



# Northamptonshire Archaeology

## Archaeological trial trenching on land at Swallowfield Park, Swallowfield, Berkshire

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**OASIS REPORT FORM**

<b>PROJECT DETAILS</b>		
Project name	Archaeological trial trenching on land at Swallowfield Park, Swallowfield, Berkshire	
Short description	Archaeological trial trenches were excavated across the line of a former late 17th or 18th century canal in the grounds of Swallowfield House, Berkshire. The canal was part of an ornamental landscape associated with the house. The excavations showed the canal to have been earth-cut, with no lining or other internal features, relying instead on the impermeability of the underlying natural clay geology to hold water. A series of weirs along its length would have acted as mechanisms to control flow and maintain the water levels. The canal had silted up and was backfilled in the early to middle part of the 19th century. An associated brick weir at the northern end of the canal was also examined and shown to have been subject to alteration and repair into the 20th century.	
Project type	Trial trenching	
Site status	None	
Previous work	Geophysical survey (Northamptonshire Archaeology 2010)	
Current Land use	Parkland (Sheep Pasture & Woodland)	
Future work	unknown	
Monument type/ period	18th century ornamental canal. Grade II Park and Garden	
Significant finds	None	
<b>PROJECT LOCATION</b>		
County	Berkshire	
Site address	Swallowfield House, Swallowfield, Berkshire, RG7	
Area	c. 1ha	
OS Easting & Northing	473299 165500	
Height OD	44m aOD	
<b>PROJECT CREATORS</b>		
Organisation	Northamptonshire Archaeology	
Project brief originator	Parklands Consortium Ltd	
Project Design originator	Northamptonshire Archaeology	
Director/Supervisor	Mark Holmes	
Project Manager	Adam Yates	
Sponsor or funding body	Farley Farms	
<b>PROJECT DATE</b>		
Start date	5 July 2010	
End date	2 August 2010	
<b>ARCHIVES</b>	<b>Location</b>	<b>Content</b>
Physical	REDMG:2010.73	
Paper	REDMG:2010.73	1 archive box of index sheets, context sheets, colour slides and black and white contact sheets
Digital	REDMG:2010.73	Pdf of report, digital photographs, dxf data
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# ARCHAEOLOGICAL TRIAL TRENCHING

## ON LAND AT SWALLOWFIELD PARK,

### SWALLOWFIELD, BERKSHIRE

JULY - AUGUST 2010

Accession No: REDMG:2010.73

#### *Abstract*

*Archaeological trial trenches were excavated across the line of a former late 17th or 18th century canal in the grounds of Swallowfield House, Berkshire. The canal, which survives now only as an earthwork, was part of an ornamental landscape associated with the house. The excavations showed the canal to have been earth-cut, with no lining or other internal features, relying instead on the impermeability of the underlying natural clay geology to hold water. A series of weirs along its length would have acted as mechanisms to control flow and maintain the water levels. The canal had silted up and was backfilled in the early to middle part of the 19th century. An associated brick weir at the northern end of the canal was also examined and shown to have been subject to alteration and repair into the 20<sup>th</sup> century.*

## **1 INTRODUCTION**

### **1.1 Background**

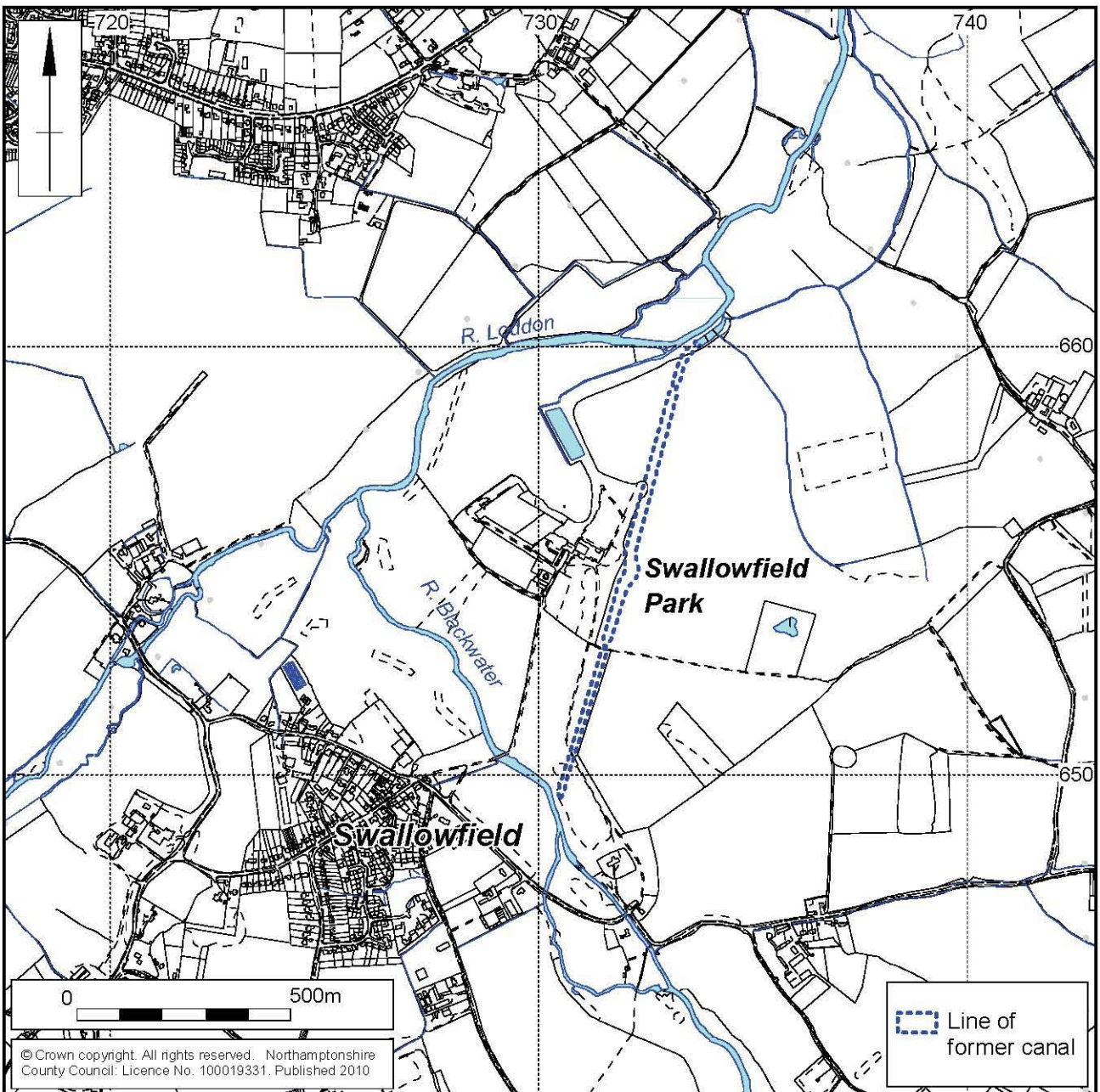
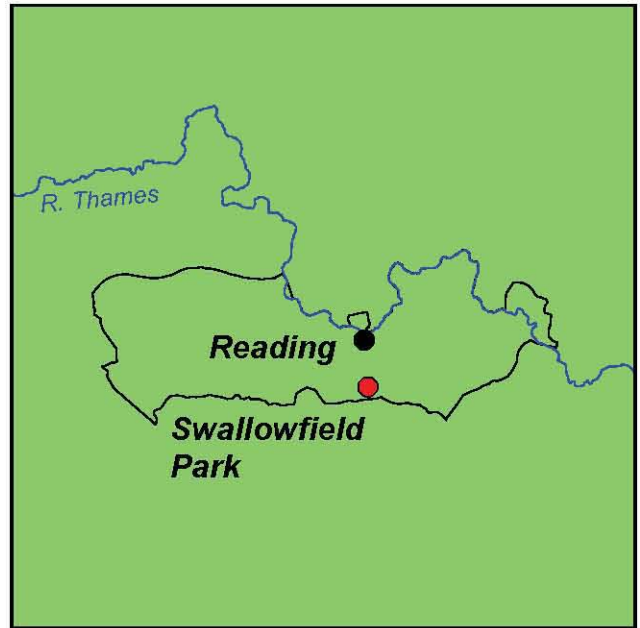
Northamptonshire Archaeology were commissioned by Parklands Consortium Ltd acting on behalf of Farley Farms to undertake trial excavations in the historic parkland associated with Swallowfield House, Berkshire (NGR SU 73299 65500; Fig 1).

The work was carried out at the request of Natural England and Farley Farms in order to further inform the existing Historic Landscape Management Plan for the site (Parklands Consortium 2009). The parkland forms part of an ornamental landscape created in the late 17th century and developed over the succeeding 150 years. It is characterised by a number of water features which make use of the location of the site, situated as it is close to the confluence of the Rivers Loddon and Blackwater. The historic parkland and pleasure grounds are listed as Grade II status in the English Heritage Register of Parks and Gardens (EH 1998).

One of these water features comprised an ornamental canal that joined the two rivers and survives today as an earthwork. The trial excavation was designed to elucidate the form, function and history of this canal. It followed on from previous archaeological surveys carried out by Northamptonshire Archaeology in 2010 (NA 2010a).

The archaeological works were carried out in accordance with a written scheme of investigation produced by Northamptonshire Archaeology (NA 2010b). The excavations took place between July and August 2010 and comprised the excavation of four separate trial trenches.





Scale 1:15,000

Site Location Fig 1

## 1.2 Location and topography

Swallowfield Park is located in the parish of Swallowfield, approximately 4km south of Reading. It is situated immediately north-east of the village of Swallowfield (Fig 1).

The parkland is bounded to the north by the River Loddon and to the south and west by its tributary, the River Blackwater. The site is relatively level and low lying, at about c44m aOD, which renders the area prone to flooding when the rivers are in spate.

The solid geology of the site is mapped as Eocene clay deposits belonging to the Thames Group (formerly known as 'London Clay'). This is overlain by Second River Terrace Sands and Gravels. Close to the rivers, the gravels are in turn overlaid by deposits of alluvium (BGS 2010).

## 2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The Parklands Consortium undertook a Historic Landscape Management Plan for Swallowfield Park in 2009, in which the historic development of the park was detailed (Parklands Consortium 2009). The following summary is drawn from their work.

The present Swallowfield House was built in 1689-90 but may have replaced an earlier moated manor house. It was surrounded by extensive landscape gardens which went through a number of phases of development during the 18th - 19th centuries and up to the present day. It may have been the Second Earl of Clarendon who constructed a flood relief and water management scheme within the Park in the last decades of the 17th century.

A major component in this scheme was a canal linking the Blackwater and the Loddon which was fed from a diversion in the Blackwater and regulated by weirs. The management plan suggests that the canal had dimensions similar to the natural river and was built with the objectives of by-passing slow flowing, meandering sections of both rivers and managing potential flood waters in the area (*ibid*).

A documentary reference to a canal was made by John Evelyn, a visitor to Swallowfield, in 1685. However, the canal is first shown pictorially on Rocque's map of Berkshire of 1761. It is then depicted on a succession of maps up to the Enclosure map of 1817 and on an engraving of the house in 1820. On these maps the canal appears as a tri-partite feature, with narrowing 'pinch points' marking each division (Fig 2). On the 1817 map, these divisions are specifically labelled as *Upper*, *Middle* and *Lower Canal* and possibly weirs and/or bridges are shown at the pinch points (Fig 3).

The canal is not shown on the 1847 tithe map and it is assumed that it had been infilled in the intervening years. However, it has been suggested that an attempt to keep the canal working was made by the owners who installed a brick culvert in the canal to channel the water. This was then infilled and grassed-over, the lack of a visible ground feature accounting for the canal's absence on subsequent mapping of the area. The conduit would have only given up working after collapses caused blockages, leading to seasonal flooding along parts of its course.

In order to provide additional details on this canal, as well as other features within the landscape garden, Natural England and Farley Farms asked for further archaeological works to be undertaken. Consequently, a geophysical survey was undertaken by Northamptonshire Archaeology in March 2010 (NA 2010a).





Not to scale

1809 estate map Fig 2



Not to scale

1817 Enclosure map Fig 3

The geophysical survey was deemed only partially successful since the geology of the area was adjudged not to be fully conducive to a gradiometer survey. However, the line of the canal was located and it was concluded that its infilling was probably quite 'clean' in that it did not contain much in the way of brick rubble or similar material. Also, it was concluded that there was no clear evidence for any internal features such as a brick built culvert in the areas examined. However, strong anomalies towards the northern end of the canal indicated the presence of a below ground structure in the area where the enclosure map of 1817 showed a possible weir or bridge (Fig 3).

As part of this fieldwork, a scheme of archaeological trenching was devised to help elucidate the nature of the canal and confirm the findings of the geophysical survey. This report details the results of the excavations.

### **3 THE ARCHAEOLOGICAL TRIAL TRENCHING**

#### **3.1 Methodology**

Initially three trenches were excavated in July 2010 (Fig 4). Trenches 1 and 2 were cut at right angles across the full width of the relict earthwork at its southern and northern ends respectively, whilst Trench 3 was located to expose an extant weir at the junction of the canal system and the River Loddon. A fourth trench, Trench 4, was excavated across the central section of the canal in August 2010. This was to ascertain whether the character of the canal differed in this location, directly in front of Swallowfield House.

Trenches 1, 2 and 4 were excavated using a mechanical excavator fitted with a toothless ditching bucket operating under constant archaeological supervision. Trench 3 was hand dug since its location in woodland precluded the use of mechanical plant.

All features revealed were cleaned sufficiently by hand to identify their nature. Recording was by Northamptonshire Archaeology pro-forma context sheets, supplemented by drawing plans at scales of 1:50 and sections at scales of 1:10 and 1:20. A photographic record was made using black and white negative, colour slides and digital images. All levels taken during the works were related to the Ordnance Survey Datum and the excavations themselves were tied into the Ordnance Survey National Grid using a Leica GPS and tapes.

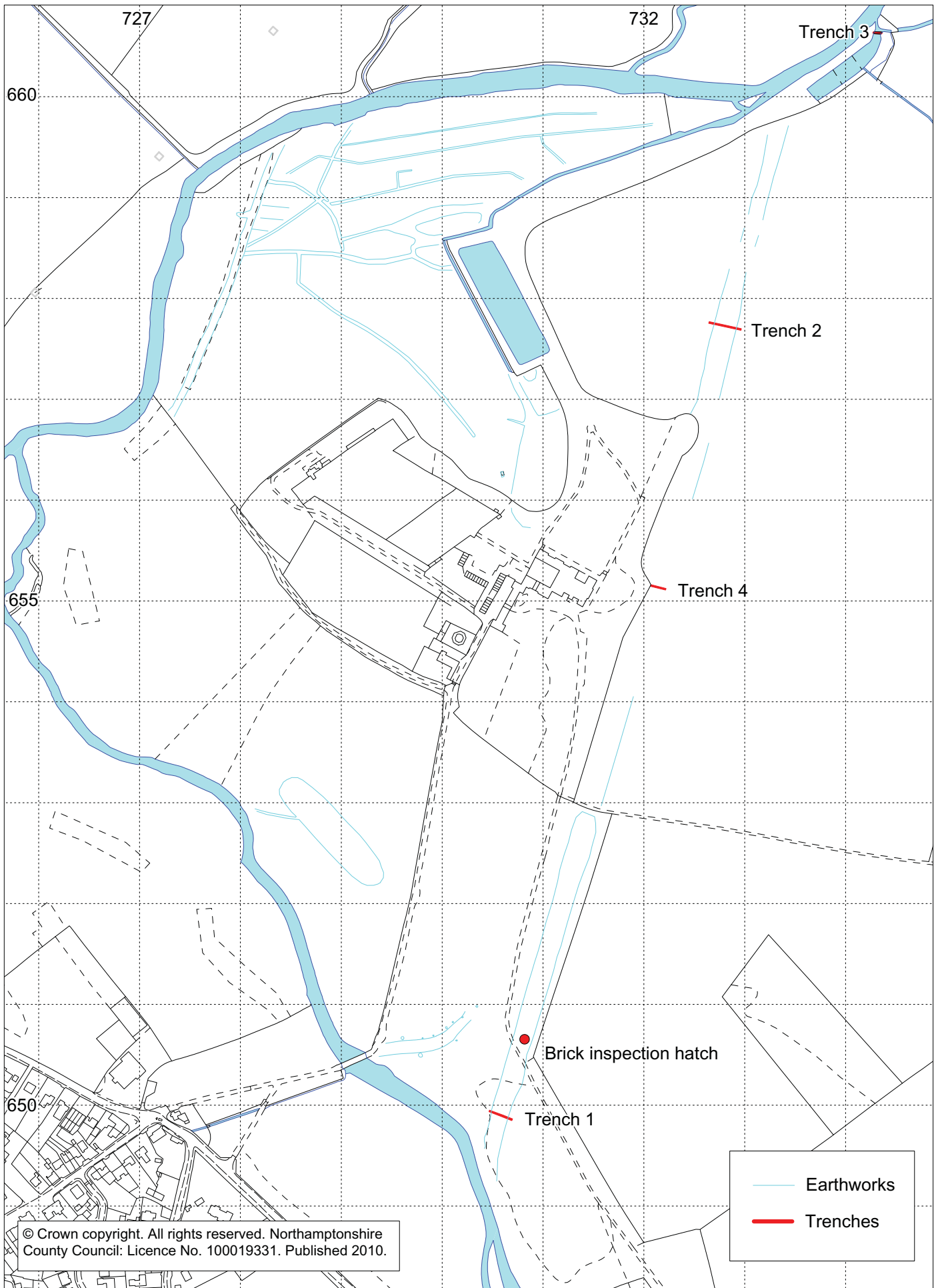
#### **3.2 Summary of results**

The natural geology across the majority of the site comprised orange river terrace gravels and sands. These were covered by a layer of yellow brown sandy silt, of varying depth, which forms the subsoil. The subsoil appears to be alluvially derived and it was into this layer that the canal had been cut. The infilled canal was covered by a layer of topsoil between 100mm – 290mm deep.

The exception to this pattern of stratification occurred at the northern end of Trench 1 where the gravels gave way to the underlying Eocene Clay.

##### ***Pre-canal features***

The earliest features located, comprised two possible ditches in Trench 1. One of the ditches pre-dated the overlying alluvial layer but no further dating evidence was present.





***The canal***

In the three trenches cut across the earthwork (trenches 1, 2 and 4), the canal was identified and shown to comprise a generally flat bottomed ditch, approximately 10m – 15m wide. It had been infilled to a depth of approximately 0.50m and cut into the underlying natural gravels. There was no evidence for any lining, revetments or other similar construction. The sides of the canal were relatively shallow, sloping down at between 20° and 35°.

The infilling of the canal was generally similar at all three locations. A primary, thin fill of grey organic clay represents an accumulation of sediment in the base of the canal. Above this was well sorted grey sandy silt that probably represents the silting of the canal. In two locations a third layer of possible deliberate dumped material was present, representing a final infilling.

In all three locations, land drains had been inserted through the infilled canal, presumably to cope with what was a very wet area, however there was no evidence for a brick-built culvert as had been suggested.

***The weir***

The weir was a more substantial construction. The foundations comprised a 0.65m wide brick base, sitting on solid wooden beams and stone blocks. The sides of the canal were revetted with wooden planks and there was evidence for a possible former sluice gate. The weir had undergone at least two phases of repair and the current wall that sits atop the earlier foundations, appears to be of modern (20th century) construction. The substantial nature of the foundations would suggest that it was built to manage a relatively substantial body of water.

**3.3 Trench descriptions*****Trench 1*** (Figs 5 and 6)

Trench 1 was 25m long and was cut at right angles across the width of the earthwork of the canal, close to its junction with the River Blackwater. At this point the canal is sited at the base of a slope overlooked by the parish church (Fig 7). The subsoil (110) was up to 400mm deep at the base of the slope but thinned to 170mm deep further upslope. A single sherd of highly abraded, possibly prehistoric pottery was recovered from this alluvial layer.

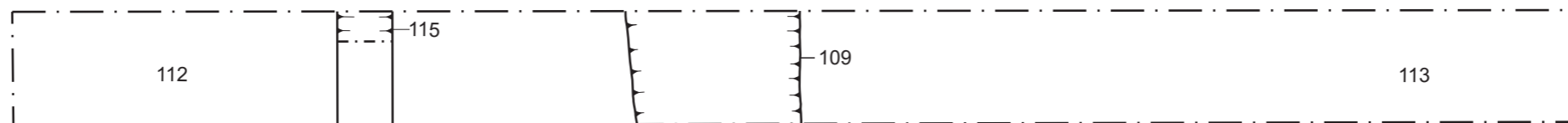
Two ditches were present which pre-dated the canal [109] [115] (Fig 6 Section 1). Both contained silty fills which had either been waterlogged or were water-derived. It is possible that one of the ditches [109] may have been a pre-cursor to the later canal or represent the line of pre-existing watercourse that was broadened to form the canal. Alternatively, the ditches may be earlier, unrelated features possibly connected with the conjectured site of the deserted medieval settlement of Swallowfield, presumed to be nearby (Parklands Consortium 2009, 93).

The canal [107] was at its broadest in this trench, possibly because it was close to the inflow point at the river. It had gravel infilling [111] along its southern edge and sandy silt [104] along its northern edge. These fills predated the final phases of infilling and may have occurred during construction of the canal. There was no similar infilling present in the lengths of canal exposed in the other trenches.

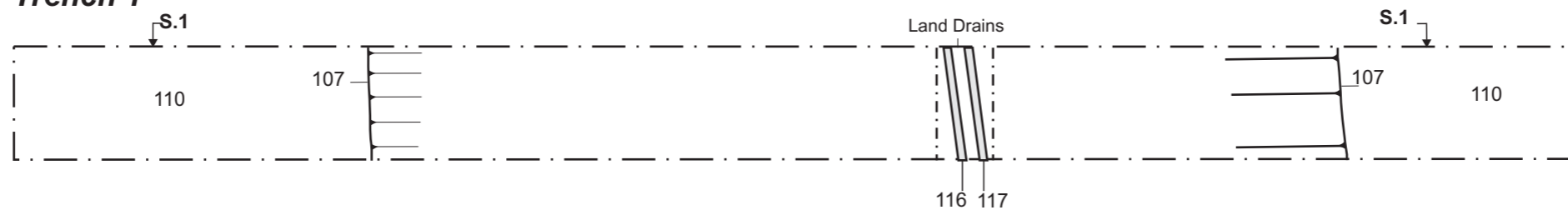




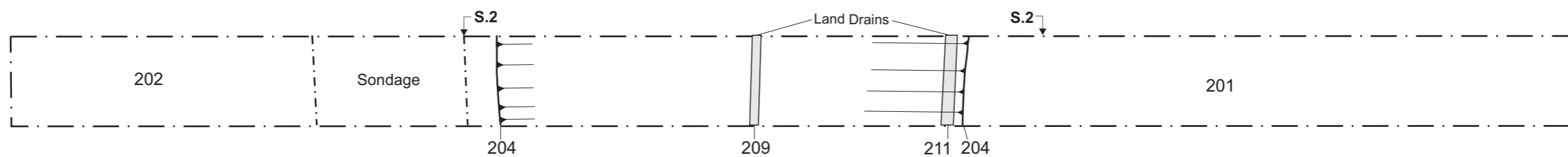
**Trench 1 - Pre Canal Features**



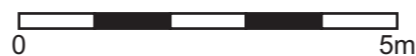
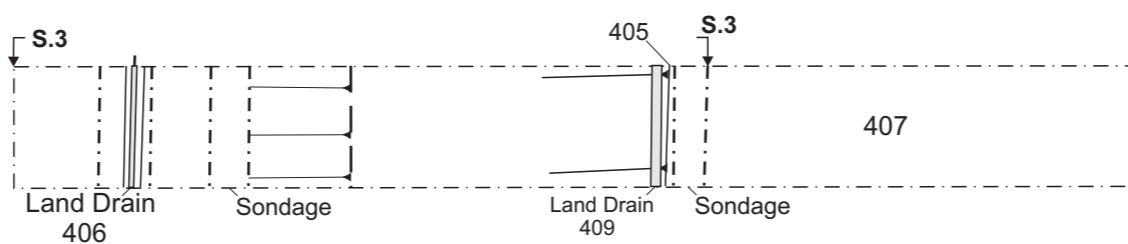
**Trench 1**



**Trench 2**



**Trench 4**



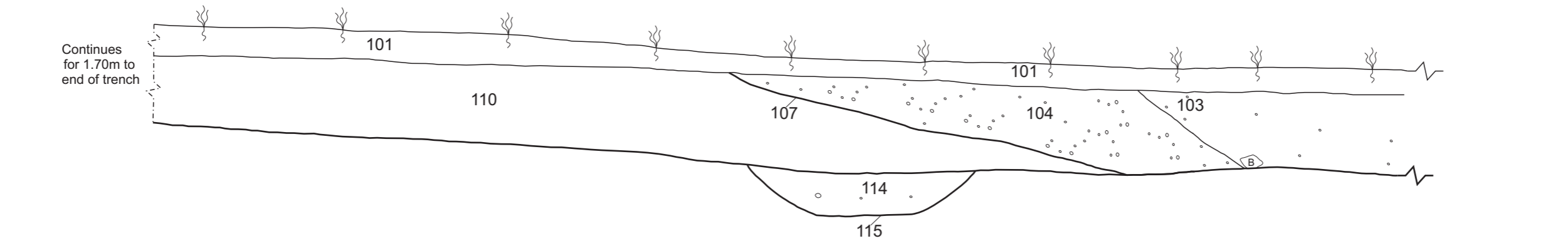
# Trench 1, S1

43.81m aOD

NW

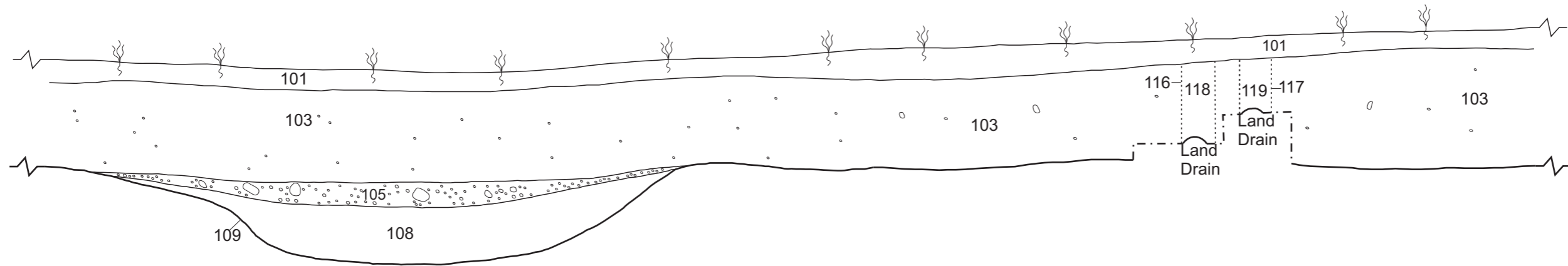
SE

Continues for 1.70m to end of trench



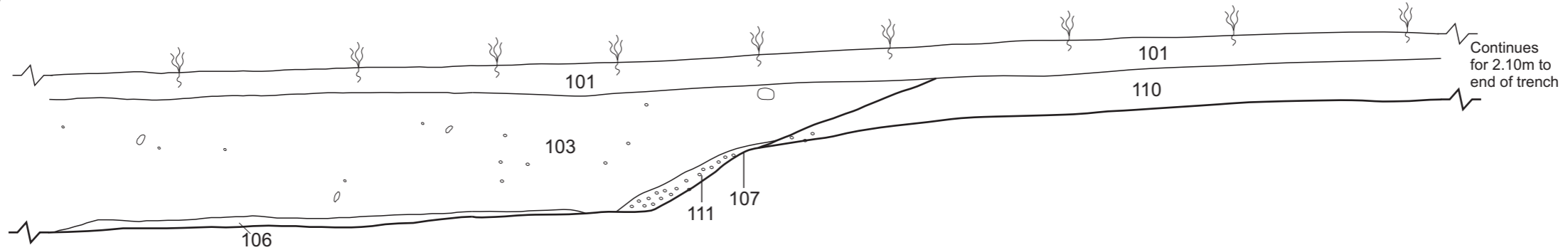
NW

SE



NW

SE





Southern end of canal earthwork, prior to excavation of Trench 1, looking south Fig 7

*Ditches [109] [115]*

Ditch [109] was aligned north-east to south-west and ran across the width of the trench (Fig 8).



Ditch [109] looking north-east

Fig 8



It had a broad U – shaped profile and survived to a depth of 0.45m and 3.00m wide. It cut into the underlying clay natural (112) and had itself been truncated by the overlying canal [107]. The primary fill (108) was grey clay silt, with orange brown staining which appeared to be water-derived. The secondary fill (105) was grey sandy silt with very frequent gravel inclusions. This may have acted as a ‘sealing’ or capping layer for what would have been an otherwise wet or boggy feature. No dating evidence was present.

Ditch [115] had a similar alignment to ditch [109] and also ran across the width of the trench. It was 1.20m wide and 0.22m deep and was cut into the natural clay geology. The ditch had a flat base and sides that sloped at approximately 45°. It was filled with grey clay silt, with orange brown staining similar to (108). It was sealed by the overlying alluvial subsoil (110). No dating evidence was present.

#### *Canal [107] (Fig 9)*

The canal was aligned north-east to south-west. It was 15.65m wide and up to 0.65m deep, at its deepest point. It had been cut into the alluvial subsoil (110) and through into the natural underlying gravels (113) which formed its sides and base in the southern half of the trench. At the northern end of the trench, these gravels gave way to the natural clay geology (112).

The southern side of the canal sloped down at approximately 30° and met the flat base relatively sharply. The northern side appeared to have a gentler angle, sloping down at around 20°.



Southern edge of canal [107], looking south

Fig 9

Primary fill (106) comprised plastic, grey silty clay 70mm thick that contained no inclusions. It formed a thin layer on the base of the canal in its southern half and would appear to be a silting episode. Dirty gravels (107) along the southern edge of the canal may represent slumping along the sides. Along the northern side of the canal was orange brown sandy silt (104) which contained frequent small gravel inclusions. The main fill of the canal (103) comprised brown grey sandy silt, flecked with orange sand. The fill was up to 500mm deep and contained a moderate amount of rounded stones and occasional fragments of brick and tile. One large fragment of ceramic horseshoe field drain, dating from the late 18th – mid 19th century, was present within the fill.

*Land drains [116][117]*

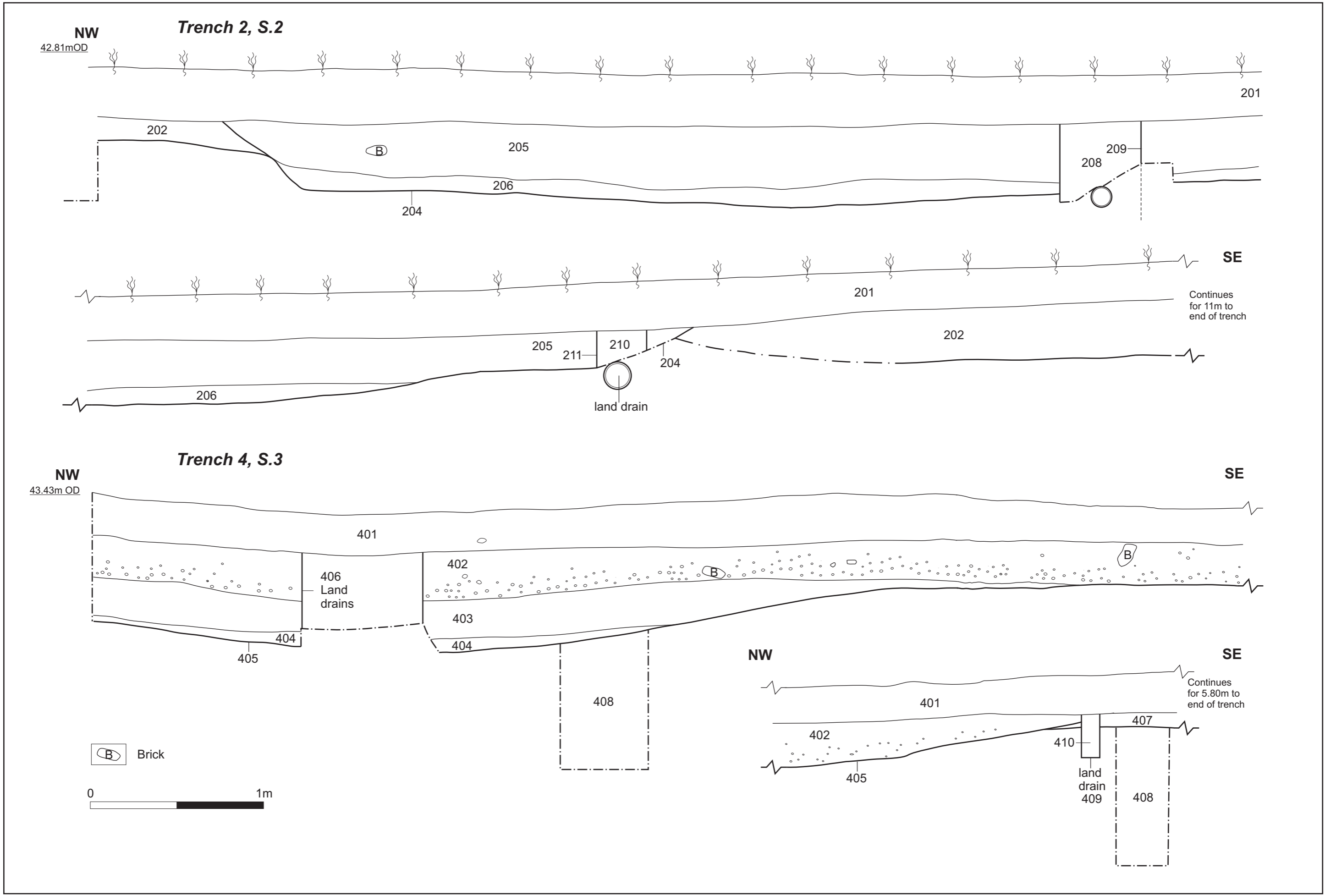
Two clay land drains were present, set within the fill of the canal. They were positioned next to each other, towards the centre of the canal, although set at slightly different depths. In plan, they appeared to have been cut down through infill [103], although this was more difficult to perceive in section. They were cylindrical drains with a bore of approximately 6" suggesting a date in the mid 19<sup>th</sup> century.

**Trench 2** (Figs 5 and 10)

Trench 2 was 32m long and cut across the width of the earthwork canal, towards its north-eastern end. The topography here was flat and the trench exposed subsoil (202) between 250mm – 350mm thick and a topsoil 300mm thick. The canal was the only feature present within the trench. A sondage was dug outside the northern edge of the canal to a depth of 0.80m in order to examine the underlying natural gravels. The underlying Eocene clay geology was not encountered at this depth but the gravels appeared clean and undisturbed and were therefore characterised as natural river terrace gravels.

The canal [204] at this point in its course was narrower than in Trench 1 but appeared to maintain roughly the same profile, comprising relatively shallow sides and a flat base. As elsewhere, the canal had been cut into the alluvial subsoil and down into the natural underlying gravels. The infilling sequence, comprising two separate fills (205)(206) was also broadly the same as elsewhere.

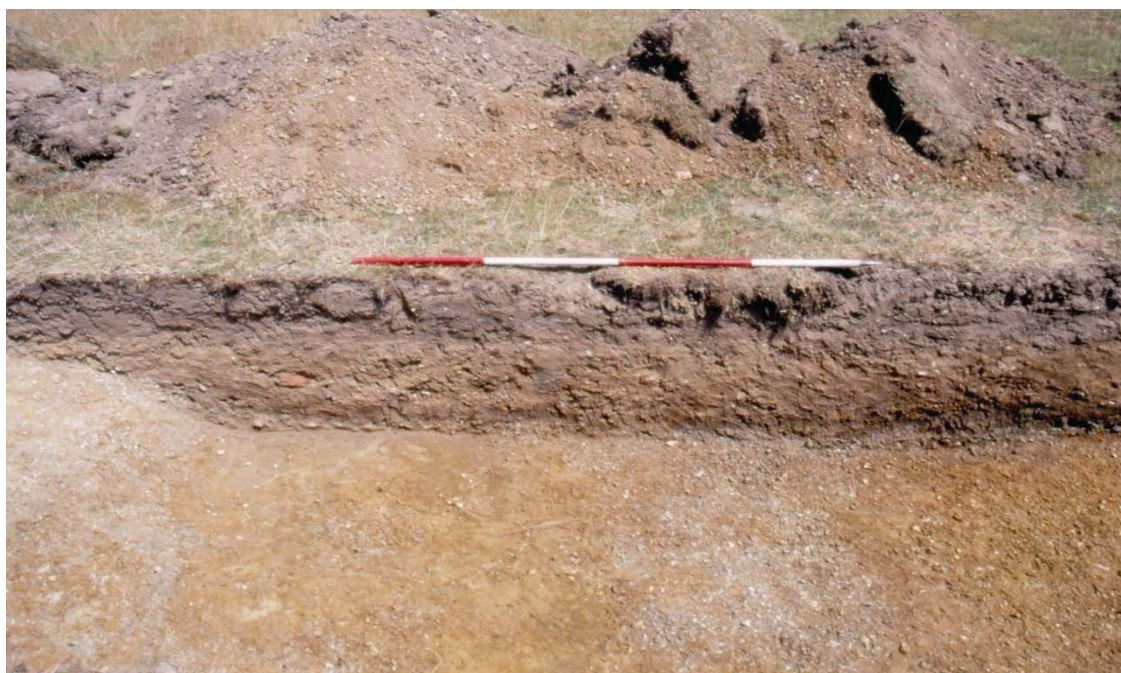




*Canal [204]*

The canal was aligned north-east to south-west. It was 9.50m wide and 0.75m deep at its deepest point. Its southern side was relatively shallow, sloping down at approximately 20° whilst its northern side was steeper, sloping down at approximately 35°.

The canal had a flat base and contained two fills. The primary fill [206] was dark grey brown silty clay with very few inclusions, 100mm thick. The secondary fill [205] was a mid orange grey silty clay with occasional brick and tile fragments. This was 370mm thick.



Northern edge of canal [204], looking north-east

Fig 11

*Land drains [209][211]*

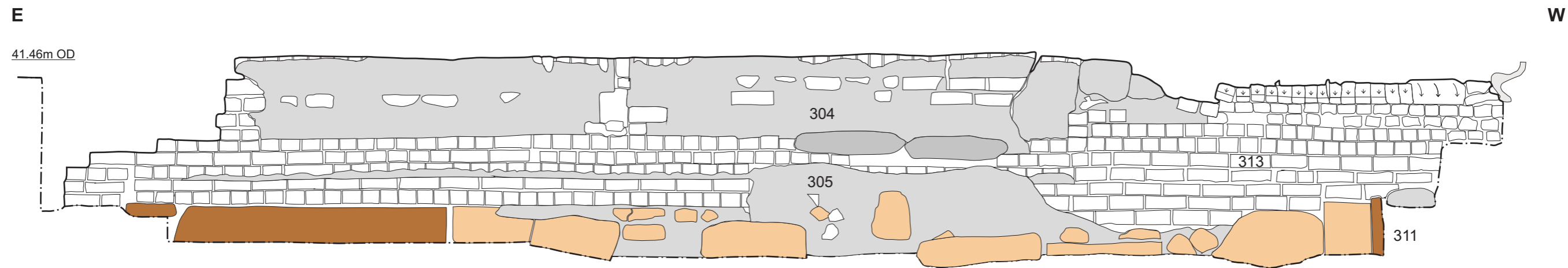
Two land drains had been cut through the infilled canal. As in Trench 1 they were ceramic cylinder drains with a bore of 6". They were set approximately 4m apart, with [209] located towards the centre of the canal and [211] located on its southern edge.

**Trench 3** (Figs 12, 13, 14)

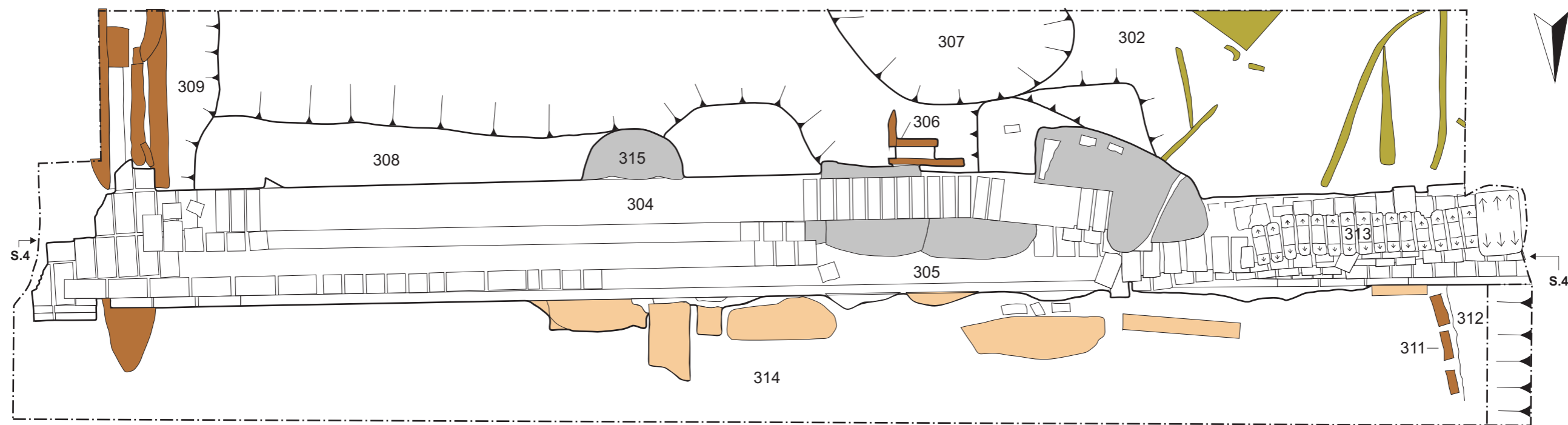
Trench 3 was located in dense woodland, at the junction of the canal and the River Loddon. A low brick wall, thought to be part of a weir, crosses the former canal at this point and hand excavation was undertaken around the structure to expose and record the remains (Figs 14 and 15).


The brick wall [304] proved to be a later 20th century addition or repair set on earlier foundations [305]. The continued use of the weir into the 20th century is probably due to the flooding that occurs when the river is in spate. This was evidenced through repairs to the extreme eastern [303] and western sides [313] of the weir which indicated that the weir had been breached at these two points. Context [313] comprised reconstructed brickwork (Figs 12 and 13). Context [303] comprised plastic soil filled sacks and rubble removed as part of the excavation process (not illustrated).

**Fig 12 Trench 3, north facing elevation of weir [305] S.4**



**Fig 13 Trench 3, plan of weir [305]**



- |  |  |
|--|--|
|  Mortar rendering |  Wooden structure |
|  Concrete         |  Canal debris     |
|  Stone            |  |





Trench 3, wall [304] prior to excavation, looking south-west

Fig 14



Trench 3, after excavation looking east

Fig 15

*Weir foundations [305]*

A raft comprising blocks of stone and wooden beams c0.20m thick had been laid down and brick foundations built on top (Fig 16). The foundations comprised five courses of red brick set in English bond to a height of 0.40m. The unfrosted bricks measured 220mm x 110mm x 70mm (8.75" x 4.25" x 2.5") although there did appear to be some variations amongst the brick sizes. They were bonded with a white mortar. The foundations had been stepped back into the underlying natural gravels, with a height difference of 0.30m between bases on the northern and southern sides.



Trench 3, detail of weir foundations [305] looking south-west

Fig 16

*Possible sluice gate [306]*

On the southern side of the wall, a wooden structure [306] was identified (Fig 17). This comprised the tops of two upright posts, of differing dimensions, and the remnants of a thin plank aligned parallel to the weir. Immediately to the south of these wooden members was a semi-circular hollow [307] measuring 1.10m long by 0.55m wide. It was 0.30m deep and extended beyond the edge of excavation. The collection of features may represent the location of a former sluice gate. The subsidence and cracks in the later wall [304] immediately adjacent to [306] may indicate that the wall is overlying further elements of the structure at this point (Fig 17).





Trench 3, wooden features [306], hollow [307] and later wall [304] looking north Fig 17

*Weir superstructure [313] [304]*

At the western side of the weir, the superstructure comprised an irregular red brick wall [313] sitting on the underlying brick foundations (Fig 18). It ran for c2.50m before joining with later brick wall [304]. Four courses were laid in header bond to a height of 0.36m. The lowest course sat flush with the underlying foundations [305] but the higher courses were disturbed and very irregular. The disturbance may have been due to tree root action but the courses did not appear to be bonded in any way and individual bricks varied in size and type. This would suggest that the wall was not original or at least had been rebuilt. It was topped with a layer of double cant bricks. Some of these appeared to be in situ, whilst others had obviously been replaced. Many had been worn down with water so that the Portland cement stood proud. The use of Portland cement would suggest a date after 1824 for these bricks. At the extreme northern end of the wall, was a large semi-circular white coping stone that appeared out of character with the otherwise brick construction.



Wall [313] looking south-west

Fig 18

Brick wall [304] was 5.5m long and joined to wall [313] with concrete cement. It sat atop the brick foundations in the central part of the canal. It was 0.47m high and constructed of five courses of unfrosted red bricks laid in stretcher bond, with the top row set in headers. The bricks were larger than those used in the underlying foundations. The wall had been faced on both sides with a 5mm thick layer of white mortar. Towards the western end of the wall, the underlying foundations had been replaced by concrete filled sacks, apparently to level up an area that was missing bricks or had sunk (Fig 17). The concrete sacks and brickwork suggest a 20th century date for the wall. A layer of yellow brown clay (308) sloped up to the base of the wall and may be related to its construction.

In the centre of the wall was an opening [Fig 19]. On the north facing side of the wall the gap measured 0.17m x 0.20m and would appear contemporary with the wall, rather than being a later insertion. On the south facing side the gap was larger due to the removal of bricks. This may have been to insert a wooden lintel in the base, the vestiges of which still survived. The presence of rusted bolts associated with the lintel possibly suggests that the opening held a sluice gate to control the flow of water. A semi-circular concrete pad [315] 0.57m x 0.27m is situated directly under the hole on the southern side of the wall and is presumably related.



The eastern end of brick wall [304] had been removed before reaching the edge of the canal. The gap between the wall and the bank and was filled with brick rubble (both whole bricks and brick-bats) and plastic sacks filled with soil. This ad hoc infilling was presumably a modern attempt at damming a breach in the weir this point.



Trench 3, opening in wall [304] and concrete pad, looking north

Fig 19

#### *The canal*

The canal, where it is spanned by the weir, is 8.20m wide and has a flat base. It was infilled to a depth of 0.46m to the south of the weir and 0.76m to the north. As demonstrated in the other trenches, the base of the canal on which the weir foundations were sat, comprised natural gravels.

At the western side of the canal, on the northern side of the weir, the canal bank had been revetted with sawn planks that had been driven into the natural gravels (Fig 20). Each plank was 0.17m wide x 0.05m thick (6" x 2"). The space behind the planks had been packed with soft clay and concreted material. Similar clay packing was observed on the southern side of the canal on its eastern bank. However, no vertical timbers were observed here, instead timber beams laid long-ways may have formed the revetting (Fig 21).

The primary fill of the canal comprised dark blue grey silt (302). It was clearly water derived and contained pieces of wood, timber and moderate brick. This was overlain by an upper fill (301) of mid brown-grey silt, 200mm deep and contained a large number of whole and half bricks, all presumably deriving from various phases in the life of the weir. The fills presumably represent accumulated silting episodes, and are comparable to those seen in the other trenches.





Trench 3, timber revetting on western edge of canal Fig 20



Trench 3, revetting on east side of the canal looking east Fig 21



**Trench 4** (Figs 5 and 10)

Trench 4 was 15m long at cut across the southern half of the line of the canal (Fig 22). The western half of the canal lay within the grounds of Swallowfield House itself and therefore could not be excavated.

The trench was located in the central section of the canal, facing Swallowfield House. The area was overgrown with trees which had been planted by the owner to cover what was a wet and boggy area (Parklands Consortium 2009, 89). The subsoil (407) was 200mm whilst the topsoil throughout the trench was 200mm deep.

The canal [405] and related land drains were the only feature present in the trench. The canal's profile was slightly different to that in the other trenches and may be related to the curve and possibly broadening in the canal depicted at this point in front of the house on contemporary maps. The canal also had an upper layer of deliberate backfill, distinct from the cleaner fills seen elsewhere.

Two sondages were dug to expose the underlying strata. One outside the southern edge of the canal found gravels to a depth of c1.7m below topsoil, where the natural Eocene clay was encountered. It was at this level the water table was reached. A second sondage dug at the centre of the canal demonstrated identical strata.



Trench 4, looking south-east

Fig 22

### *Canal [405]*

The southern half of the canal was exposed to a length of 8.5m. At its deepest point the canal was 0.55m deep. Its southern edge sloped down at an angle of 10° towards a level base before sloping down again towards a slightly rounded base in the centre of the canal.

The primary fill (404) comprised dark grey sandy silt, 90mm thick which was located in the central part of the canal. Above this was a layer of light grey sandy silt, mottled with orange sand with very occasional small gravel inclusions (403). This clean well sorted fill was up to 250mm deep and occupied the entire exposed width of the canal. The final infilling of the canal comprised mid brown silty sand, mottled with orange and grey (402). It contained frequent gravel and moderate amounts of brick, tile and land drain fragments. It was 200mm thick.

### *Land drains [406] [409]*

A pair of clay cylindrical land drains had been laid in the former canal by cutting through infills (402) and (403) and placing the drains towards the base of the canal. Part of a third drain, broken in antiquity, was also present possibly suggesting that failed attempts at drainage had previously been made. All these lay within a single cut [406]. A fourth drain had been dug on the very edge of the canal [409].

## **4 THE FINDS**

### **4.1 THE PREHISTORIC POTTERY by Andy Chapman**

A single small sherd, weighing 3g, from layer (110), is an abraded body sherd, 6mm thick, with an orange-brown core and surfaces and containing frequent inclusions of angular flint, typically 0.5-1.5mm in diameter. The sherd is from a hand-built vessel of prehistoric date, but lacking other diagnostic features it can only be given a broad Bronze Age to Iron Age date.

### **4.2 THE BRICKS by Pat Chapman**

There are eleven complete or partial bricks, of which eight are the standard rectangular bricks including one fragment, one is a capping or coping brick and two are double cant bricks (Table 1).

The rectangular bricks are all plain and unfrosted. There are traces of white lime mortar on some of them. The longest, and thinnest, brick, measuring 230 x 113 x 46mm, is similar in length and breadth to the double cant bricks, maybe suggesting they were used in the same feature. The other bricks have small variations in size, with thickness having the greatest variability, between 57mm and 72mm (see Table 1 for measurements). There are also variations in colour; from orange, orange-brown, pale brown to pink. One of the pink bricks has the majority of the surface, including the broken areas, covered with a black deposit, and also has traces of vitrification at each end. The fabrics are typically sandy, two with frequent gravel and flint, one with gravel and grog inclusions.

The large half round coping brick is 350mm long, made in red-brown sandy clay. Coping bricks were made so the ends projected out over the wall to keep rain clear of the wall. However, it may have been laid horizontally as part of a structure. There is a short header, 45mm high, before the half round which has a maximum height of 130mm. Portland cement, which is grey, was used for this feature, and was 12mm thick between bricks, traces of the adjacent brick remaining adhered to the cement.

Double cant bricks have had two corners cut off diagonally so one stretcher is shorter than the other. They can be used as capping bricks which finish a wall without projecting, or set in the side of a wall or structure. These two bricks are similar, both made in red-brown sandy clay, though not identical in size, and have been waterworn, one quite considerably, leaving the 5mm thick Portland cement standing proud of the brick. The other double cant brick has cement 12mm thick. As these are waterworn, unlike the other bricks, it is possible that they were used underwater.

The rectangular bricks were probably wire cut as there is no frog, a method introduced in the mid 19th century, rather than pressed into a mould (Brunskill 1990, 25). The variations in colour could have been a deliberate choice for visually enhancing the wall or structure, as polychrome effects were popular through out the Victorian period. The use of white lime mortar would have been for further visual effect. The other bricks are more specialised and would have been mould made. Portland cement, used in these bricks, was invented in 1824 and thereafter very widely used as it is stronger than lime mortar, though not always good for the bricks. As the double cant bricks are waterworn they may have been used either in a water management structure or as part of a retaining wall partially under water.

Table 1: Brick dimensions

Context /type	dimensions (mm) (inches)	comment
<b>Rectangular bricks</b>		
111 / canal fill	-- x 113 x 62 -- x 4 <sup>3</sup> / <sub>8</sub> x 2 <sup>1</sup> / <sub>2</sub>	Pale red core, orange surfaces, sandy
205 / canal fill	-----	Fragment, terracotta red, sandy
302 / canal fill	216 x 103 x 57 8 <sup>1</sup> / <sub>2</sub> x 4 x 2 <sup>1</sup> / <sub>4</sub>	Orange-brown, sandy, white lime mortar
	215 x 100 x 57 8 <sup>1</sup> / <sub>2</sub> x 4 x 2 <sup>1</sup> / <sub>4</sub>	One end damaged, thin pale-brown-pink surface, orange body, sandy, frequent gravel and grog up to 7mm, traces white lime mortar
	215 x 100 x 65 8 <sup>1</sup> / <sub>2</sub> x 4 x 2 <sup>1</sup> / <sub>2</sub>	Orange, sandy, frequent gravel and flint up to 12mm
	222 x 100 x 60 8 <sup>3</sup> / <sub>4</sub> x 4 x 2 <sup>3</sup> / <sub>8</sub>	Pink, sandy, grey headers, much black deposit including on broken areas. Traces vitrification on corner of stretcher onto top and header opposite end
	223 x 105 x 72 8 <sup>3</sup> / <sub>4</sub> x 4 <sup>1</sup> / <sub>8</sub> x 2 <sup>3</sup> / <sub>4</sub>	Pink and grey, not entirely square, white lime mortar
	230 x 113 x 46 9 x 4 <sup>3</sup> / <sub>8</sub> x 2 <sup>7</sup> / <sub>8</sub>	Thinner, longer, wider, sandy, pale brown – top smoother with red and black traces, white lime mortar
<b>Coping and double cant bricks</b>		
	350 x 130 /45 x 62 13 <sup>3</sup> / <sub>4</sub> x 5 x 1 <sup>3</sup> / <sub>4</sub> x 2 <sup>3</sup> / <sub>8</sub>	Coping, red-brown, sandy, occasional gravel and flint up to 12mm, short vertical header before curve. Portland cement, 12mm thick with remnants next brick
	232 x 113/60 x 74 9 <sup>1</sup> / <sub>8</sub> x 4 <sup>1</sup> / <sub>2</sub> /2 <sup>1</sup> / <sub>2</sub> x 2 <sup>7</sup> / <sub>8</sub>	Double cant, Portland cement 5mm (1/4inches) thick-top eroded between the cement
	230 x 110/50 x 70 9 x 4 <sup>3</sup> / <sub>8</sub> /2 x 2 <sup>3</sup> / <sub>4</sub>	As above, cement 16mm (5/8) thick

### The field drain

A ceramic horseshoe field drain was recovered from canal fill (103). It is 360mm (14<sup>1</sup>/<sub>8</sub> inches) long and made from orange clay. This style of drain was one of the earliest to be used, usually placed on flat tiles, beginning at the end of the 18th century, and were

not superseded by the mass produced cylindrical drain until the mid 19th century (Harvey 1987, 22). The drain has no water deposits on its inner surface and looks very little used.

Overall, the bricks and the field drain would suggest a date somewhere in the mid 19th century for their use. None have been retained in archive.

## 5 CONCLUSIONS

The presence of the canal was confirmed in all the trenches but its form was perhaps wider and shallower than originally anticipated. None of the trenches along the main length of the canal revealed any traces of revetting or clay lining, and it appears to have functioned by a natural system which utilised the high water table derived from the proximity of the rivers and the impermeability of the clay beneath the gravels. Where excavated, it was an earth-cut feature 10m – 15m wide and 0.50m deep, but this does not preclude it having been larger elsewhere. Evidence for timber and brick revetting of the edges was present in Trench 3 at the outlet weir at the north end, where the canal met the River Loddon. At this location it would have been imperative for the edges of canal to have been maintained, to prevent erosion from damaging the function of the weir.

There is a general fall in the level at the base of the canal from south to north (Table 2). Between Trenches 1 and 4 the fall is 0.12m from 42.59m to 42.47m AoD. The canal falls more sharply further north by a further 0.53m to 41.94m in Trench 2, giving a total fall of 0.65m. The level in Trench 3 is markedly lower again, at 40.51 to the south of the weir and 40.21m to the north, and the height at the top of the weir is 41.40m. This would not have been sufficient to maintain water levels in the canal, and further measures would have been required.

*Table 2: Ordnance Datum heights along the canal*

Trench	Ground level (max)	Level at top of canal infill	Level at base of canal cut
1	43.67	43.24	42.59
2	43.08	42.69	41.94
3	41.81	40.97 (The height of the top of the weir is 41.40m)	40.21 to north of weir 40.51 to south of weir
4	43.52	43.33	42.47

Examination of the historic maps shows two points at which these control mechanisms may have been present. Towards the north end of the canal a structure is shown on the 1809 and 1817 maps crossing the canal between Trenches 2 and 3, at a point where the canal sharply narrows. It is likely that this is a sluice or weir designed to maintain the water levels in the higher portion of the canal to the south. The site of this appears to correspond with an anomaly identified by the geophysical survey thought to represent buried brickwork (NA 2010a). A second pinch point is shown on the 1817 map towards the south end of the canal between Trenches 1 and 4. This appears to have been inserted to allow access across the canal; at which point the canal may have been culverted, possibly including further water control mechanisms. It is worth



noting that on this map the canal is referred to as 'Upper', 'Middle' and 'Lower Canal' along its length, the portions being divided by the pinch points/sluiques described above. As found with the weir in Trench 3, it may be expected that the canal sides at these points were revetted to prevent erosion.

In summary the water levels within the canal would have been at 2 or 3 different levels along its length through a system of sluiques and weirs, allowing the water levels to be maintained without the deep excavations that would be required to keep a single consistent water level along the entirety of the canal's length. Logic would also suggest that there would be a mechanism at the southern end of the canal to control the inflow of water in from the Blackwater. A weir is shown on the 1809 estate plan at the site of a current weir on the Blackwater, and there is also the suggestion of a channel leading from the weir along the east side of the old road towards the south end of the canal. This weir would have allowed the water to be maintained at a high enough level within the Blackwater to feed the canal, presumably via a sluice mechanism.

No direct evidence for the dating of the canal construction was found. Although documentary evidence suggests a canal was present in the late 17th century, the brickwork foundations for the weir in Trench 4 appear to be of slightly later construction. It is therefore possible that some re-modelling of the canal occurred over time. The stratigraphically early ditch in Trench 1 may be the remains of related earlier construction, although no other similar evidence was found in the other trenches.

The canal appears to have silted up naturally, although the latest infilling in Trench 4 may be a deliberate dump either to help level the ground or to simply cover an otherwise wet and boggy area. The brick and tile found within the fills would support a 19th century for the abandonment of the canal, as indicated by cartographic sources.

After the canal had become filled, land drains were inserted. Their size would preclude them being used to channel the canal waters underground and they would simply have been used in an attempt to drain the wet ground. There was no evidence for a brick-built culvert. However, in the stretch of canal immediately north of the track leading from the church, there is a brick built inspection hatch located in the middle of the canal (Figs 4 and 23). A linear parch mark stretches from this through to the entrance of the next field. It is therefore possible that a more substantial conduit exists at this point.



Brick inspection hatch and parchmark looking north-east Fig 23

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