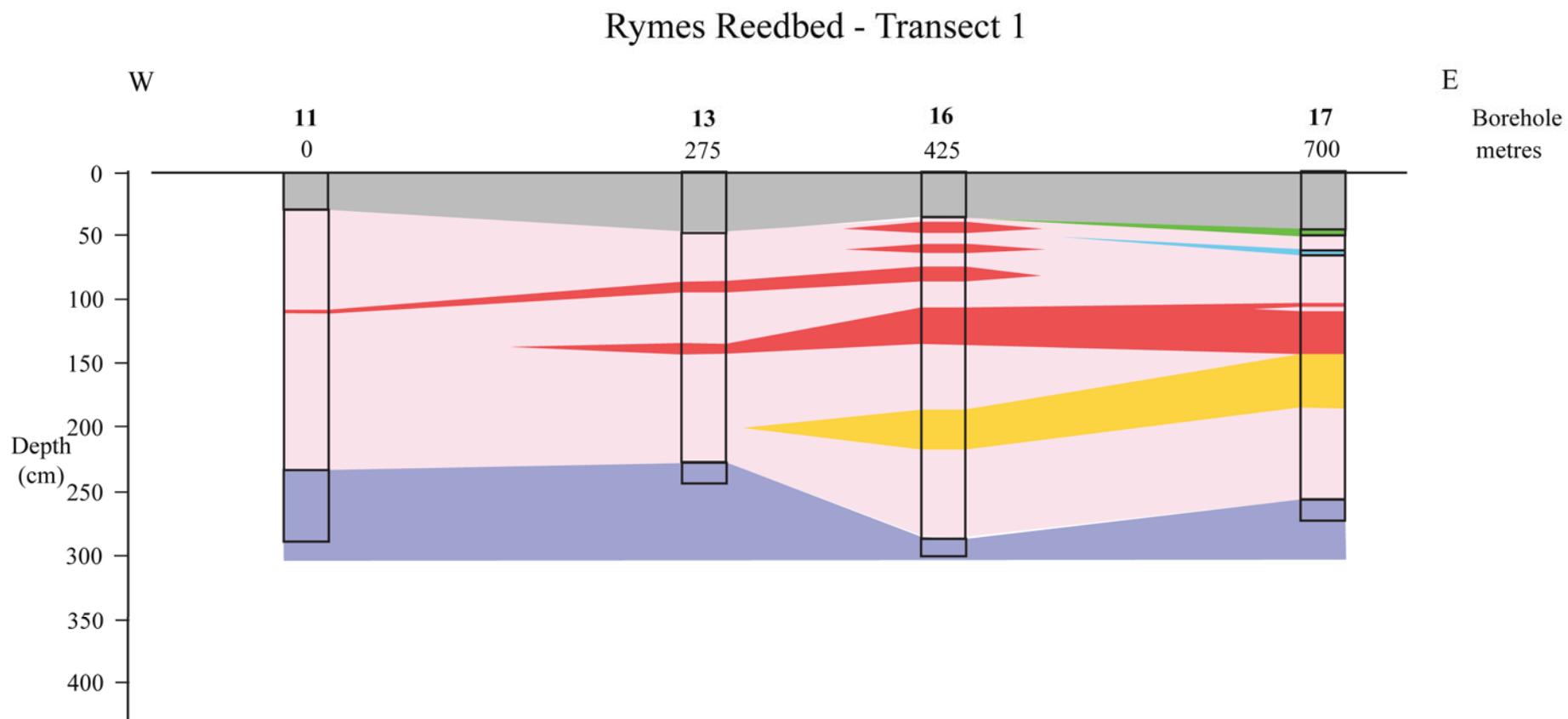


Figure 3

Rymes Reedbed - Transect 2

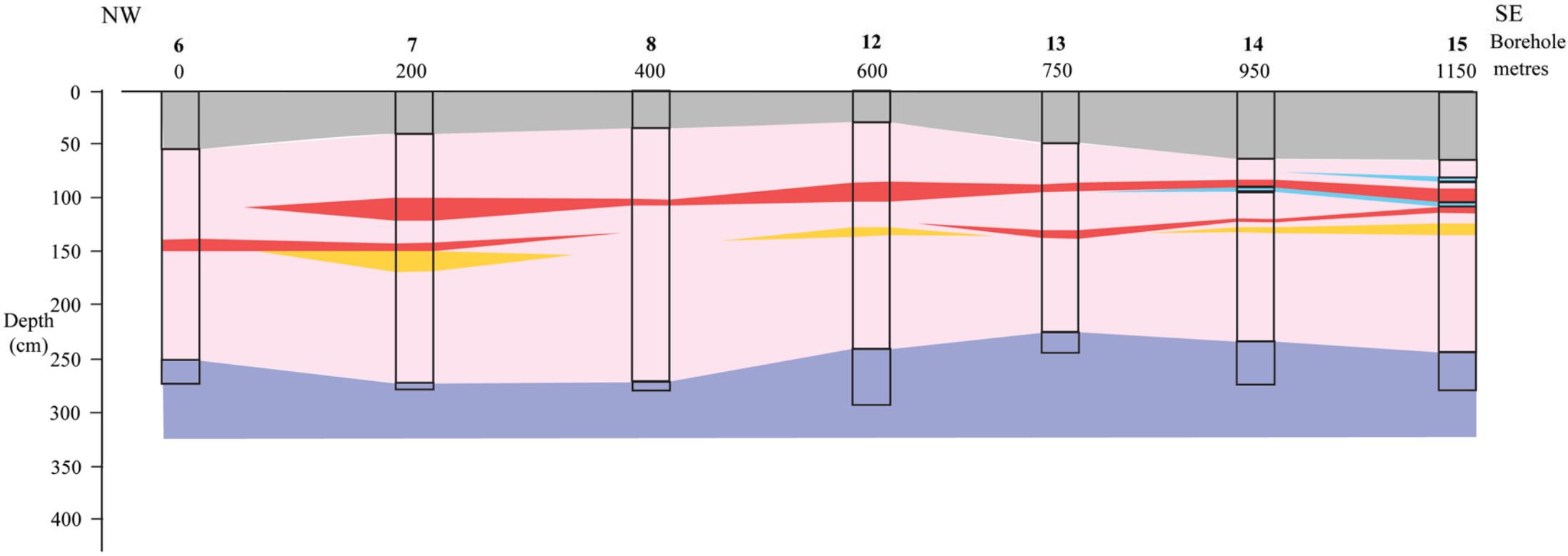


Figure 4

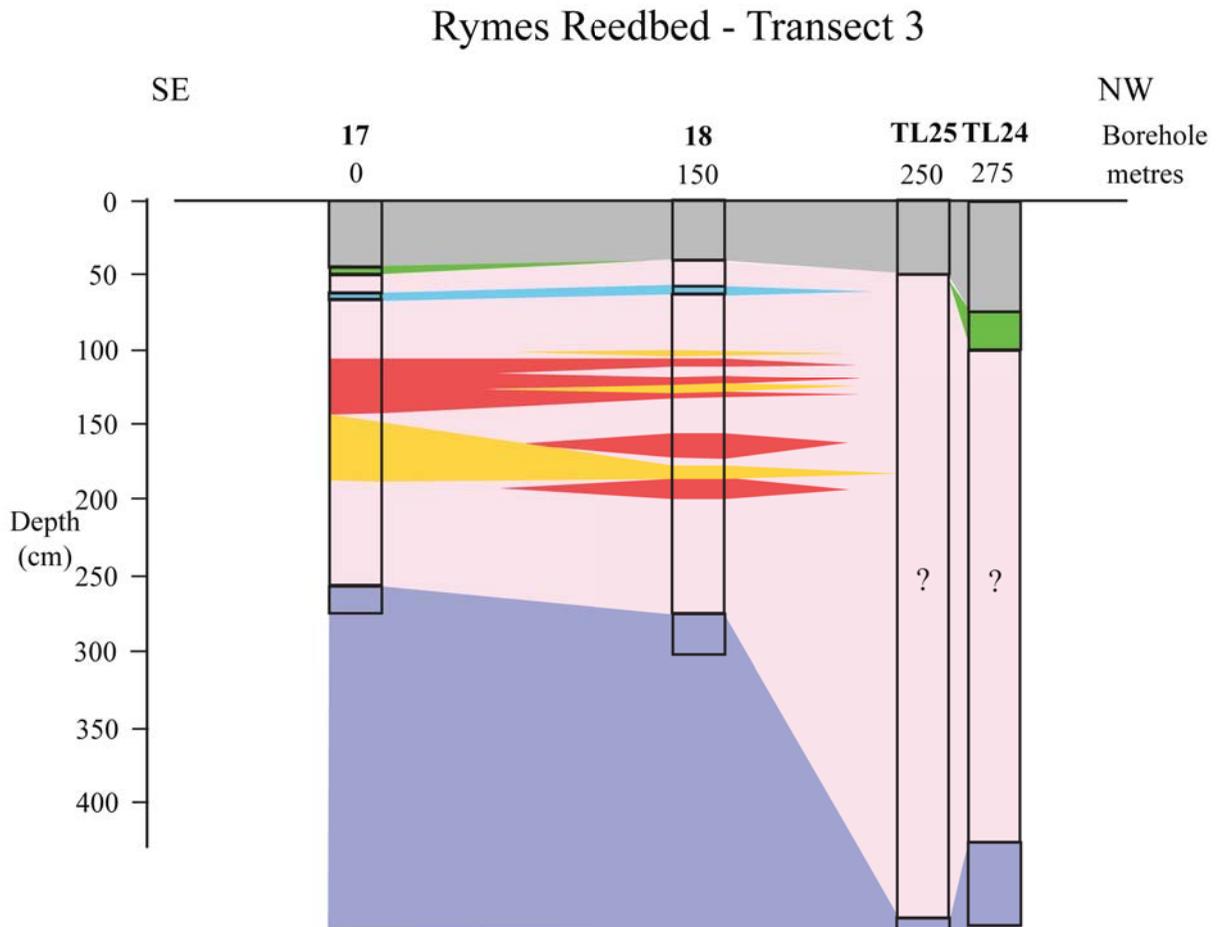


Figure 6

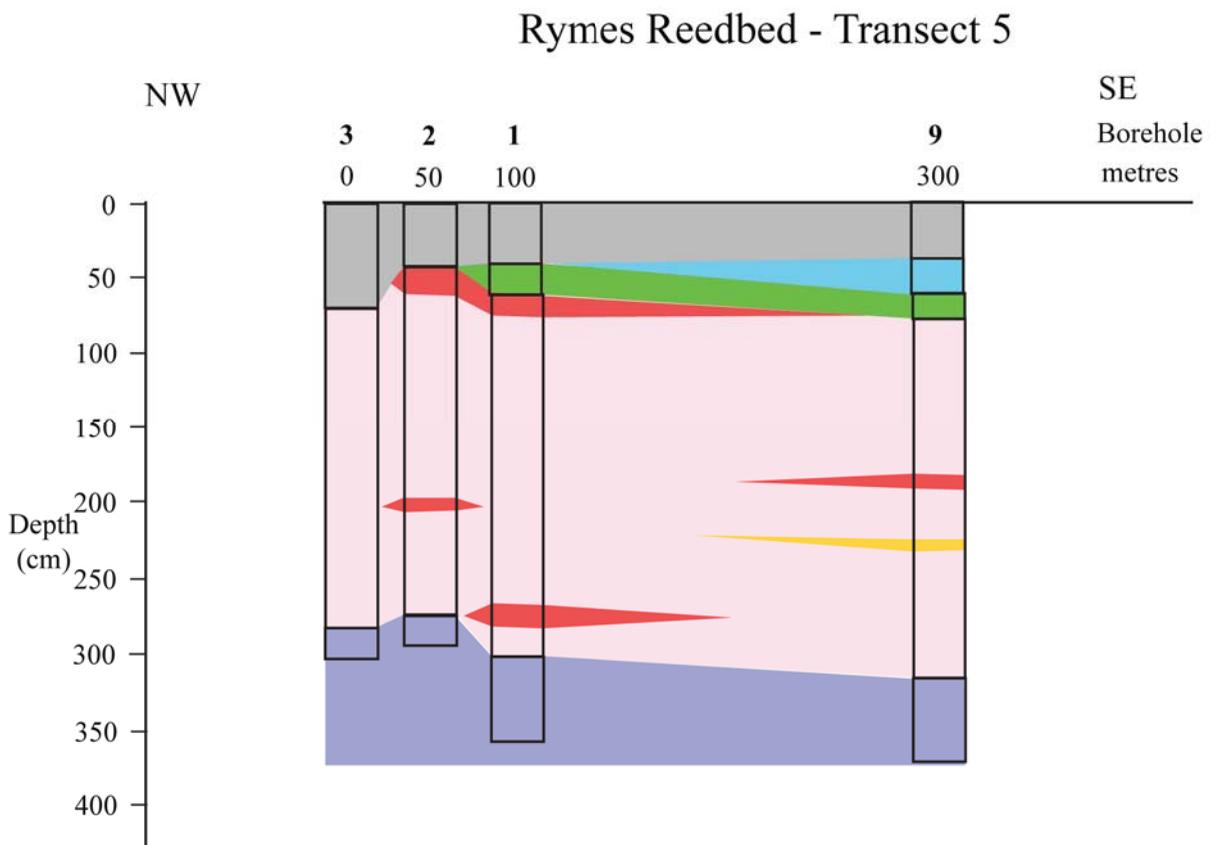


Figure 5

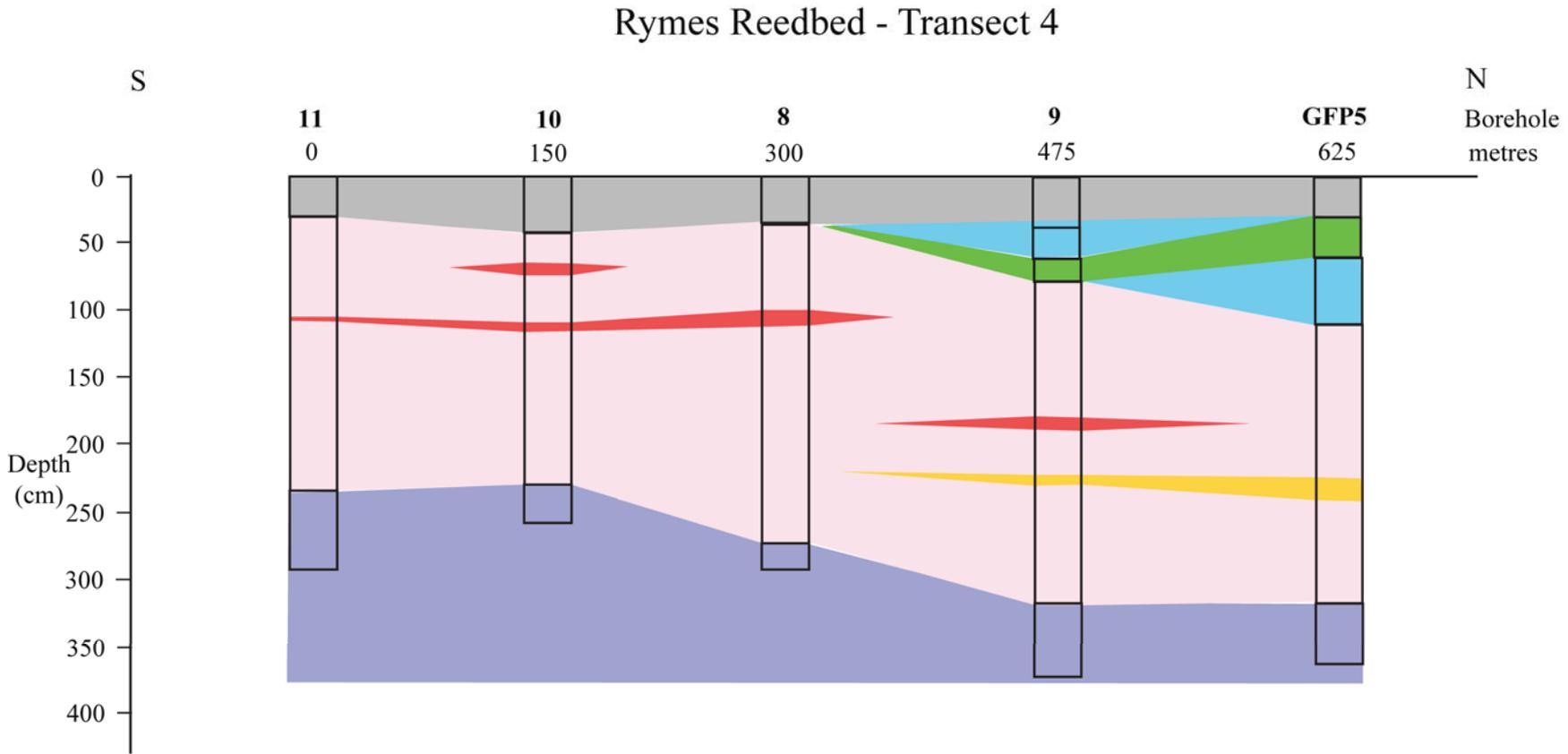
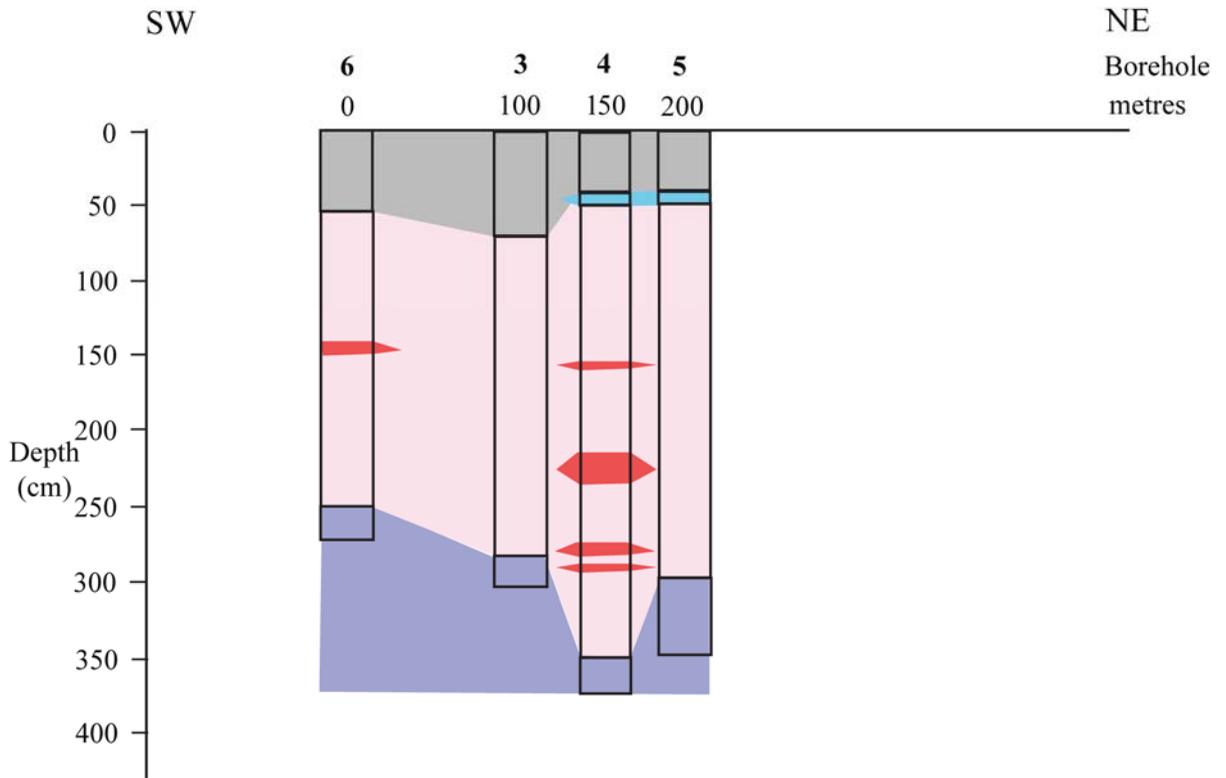


Figure 7

Rymes Reedbed - Transect 6



Rymes Reedbed - Lithology

- Ploughsoil and 'rotted' peat
- Lake marl
- Silty clay
- Sphagnum* peat
- Fine-grained lake mud (gyttja)
- Detritus mud, reed peat & wood peat
- Bedrock Oxford Clay

APPENDIX C. LIST OF RELEVANT HISTORIC MAPS AND DOCUMENTS CONSULTED

Historic Maps

- J Jansson's Map 'Comitatus Cantabrigiensis' **1646** (Cambridge Archives)
- J Speed's Map of Huntingdonshire **1662** (Cambridge Archives)
- Jonas Moore's Map of the Great Level of the Fens **1684 (1720)** (Cambridge Archives)
- John Bodger's Map of Whittlesea Mere **1786** (Cambridge Archives)
- Samuel Well's Map of The Great Level of the Fens Called Bedford Level, **1829** (Cambridge Archives)
- JG Lenny's Map of Lands Subject to the Eau Brink Tax **1833** (Cambridge Archives)
- Map of Whittlesey Mere showing proposed drainage, **1840** (Huntingdon Archives)
- Map of Whittlesey Mere **1845** (Huntingdon Archives)
- Undated Map of Whittlesey Mere (Huntingdon Archives)

Historic Documents

- Extracts from various sources concerning Whittlesey Mere. **No date**. Handwritten notebook (Huntingdon Archives)
- Deed of Arrangement for Division of the Soil in Whittlesey Mere **1845**. Contains a map (Huntingdon Archives)
- 'Additional Records of the Bedford Level Corporation' documents (Cambridge Archives). These include numerous bundles of hand written papers from 17th to 19th centuries: accounts, maps, plans, letters, fishing rights, leases, bills and acts of Parliament, meeting minutes, petitions, contracts etc. I looked at 'Whittlesea Mere Draft **1846** (A description and history of the proposed drainage)' (Box 85, Bundle 5). I also looked at 'Documents Relating to Whittlesey Inclosure' **1835-43** (Box 51, Bundle 1).
- Scrapbook of historical and topographical information on the fens by JM Heathcote **1865** (Huntingdon Archives). Includes an account of finds made during the drainage of Whittlesey Mere.
- Holmwood and Stilton Drainage Board Papers Etc. Papers mainly dating from c **1920** consisting of specifications etc for drains and pumping stations. Two typed sheets entitled 'The Yaxley 1st Fen Drainage Act 1768' were photocopied. (Huntingdon Archives).

Books held at the Wildlife Trust's offices in Cambourne (consulted, but not referred to in the text)

- Godwin, H, *Fenland: Its Ancient Past and Uncertain Future*
- Bevis, T, *Water Water Everywhere – The Draining of the Fens*
- Heathcote, JM, *Reminiscences of Fen and Mere*
- W.E.A, 1987 *Whittlesea Mere – A W.E.A. Project*

APPENDIX D. BIBLIOGRAPHY

Begg, C, Boreham, S and Macaulay, S, 2008 *The Great Fen Project: Archaeological Survey Report – Northern Great Fen (Holme Fen and Whittlesey Mere) – Area Above B660*. CAM ARC Report No. 1007 (unpublished)

Casa Hatton, R, 2002 *The Great Fen Project: An Archaeological Desk-based Assessment*. Cambridgeshire County Council Report No. 208 (unpublished)

Department for Communities and Local Government, March 2012 *National Planning Policy Framework*

Godwin, H and Vishnu-Mitre, 1975 'Studies of the post-glacial history of British vegetation: XVI, Flandrian deposits of the Fenland margin at Holme Fen and Whittlesey Mere, Hunts', in *Philosophical Transactions of the Royal Society of London* 270:561-604

Gdaneic, K, 2012 *Brief for archaeological investigation, Rymes Reed Bed, Great Fen Project, Huntingdonshire*, Cambridgeshire County Council Historic Environment Team (unpublished),

Hall, D, 1992 *The Fenland Project, Number 6: The South-Western Cambridgeshire Fenlands*. E. Anglian Archaeol 56

Hutchinson, JN, 1980 'The Record of Peat Wastage in the East Anglian Fenlands at Holme Post, 1848-1978 AD' in *The Journal of Ecology* 68(1), 229-249

Victoria County History of Huntingdonshire, Volumes I and III

Waller, M, 1994 'Ugg Mere and Whittlesey Mere' in *The Fenland Project, No 9: Flandrian Environmental Change in Fenland*. E. Anglian Archaeol 70

APPENDIX E. OASIS REPORT FORM

Project Details

OASIS Number	oxfordar3-141388		
Project Name	Preliminary Evaluation at Rymes Reed Bed, Holme, Hunts (The Great Fen Project)		
Project Dates (fieldwork)	Start	14-01-2013	Finish 17-01-2013
Previous Work (by OA East)	Yes	Future Work	Yes

Project Reference Codes

Site Code	HOMRRC12	Planning App. No.	1200/729/FUL
HER No.	ECB3893.	Related HER/OASIS No.	

Type of Project/Techniques Used

Prompt	Direction from Local Planning Authority - PPS 5
Development Type	Other

Please select all techniques used:

<input checked="" type="checkbox"/> Aerial Photography - interpretation	<input type="checkbox"/> Grab-Sampling	<input type="checkbox"/> Remote Operated Vehicle Survey
<input type="checkbox"/> Aerial Photography - new	<input type="checkbox"/> Gravity-Core	<input type="checkbox"/> Sample Trenches
<input type="checkbox"/> Annotated Sketch	<input type="checkbox"/> Laser Scanning	<input type="checkbox"/> Survey/Recording Of Fabric/Structure
<input checked="" type="checkbox"/> Augering	<input type="checkbox"/> Measured Survey	<input checked="" type="checkbox"/> Targeted Trenches
<input type="checkbox"/> Dendrochronological Survey	<input type="checkbox"/> Metal Detectors	<input checked="" type="checkbox"/> Test Pits
<input checked="" type="checkbox"/> Documentary Search	<input type="checkbox"/> Phosphate Survey	<input type="checkbox"/> Topographic Survey
<input checked="" type="checkbox"/> Environmental Sampling	<input type="checkbox"/> Photogrammetric Survey	<input type="checkbox"/> Vibro-core
<input type="checkbox"/> Fieldwalking	<input type="checkbox"/> Photographic Survey	<input checked="" type="checkbox"/> Visual Inspection (Initial Site Visit)
<input type="checkbox"/> Geophysical Survey	<input type="checkbox"/> Rectified Photography	

Monument Types/Significant Finds & Their Periods

List feature types using the [NMR Monument Type Thesaurus](#) and significant finds using the [MDA Object type Thesaurus](#) together with their respective periods. If no features/finds were found, please state "none".

Monument	Period	Object	Period
pit	Post Medieval 1540 to 1901	pottery	Post Medieval 1540 to 1901
	Select period...		Select period...
	Select period...		Select period...

Project Location

County	Cambs	Site Address (including postcode if possible)
District	Huntingdonshire	Rymes Reed Bed, Holme, Wetland Creation Project (Great Fen Project)
Parish	Holme and Yaxley	
HER	Cambs	
Study Area	145 ha	National Grid Reference TL 2060 9040 (c)

Project Originators

Organisation	OA EAST
Project Brief Originator	Kasia Gdaneic - CCC
Project Design Originator	Stephen Macaulay- OA East
Project Manager	Stephen Macaulay- OA East
Supervisor	Kate Clover and Graham Clarke

Project Archives

Physical Archive	Digital Archive	Paper Archive
Location ...N/A	Location ...OA East	Location ...OA East
Accession ID...	Accession ID ...HOMRRC12	Accession ID ... HOMRRC12

Archive Contents/Media

	Physical Contents	Digital Contents	Paper Contents
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Ceramics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Survey		<input type="checkbox"/>	<input type="checkbox"/>
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Digital Media	Paper Media
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Notes:

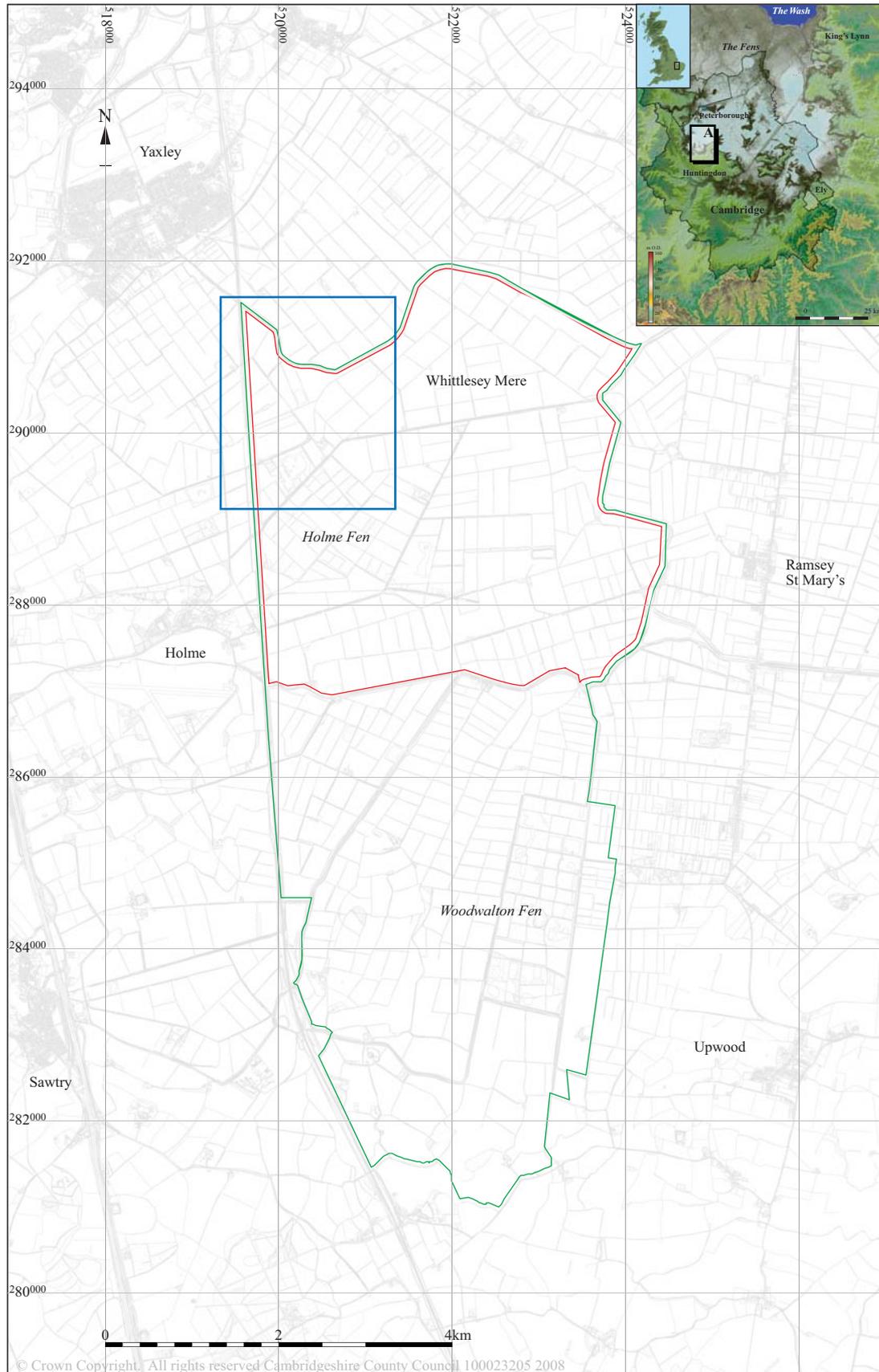


Figure 1: Location of the Great Fen Project (green), the current study area (red) and the area shown in Figure 2 (blue)

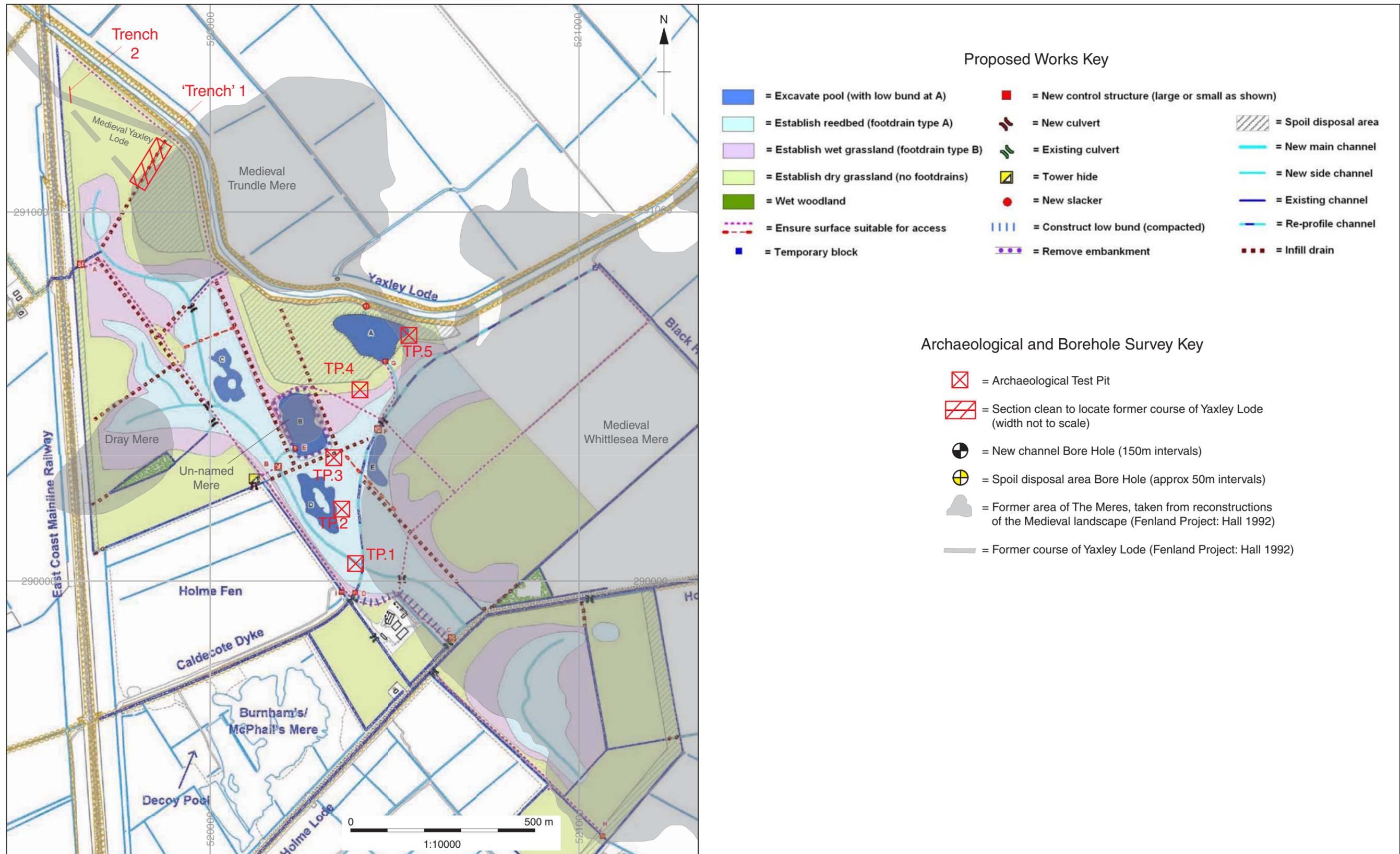


Figure 2: Location of current archaeological investigations and proposed works, showing former area of The Meres

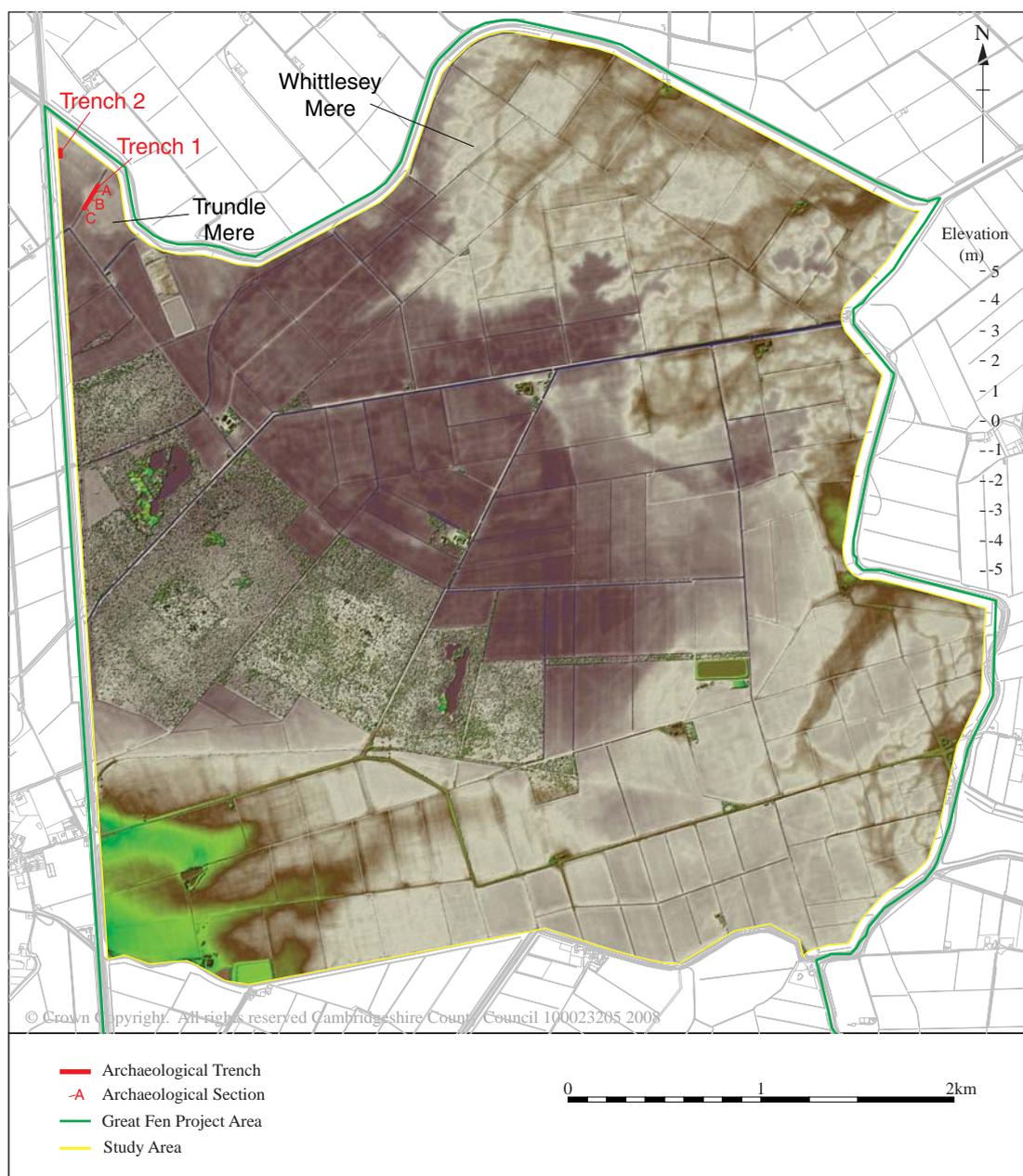


Figure 3: Surface model generated from LIDAR D series data, showing 'Trench' 1, with section points and Trench 2

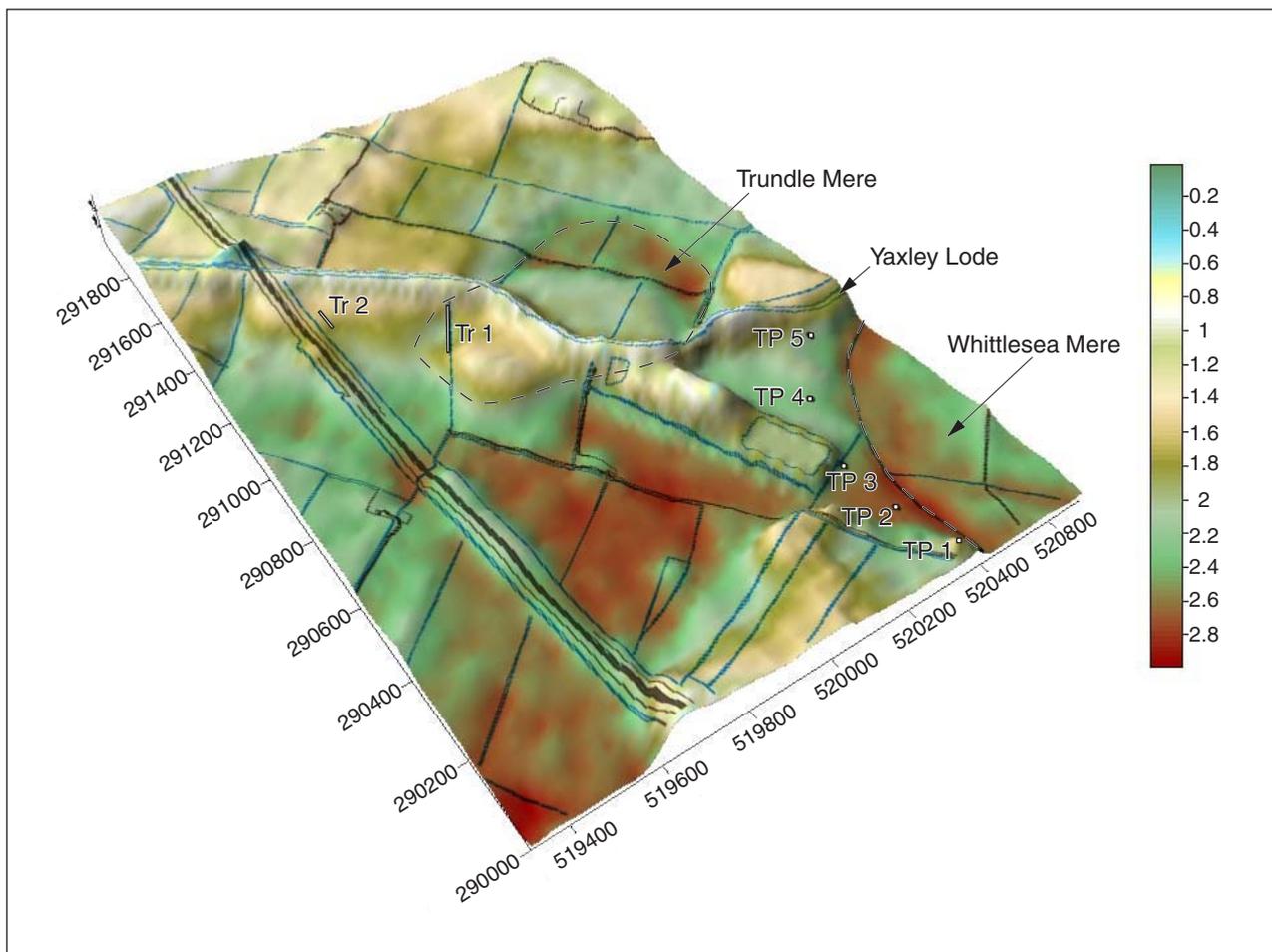
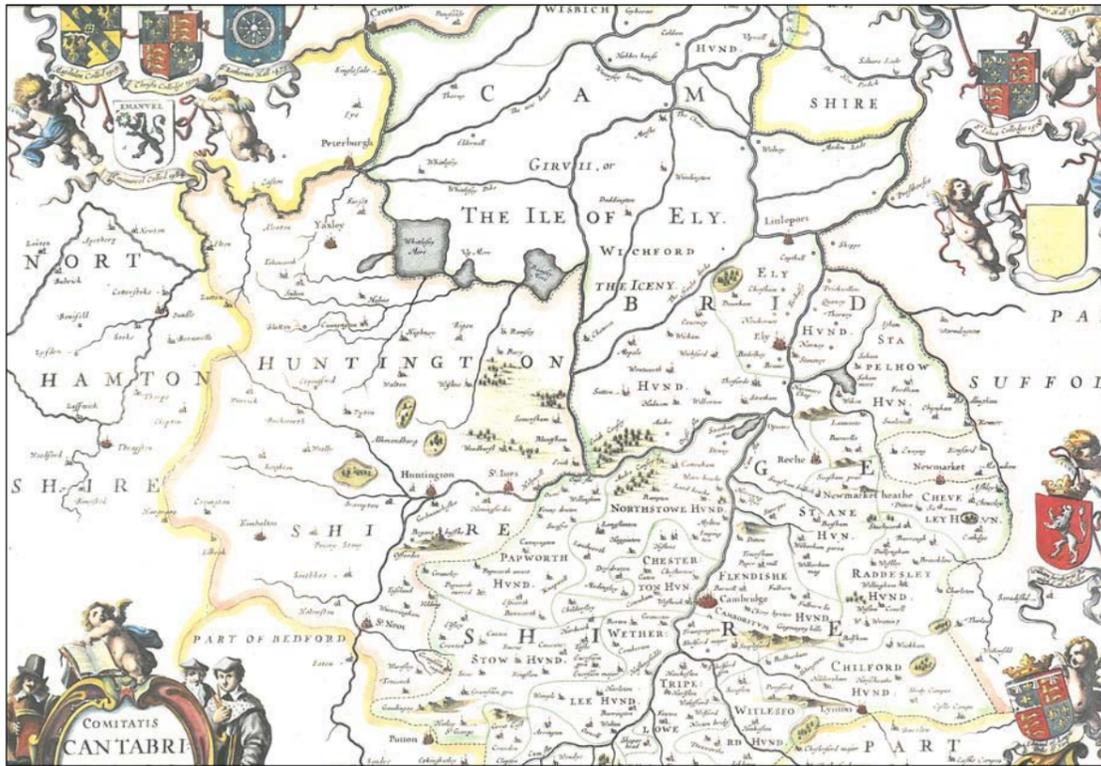
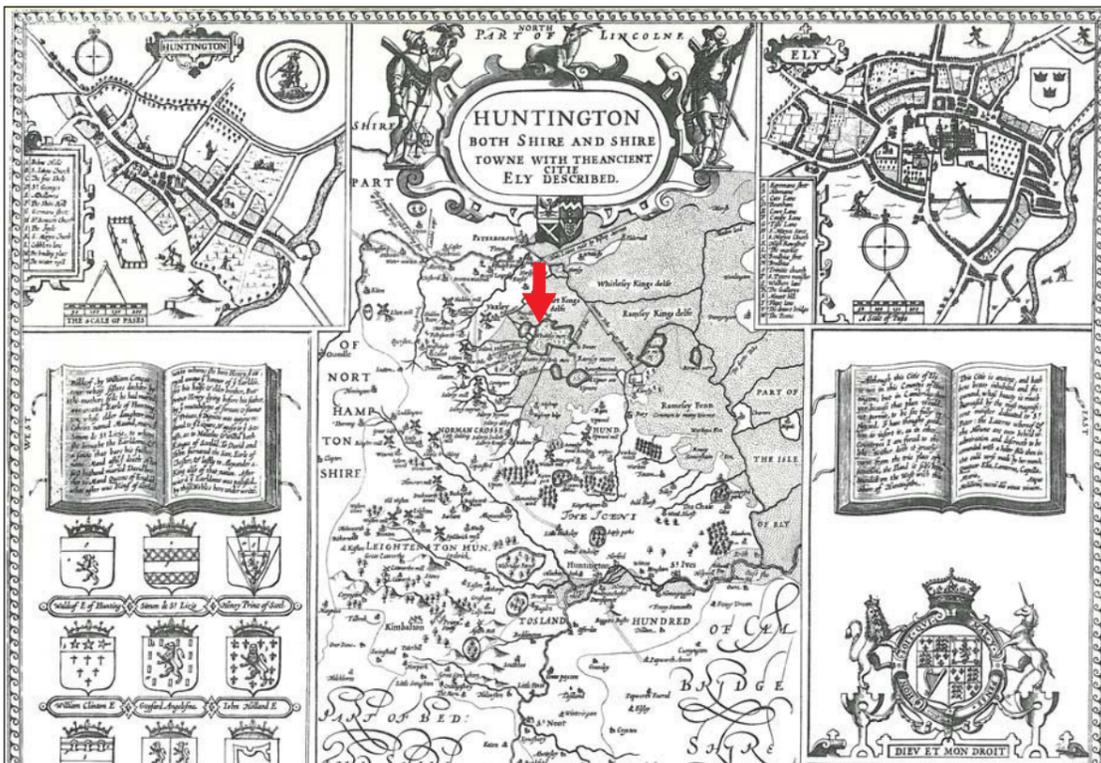


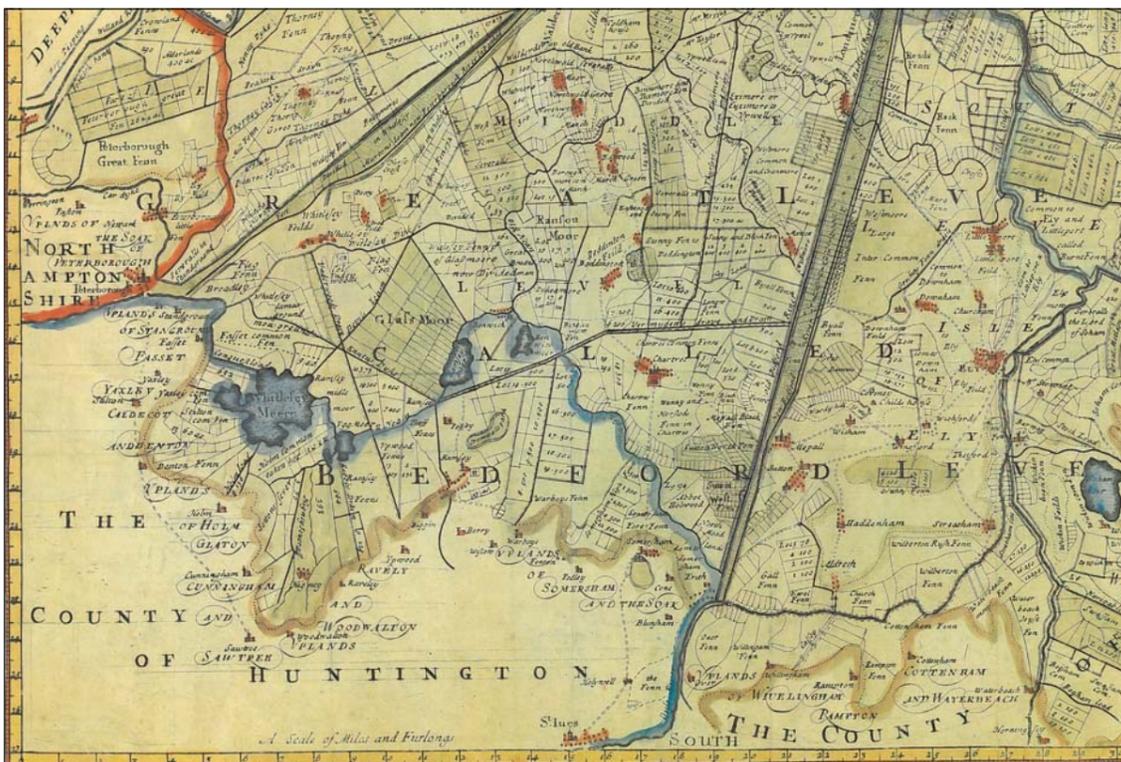
Figure 4: Digital Elevation Model generated from LIDAR D series data and location of current archaeological investigations



Jansson 1646



Speed 1662



Moore 1684 (1720)

Figure 5: J Jansson's Map 'Comitatus Cantabrigiensis' 1646, J Speed's Map of Huntingdonshire 1662 and Jonas Moore's Map of the Great Level of the Fens 1684 (1720)

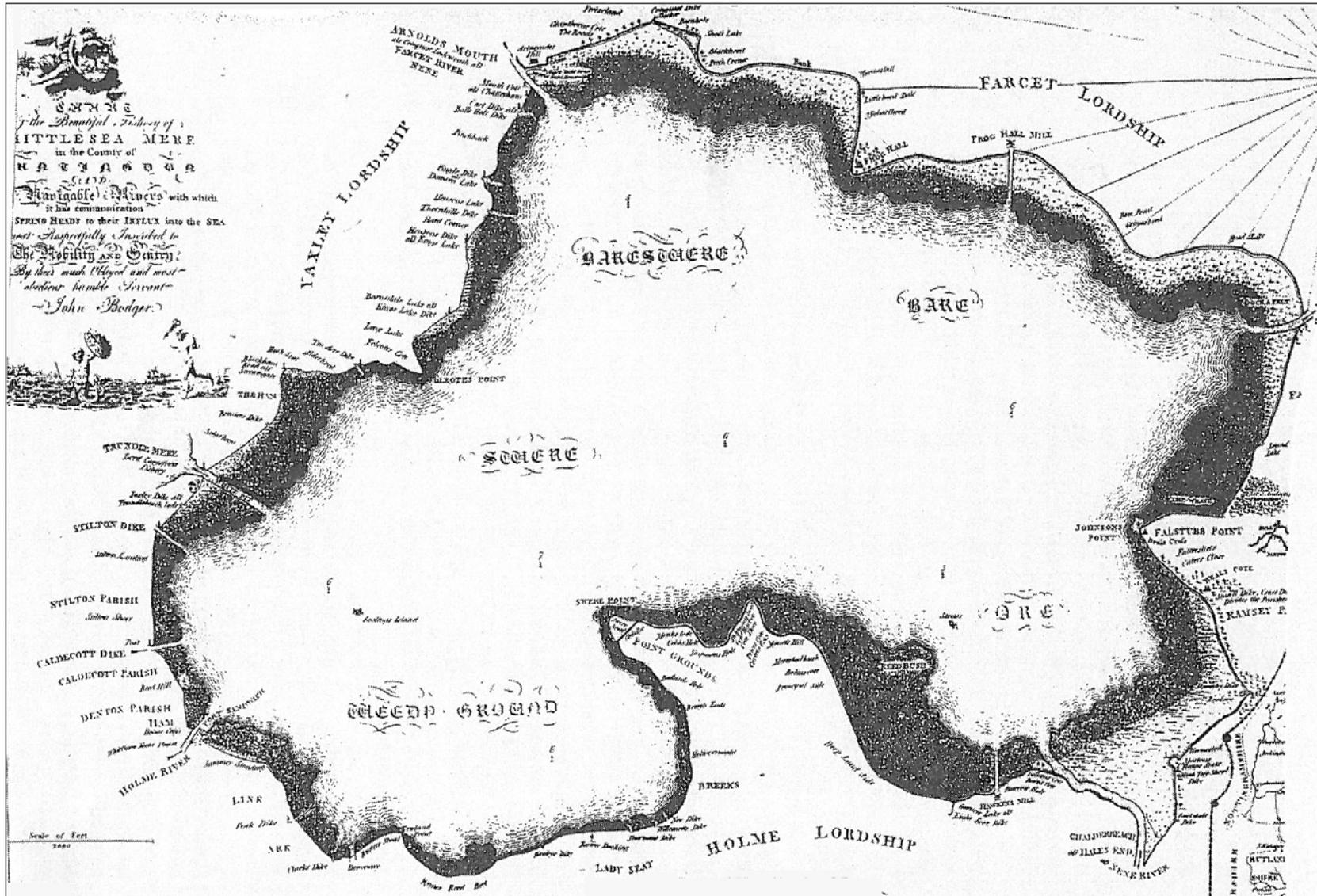


Figure 6: John Bodger's Map of Whittlesea Mere 1786



Figure 7: Samuel Wells' Map of The Great Level of the Fens Called Bedford Level, 1829



Figure 8: JG Lenny's Map of Lands Subject to the Eau Brink Tax 1833



Figure 9: Map of Whittlesey Mere showing proposed drainage 1840 (scaled)

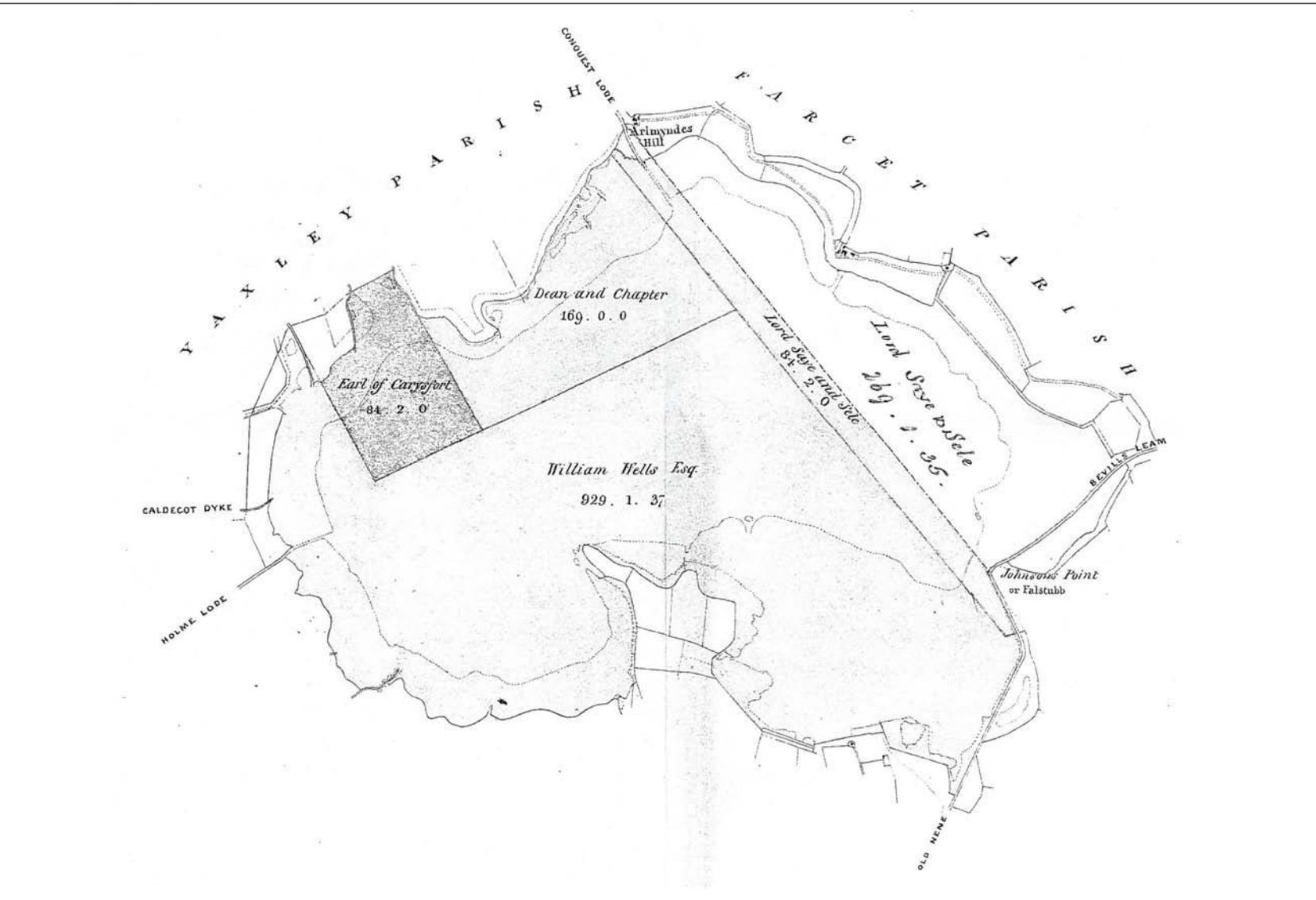


Figure 10: Map of Whittlesea Mere 1845



Plate 1: 'Trench' 1, cleaning modern drain to locate former course of Yaxley Lode



Plate 2: Test-pit 1 fully excavated, 2m scale



Plate 3: Test-pit 3 fully excavated, 2m scale



Plate 4: Trench 1 after cleaning northern face of drain, showing marl lake deposits



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