



**River Nar Restoration
West Lexham**

**Topographical Survey
and
Monitoring of Works under Archaeological
Supervision and Control**

ENF 141458

**Heather Wallis
October 2017**

HW Report No. 207



Project name	West Lexham 2016/7 (River Nar Restoration)
Parish	Lexham
Event No.	ENF 141458
Grid Ref.	TF 84166 16996 to TF 84485 17081
Date of Work	17th October 2016 to 17th March 2017

Summary

Three small borrow pits and a short length of new river channel were excavated at West Lexham during works to improve the flow and habitat of the River Nar. These works were located within the area of 19th-century floated water meadows. Where the water meadows survive as visible earthworks both a contour survey and earthwork survey were undertaken. Within the areas of excavation one linear feature which may have been part of the water meadows was recorded and a deposit which formed part of one of the earthwork banks was also noted.

Introduction

The Internal Drainage Board undertook restoration works along the River Nar at West Lexham (Fig. 1). The works consisted of in-channel improvements and the excavation of a short length of a new channel.

Due to the location of the works, in an area where there are known archaeological sites, Norfolk Historic Environment Service requested that a programme of archaeological works was undertaken. In this instance, the required works comprised topographic survey and monitoring of excavation works under archaeological supervision and control.

Archaeological monitoring and survey work was carried out according to a Brief for the Monitoring of Works under Archaeological Supervision and Control issued by Norfolk Historic Environment Service and a Written Scheme of Investigation prepared by Heather Wallis.

Location and Geology

Works were undertaken on a stretch of the River Nar at West Lexham. Here the river passes to the south of West Lexham Hall and two lakes; West Lexham Lake and East Lexham Lake.

The bedrock geology of the area is chalk over which lay Briton's Lane sands and gravel, and alluvial deposits of silt, clay, sand and gravel.

(<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>).

Archaeological Background

The stretch of river for improvement is situated to the south of West Lexham Farmhouse. It is located within an extensive and important complex of 19th-century floated water meadows and is close to the historic core of West Lexham village.

Lexham is mentioned in the Domesday Book, and architectural features at the churches at both East and West Lexham date to the Late Saxon or early Norman period. The medieval village of West Lexham was located around the green, close to the church, with out-lying houses along tracks to the east and south (Map of 1575). The village was largely abandoned by 1771 (NHER 4063).

West Lexham Farmhouse was built about 1800 and between 1803 and 1811 floated water meadows were constructed nearby. These were designed by John 'Strata' Smith and built on the Holkham Estate farm of John Beck, including on land once occupied by the out-lying parts of the medieval village of West Lexham. The scheme won a gold award from the Board of Agriculture on its completion. The water meadows covered about 10ha and extended for c.1km along the River Nar from West Lexham Farmhouse to the east and beyond the A1065 road to the west. The water meadows were made up of a complex series of main channels, feeder channels and sluices. Across much of this area the water meadows can still be seen as well preserved earthworks, although in other areas levelling of the earthworks has taken place.

Few other sites are known close to the line of works, but occasional prehistoric, Roman, Saxon and medieval artefacts have been recovered.

The Development Works

The works divided into three parts

1. In-channel works creating berms using woody debris and sediments from the river bed
2. Creation of berms using material from borrow pits excavated adjacent to the river
3. Creation of short stretch of new river channel to the south of the river at the east end of West Lexham Lake.

The first of these did not impact on any known sites and archaeological monitoring of this work was not required by Norfolk Historic Environment Service.

Three borrow pits which lay in the area of the 19th-century floated water meadows were excavated. Monitoring of these pits was undertaken from the top edge of the excavations.

The creation of a short stretch of new channel at the east end of West Lexham Lake passed through the area of the water meadows. Initial archaeological work in this area consisted of a topographical survey across the existing earthworks. Following the survey work the line of the new channel was agreed between Norfolk Rivers IDB and Norfolk Historic Environment Service. Archaeological monitoring of the excavation of the new channel was undertaken.

Methodology

Prior to works commencing discussions with the contractor identified approved routes for machine movements across and through the earthworks.

Topographic survey was undertaken using GPS survey equipment (Trimble R8 RVS Now Rover and Trimble Business Centre software), supplied and operated by IDB staff, under the supervision of an archaeologist. Survey data was imported into AutoCAD Civils 3D 2014 from which a contour survey and cross-sections were produced. Measurements were taken in order to produce both a contour survey and hachured archaeological earthwork survey.

Monitoring of excavation works was undertaken in order to identify and record any disturbed archaeological soils and retrieve any artefacts. Due to the depth of the excavations monitoring was undertaken from the edge of the pits and channel. Archaeological records consist of site notes with context descriptions on *pro forma* recording sheets. Photographic record includes both digital colour and black & white photographs.

All works were carried out in full accordance with national and regional guidelines for the treatment of archaeological remains, and in particular the guidance set out in *Standards for Field Archaeology in the East of England* (Gurney 2003) and the *Chartered Institute of Field Archaeologists Standard and Guidance for an Archaeological Watching Brief* (2014).

Results

Borrow pits

Three borrow pits were excavated, located on the north bank of the River Nar and to the south of the West Lake (Fig. 2). Due to the depth of these and the level of the water table all recording was undertaken from the top edge of the trenches. Detailed section drawings were therefore not made but measured sketch sections showing typical deposits are depicted in Fig. 3.

Pit 1

Measured c.12.5m x 4.5m and c.2m deep.

(Plate 1)

The underlying natural, a grey silty/sandy gravel (05) was noted at a depth of c.1.6m. Over this was a layer of natural yellowy grey sand (04) with some

coarse gravel and a pale yellowish grey sand with peaty and silty lenses (03). A linear feature (**08**) aligned north-east to south-west, was seen cutting through this. This feature was cut from a depth of 0.8m and was c.0.8m deep and 2m wide. It's lowest fill, which extended across the base of the feature and up its sides was mid brown silty peat (06). Above this was dark grey clayey silt (07). Both deposits are thought to have accumulated naturally within the feature. The upper fill was grey brown clayey silt (09) with sand and gravel lenses and patches. This is likely to have been deliberate backfill.

Above this feature was c.0.4m of dark greyish brown clayey silt (02) and c.0.4m of dark orangey brown loamy silt topsoil (01). Both these latter two deposits were likely to be the result of levelling and landscaping in this area.

The feature (**08**) was parallel to the floated meadow earthworks and may originally have formed part of these meadows which were constructed between 1803 and 1811. The upper fill and overlying subsoil and topsoil which probably derived from cleaning of the adjacent river and/or lake were deliberately deposited to infill this channel.

Animal bone

(Identified by Julie Curl)

Three bones were recovered from the silts consisting of two equid tibiae and an equid mandible. The heavily worn teeth with some periodontal disease indicates that this was a mature animal. Measurements of the tibia show that this equid stood approximately 13.5 hands high so classifying this as a pony. The bones indicate a slender animal but distinctive muscle attachments scars indicate an animal of strength. This pony had therefore been put to hard work such as cart pulling. Recovered from the spoil it is unclear precisely which deposit the bones came from.

Ceramics

(Identified by Sue Anderson)

A single sherd of Chinese porcelain was recovered from the topsoil.

Pit 2

Measured c.7m x 3.5m, c.1.6m deep

Natural gravel (05) was revealed in the base of this pit. Above this was c.0.3m of orangey grey clayey silt (10) and c.0.4m of yellow grey sand (04). Both of these were natural deposits within the river valley. Over these was c.0.4m of dark greyish brown silty clay (02) and c.0.4m of dark orangey brown silty topsoil (01).

Pit 3

Measured c.12m x 9m, c.1.2m deep

(Plate 2)

At the south end of the excavation clean orange gravel (24) was noted at a depth of 0.7m, while at the north this deposit was just c.0.4m below the present

ground surface. Over this lay c.0.1m of dark grey silty gravel (25) which was only present towards the south end of the scrape. Above this was mixed orange brown gravel and silt (26) between 0.1 and 0.2m deep. The overlying topsoil was between 0.3 and 0.4m deep and was a dark brown peaty silt (27).

New channel

Topographic Survey

The topographic survey was undertaken across an area centred on the line of the proposed new river channel. Survey was not limited to the width of the new channel but extended to encompass a wider area in order to capture the true nature of the earthworks in this locality. Survey points were recorded to produce both a contour survey and archaeological hachured earthwork survey.

The results of the survey are presented in Figs 4-6. These show two parallel channels and low banks which form the eastern end of the floated water meadow complex. Their remains are slight with the height difference between hollows and the tops of the banks being just 0.15m. To the east of these a raised track crossed the area on a north-west to south-east alignment, from a river crossing to the north.

The top of the raised earthworks lay at c.36.9mOD, just 0.10m above 'ground level'. To the north-west the land slopes gently towards the river to a height of 36.20mOD, before the bank drops steeply into the river channel. South-east of the earthworks the land slopes up away from the river. The present trackway sits high to the east of the surveyed area at 37.30mOD

Monitoring

The excavation of the new river channel was undertaken by machine using a flat-bladed ditching bucket (Plate 3). The new channel was up to 5m wide and it varied in depth between c.0.9m to c.1.5m depending on the localised surface level and the required fall across the length of the cut. There was some variation in the deposits along the length of the channel and four measured sketch sections were recorded to reflect these changes (Figs 6 and 7).

Natural gravel was recorded along the full length of the base of the channel (contexts 11 and 21). These deposits were somewhat mixed, the majority of it was grey silty gravel although some patches of orange coarser gravel were also noted. Occasional patches of post-medieval brick fragments were noted in the topsoil (18).

Section A – across trackway

Above the lowest natural gravel (11) was a deposit of orangey brown slightly silty moist sand (12) over which was a layer of crushed chalk (13) (Plate 4). The crushed chalk was only present in the area of the track and varied in depth between 0.1 and 0.2m. Over this lay 0.3m depth of large gravel/medium sized flints in orange brown silty sand (14). Sitting above this was 0.1m of smaller gravel in grey sand (15). A thin layer of turf had developed over this.

Section B – to west of trackway

On top of the natural gravel lay a dark brownish grey silt with some very fine sand (16). Over this a 0.5m deep deposit of dark brownish grey sandy silt with occasional small flints (17) was recorded. It is thought this may be the natural silting of a hollow adjacent to the trackway. The uppermost deposit was a dark brownish grey loamy silt topsoil (18).

Section C – close to raised earthworks

Above natural orange gravel (21) lay 0.35m depth of mid brownish orange sandy silt (19) over which was 0.45m of mid orange brown slightly clayey silt (20). This deposit was thickest in the southern section but not as apparent in the northern section (Plate 5). It is therefore possible that this was part of the raised earthwork bank. Above this was the topsoil (18)

Section D – western end

Over the natural gravel (21) lay greyish brown silty gravel (22) above which was a greyish brown slightly clayey silt with some fine sand content (23). Above this lay the topsoil (18) (Plate 6).

Conclusions

To the north of the river the earthworks of the floated water meadows, identified from aerial photographs, are no longer visible having been levelled in the latter part of the 20th-century. Here a linear feature was recorded within one of the borrow pits. This feature was probably part of the floated water meadow system as it lay on the same alignment as the earthworks seen on the aerial photographs. This feature lay below c.0.8m of more recently deposited soils.

To the south of the river the earthworks of the floated water meadows are still apparent. Prior to the excavation works in this area, the earthworks were surveyed and the new channel located to skirt these. Within the section of the new channel one recorded deposit was more clayey than the surrounding silts and sands and this probably formed part of the earthwork bank. Dumps of chalk and gravel were also recorded which formed a trackway from a river crossing to the north leading across fields to the south. The track possibly crossed a low-lying area as indicated by a greater depth of silty deposits to its side. The track is still in use today.

All other deposits recorded were naturally accumulating river valley sands, gravels and silts.

Acknowledgements

Thanks go to all staff at the Internal Drainage Board (IDB) and particularly to Paul George who managed the project and undertook the archaeological survey and contour survey work.

Animal bone was identified and commented on by Julie Curl. Sue Anderson identified the pottery.

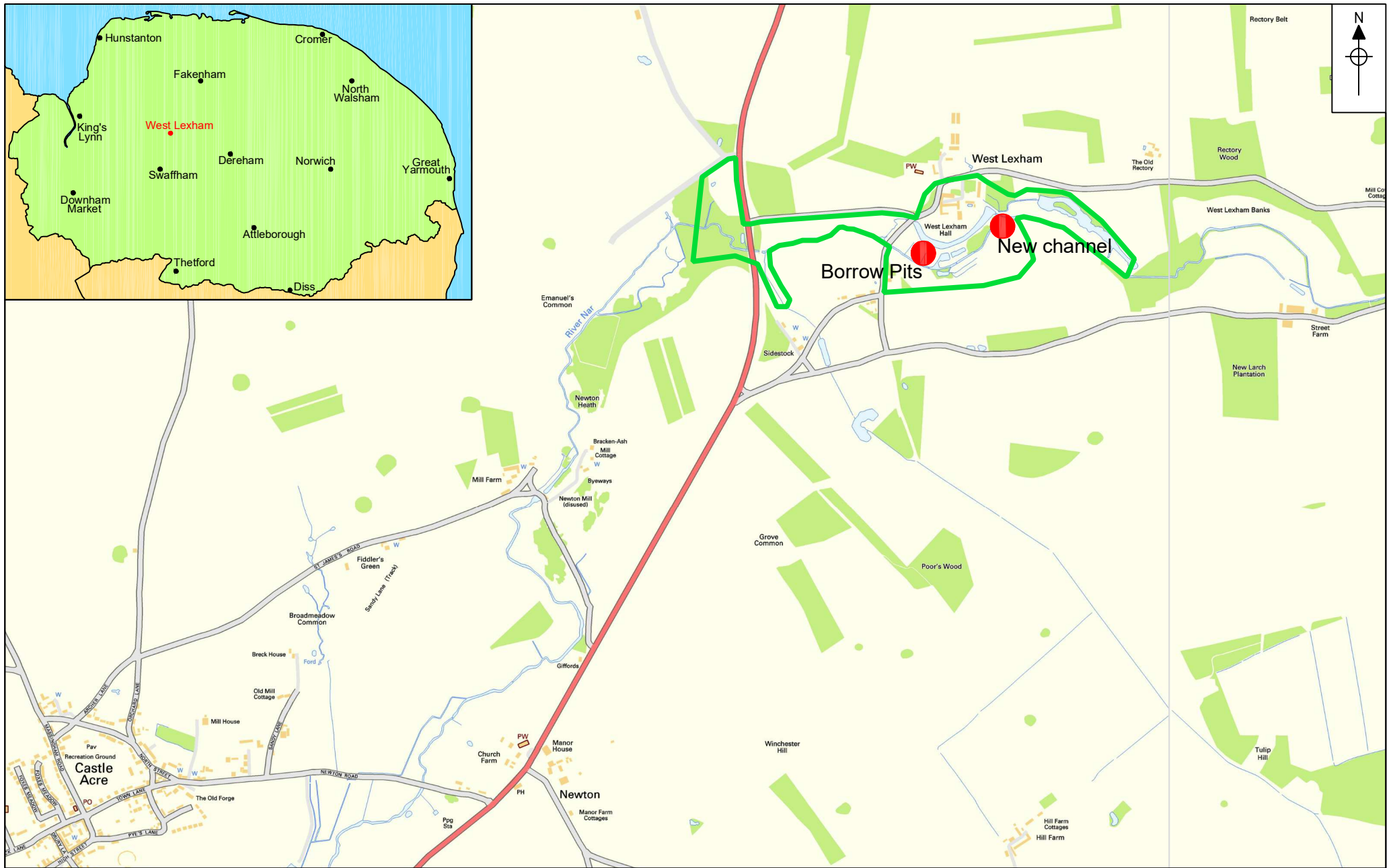


Figure 1. Site location plan showing extent of West Lexham Water Meadows (green) and site locations.

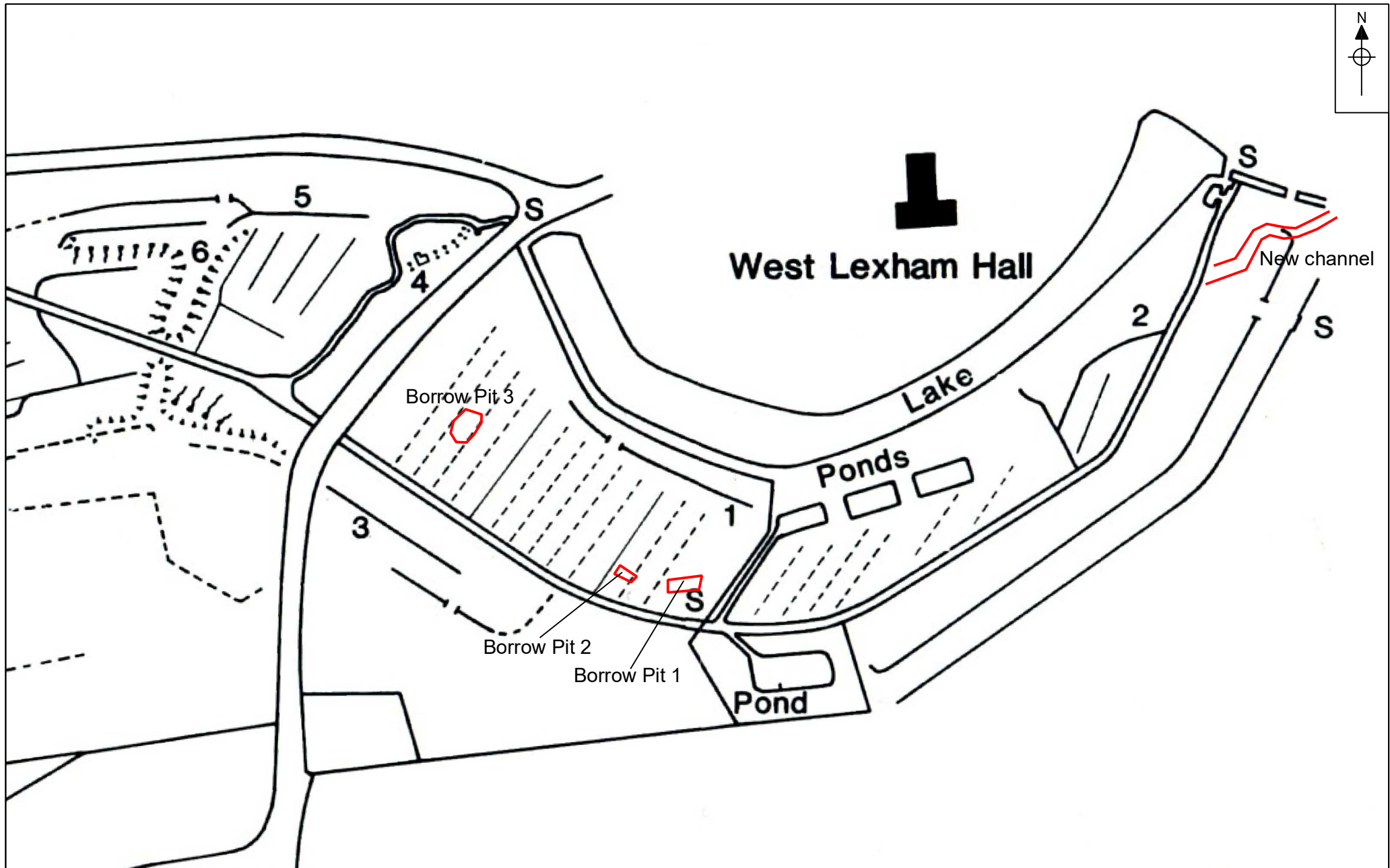


Figure 2. Location of borrow pits and new channel overlaid on earthwork survey (Brian Cushion 2000).

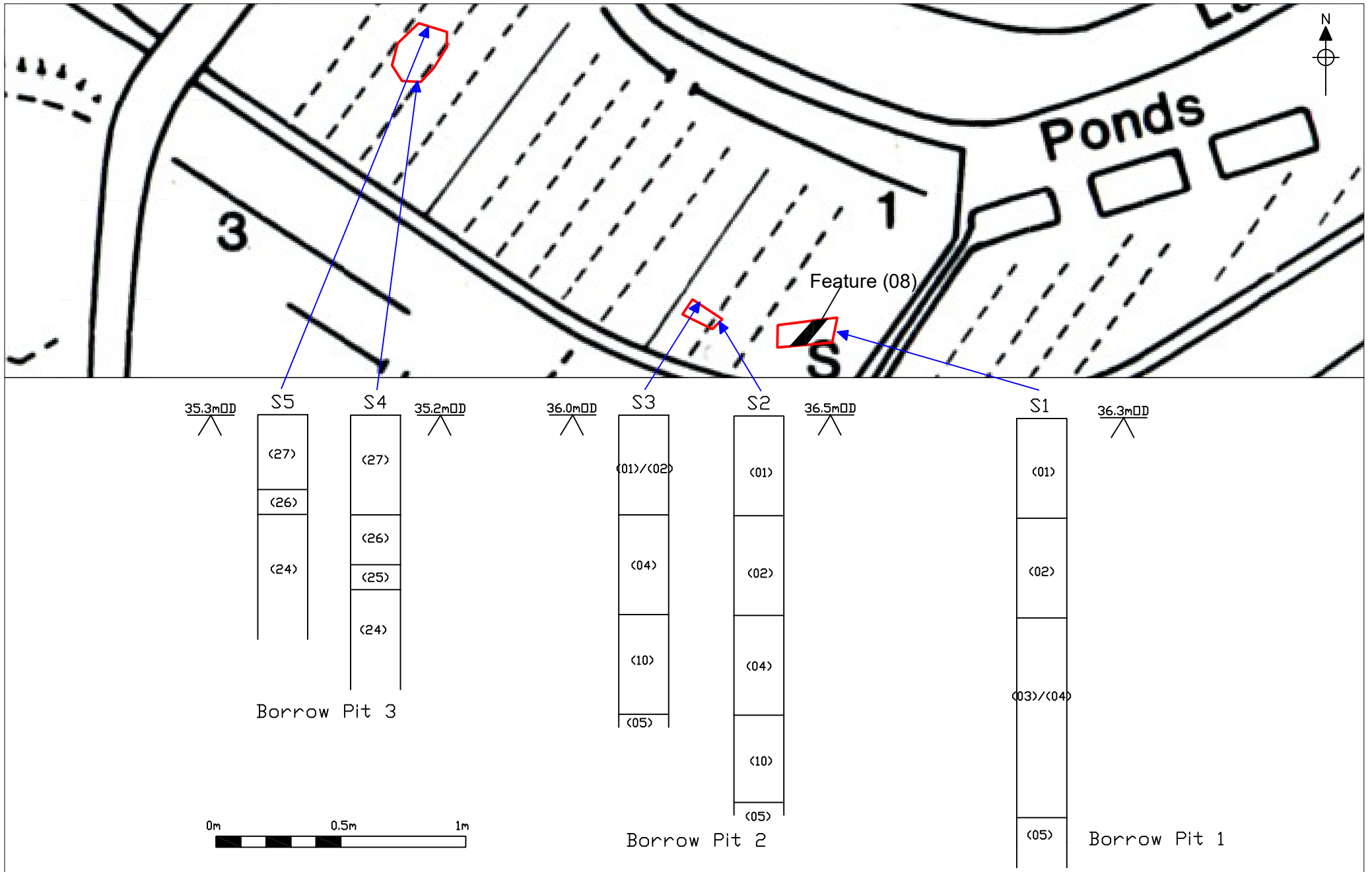


Figure 3. Plan and sections of borrow pits.

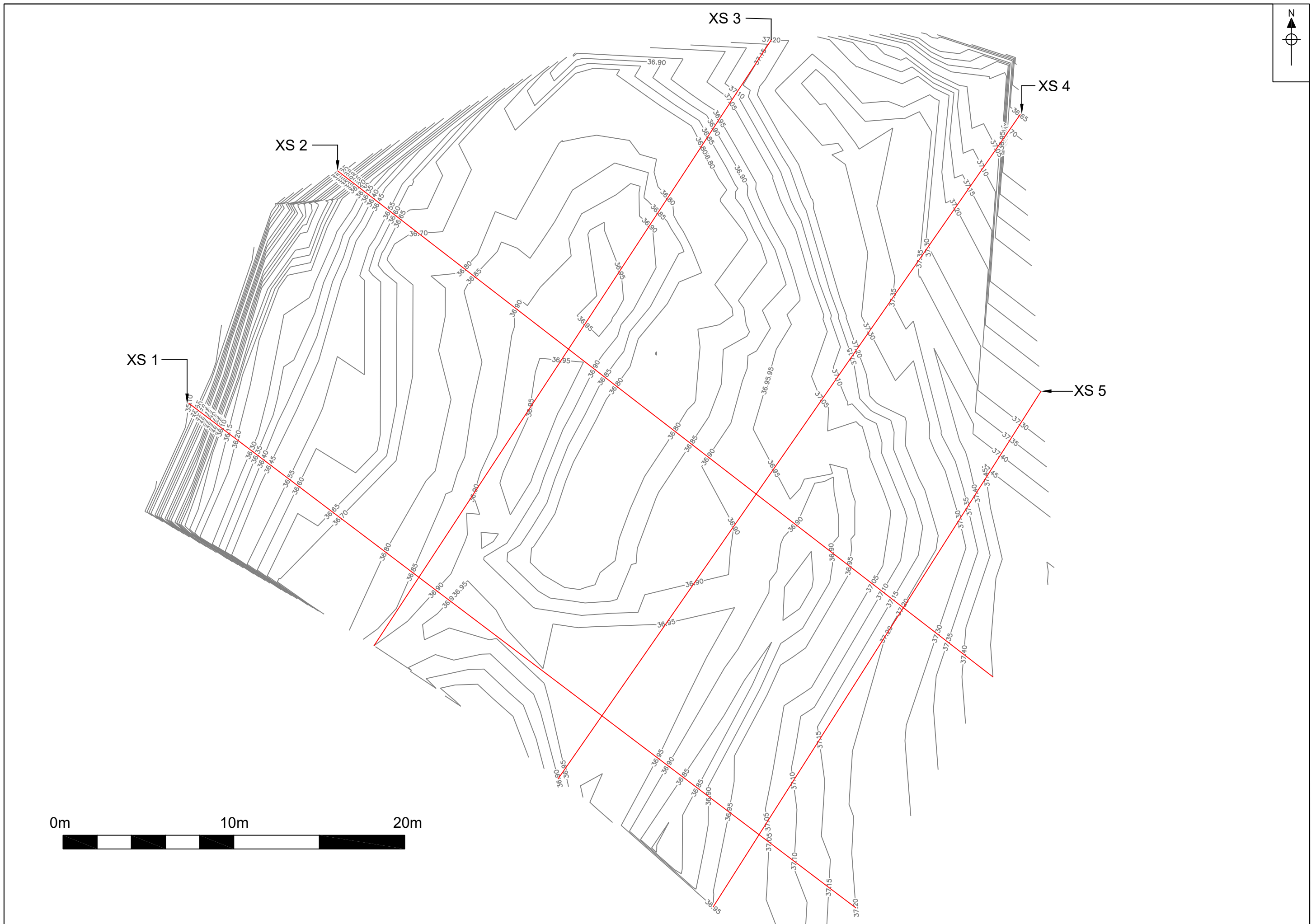


Figure 4. Contour survey showing location of cross-sections (Fig.5).

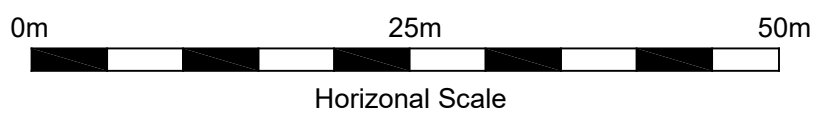
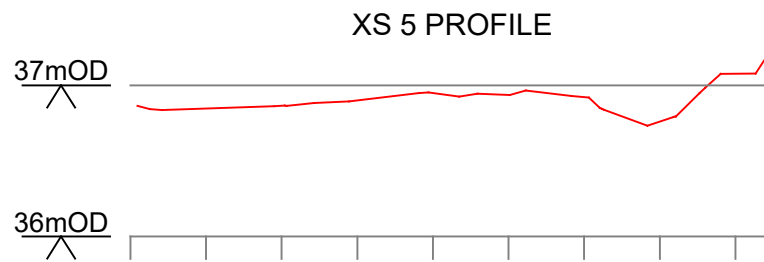
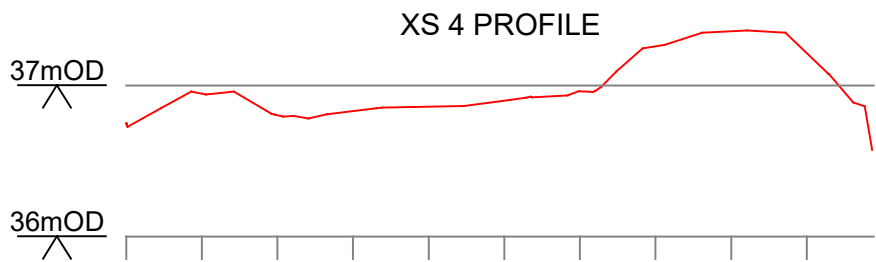
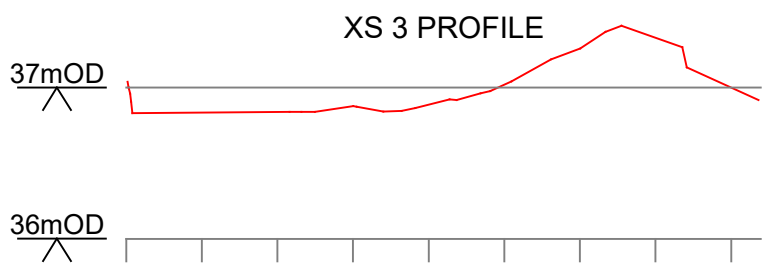
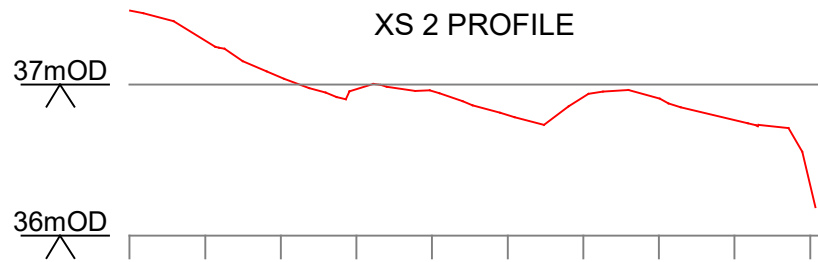
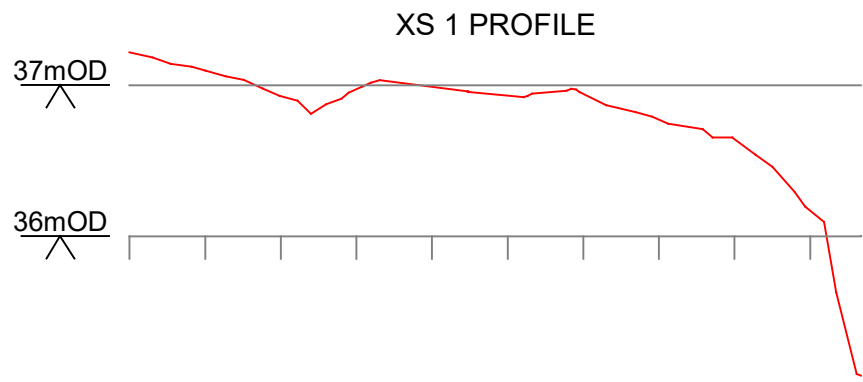


Figure 5. Contour survey cross-sections. Vertical scale x10.

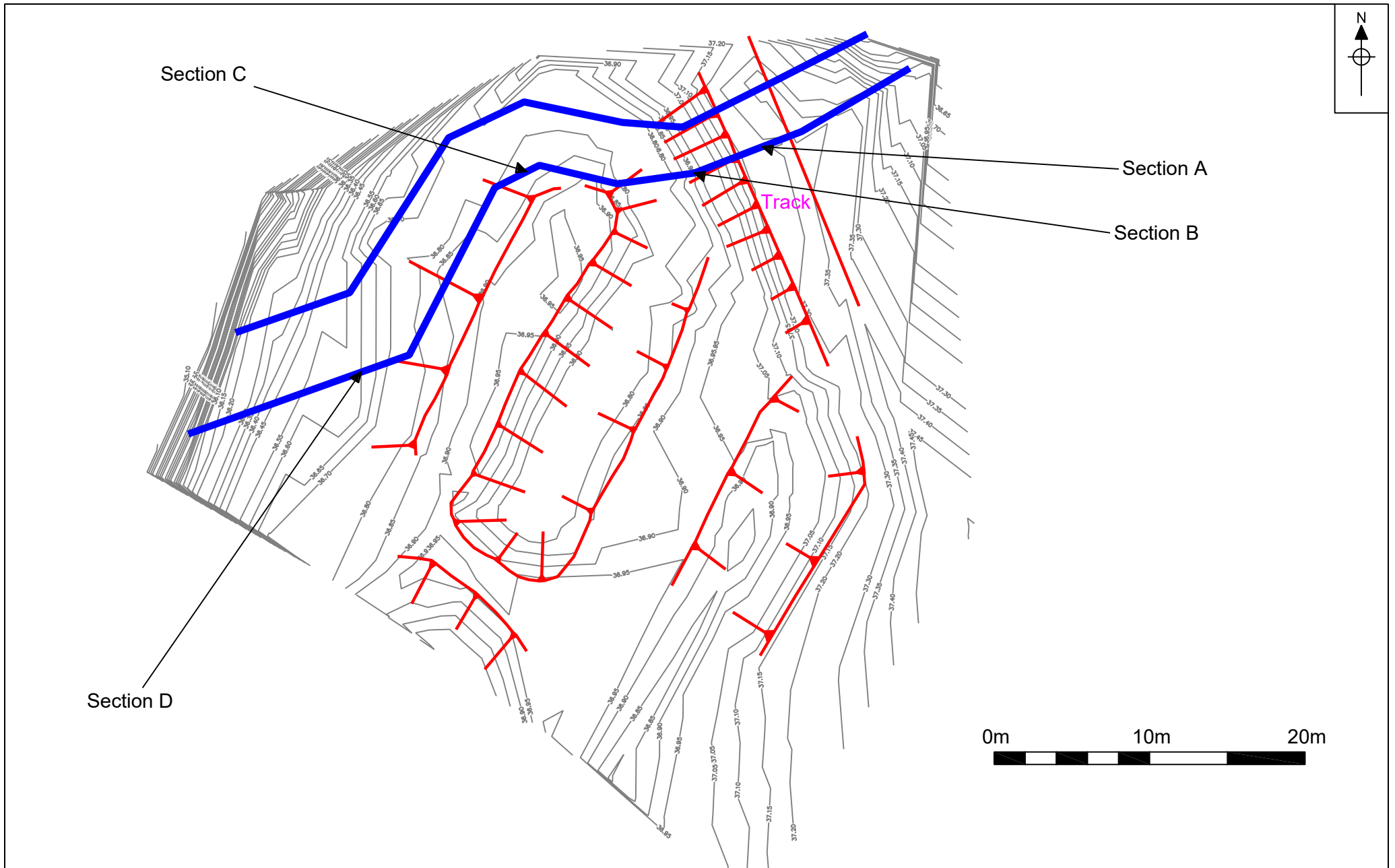


Figure 6. Showing earthwork survey (red), new channel (blue) and location of section drawings (Fig. 7) over contour survey.

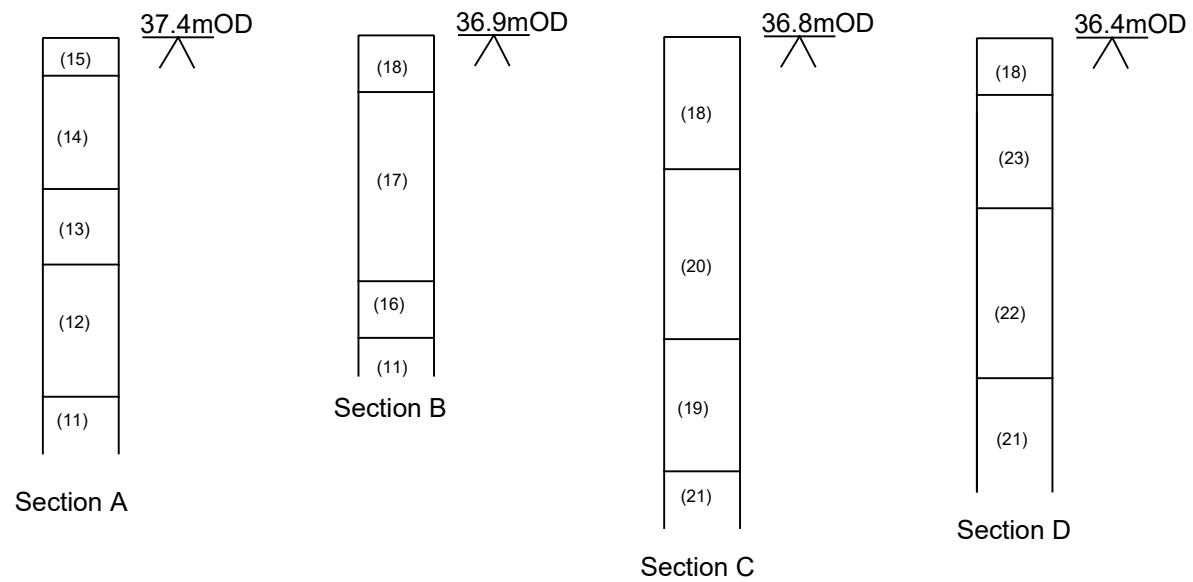


Figure 6. Representative sections along new channel.



Plate 1. Borrow Pit 1. Feature (08) in section. Looking north-east.



Plate 2. Borrow Pit 3. Looking north-east.



Plate 3. New channel. View of works. Looking north-east.



Plate 4. New channel. Section through track. Looking north-west.
(Opposite Section A)



Plate 5. New channel. Section close to earthwork bank. Looking north-east.
Right hand side of cut shows Section C deposits.



Plate 6. New channel. Section where channel joins river. Looking south-west.
Left hand side of cut shows Section D deposits.

Appendix 1

Context List

Ctxt No.	Area	Category
01	Borrow Pits 1 and 2	Topsoil
02	Borrow Pits 1 and 2	Subsoil
03	Borrow Pit 1	Natural
04	Borrow Pits 1 and 2	Natural
05	Borrow Pits 1 and 2	Natural
06	Borrow Pit 1	Fill of 08
07	Borrow Pit 1	Fill of 08
08	Borrow Pit 1	Linear cut
09	Borrow Pit 1	Fill of 08
10	Borrow Pit 2	Natural
11	New Channel	Natural
12	New Channel	Natural
13	New Channel	Makeup
14	New Channel	Surface
15	New Channel	Surface
16	New Channel	Natural
17	New Channel	Natural
18	New Channel	Topsoil
19	New Channel	Natural
20	New Channel	Bank
21	New Channel	Natural
22	New Channel	Natural
23	New Channel	Natural
24	Borrow Pit 3	Topsoil
25	Borrow Pit 3	Natural
26	Borrow Pit 3	Natural
27	Borrow Pit 3	Natural

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Project details

Project name	West Lexham
Short description of the project	Three small borrow pits and a short length of new river channel were excavated at West Lexham during works to improve the flow and habitat of the River Nar. These works were located within the area of 19th-century floated water meadows. Where the water meadows survive as visible earthworks both a contour survey and earthwork survey were undertaken. Within the areas of excavation one linear feature which may have been part of the water meadows was recorded and a deposit which formed part of one of the earthwork banks was also noted.
Project dates	Start: 17-10-2016 End: 17-03-2017
Previous/future work	No / No
Any associated project reference codes	ENF141458 - HER event no.
Type of project	Recording project
Monument type	DITCH Post Medieval
Monument type	BANK Post Medieval
Significant Finds	NONE None
Investigation type	""Watching Brief""

Project location

Country	England
Site location	NORFOLK BRECKLAND LEXHAM West Lexham
Study area	2500 Square metres
Site coordinates	TF 84166 16996 52.718812553248 0.727086766324 52 43 07 N 000 43 37 E Point
Site coordinates	TF 84485 17081 52.719466745514 0.73185233369 52 43 10 N 000 43 54 E Point

Project creators

Name of Organisation	Heather Wallis
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Heather Wallis

Project director/manager Heather Wallis
Project supervisor None

Project archives

Physical Archive Exists? No
Digital Archive recipient Norfolk Museums Service
Digital Contents "Stratigraphic","Survey"
Digital Media available "Images raster / digital photography","Spreadsheets","Text"
Paper Archive recipient Norfolk Museums Service
Paper Contents "Stratigraphic","Survey"
Paper Media available "Notebook - Excavation',' Research',' General Notes","Report"

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