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Medieval Water Management along the Swaffham Bulbeck - Bottisham Pipeline 1992

Cambridgeshire County Council

MEDIEVAL WATER MANAGEMENT ALONG THE SWAFFHAM BULBECK - BOTTISHAM ANGLIAN WATER PIPELINE

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Moated site (RCHM 62), Bottisham Park

cambridgeshire archaeology

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1 ABSTRACT

In 1992 a watching brief was carried out by Cambridgeshire Archaeology in advance of the new Anglian Water Swaffham Bulbeck - Bottisham main. Three areas were selected for close observation on account of their proximity to known archaeological monuments, and cleaned down to the top of the subsoil. Two were without archaeological features, but west of St. Ives Wood a ditch was located and excavated. It seems probable that this was a water channel related to the water management system of the deserted medieval village in Bottisham Park.

2 COUNTY ARCHAEOLOGICAL POLICY

Archaeological planning in Cambridgeshire is essentially based on the County Sites and Monuments Record (SMR). This consists of over 11,630 recorded entries, varying from find spots of individual artefacts to extensive monuments and archaeological landscapes. 250 of these are currently deemed worthy of statutory protection and are now designated as scheduled ancient monuments (SAMs) by the Secretary of State for the Environment.

In Cambridgeshire the majority of archaeological sites and monuments only survive below the ground. These can sometimes be identified from aerial photographs, in which they show up as variations in overlying crops. However, there are many sites which do not show up in this way and whose existence has not been recognised as yet. Thus the SMR is an incomplete catalogue of surviving archaeological remains, to which previously unknown sites are continually being added. For this reason lack of recorded evidence cannot be taken as proof that a particular area is archaeologically sterile.

The need for effective management of the archaeological resource is clearly recognised by Cambridgeshire County Council. It is the Council's policy to safeguard significant archaeological sites, and development on scheduled ancient monuments and other important sites will not normally be permitted (Structure Plan Policy P14/12), whilst the setting of a monument is also a matter which can affect the determination of a planning application. There may be other sites where there is considered to be no overriding case for preservation. Here a programme of field work will probably be required to allow for the excavation and recording of remains with minimal loss of information (Structure Plan Policy P14/13).

Additionally, specific guidelines set out procedures for pipelaying projects:

Phase 1 (Route selection): Notification of proposed route and pipelaying specification to County Archaeological Office; desktop assessment of known archaeological sites on SMR; design adjustments to avoid important archaeological sites.

Phase 2 (After route selection): Field investigation as appropriate, including field-walking, geophysical survey, earthwork survey and trial trenching to include all areas of recorded remains and known archaeological potential which may be affected; full excavation or preservation of newly evaluated sites; sample excavation of remaining sites and archaeological features after soil stripping operations.

Phase 3 (During construction): Provision of recording brief during pipe trench construction; notification by contractors of any finds discovered.

Phase 4 (Post construction): Post-excavation analysis and publication of results.

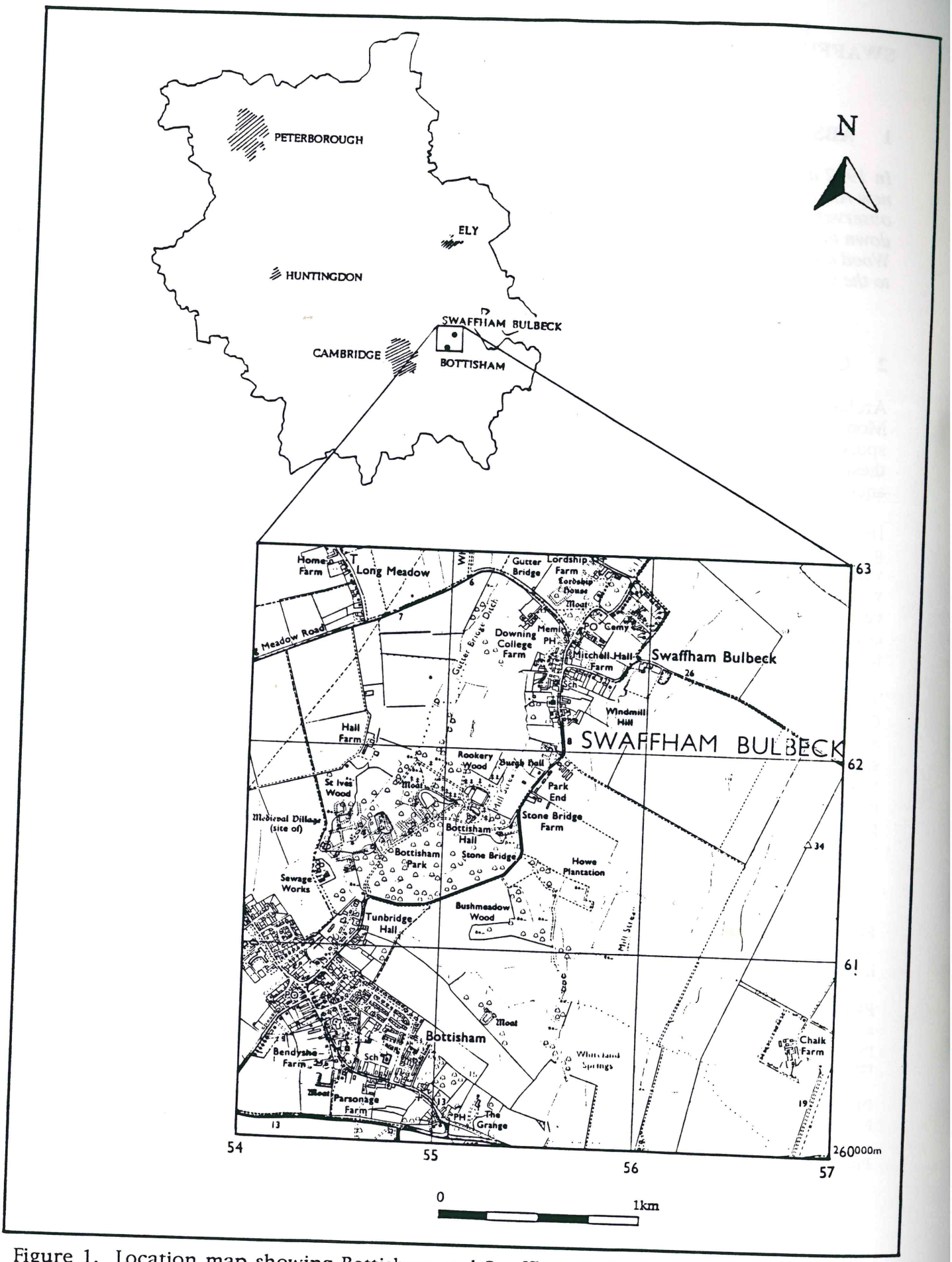

Figure 1. Location map showing Bottisham and Swaffham Bulbeck

3 INTRODUCTION

In September 1991 Anglian Water notified Cambridgeshire County Council Archaeology Section of the proposed construction of a new water main parallel to the existing Swaffham Bulbeck Rising Main, which runs between Swaffham Bulbeck and Bottisham, largely within Bottisham parish. The new pipeline would be 150mm in diameter, laid at a depth of 1-1.5m below ground in a machine dug trench of width 0.5m. In addition, along the length of the pipeline an easement 20m wide would be partially or completely stripped of topsoil to allow for easy machine access and the temporary dumping of subsoil. It was immediately apparent that this would involve disturbance to outlying elements of a well-preserved deserted medieval village surviving within the boundaries of Bottisham Park, and especially to earthworks in the form of a triangular enclosure (SMR 01124f). Anglian Water therefore decided to re-route the main along the western edge of St. Ives Wood (Fig. 2) to avoid damaging these earthworks. A limited programme of fieldwork was still necessary in case archaeological remains were encountered next to St. Ives Wood or elsewhere on the route, and Cambridgeshire Archaeology was contracted to carry out this work.

4 METHODOLOGY

Initial research (desktop evaluation) was carried out using secondary historical sources, SMR information, and aerial photographs of the area, noting the position of any monument that might be directly or indirectly affected by the route of the pipeline.

Certain areas were then defined for detailed archaeological investigation on the grounds that they were in close proximity to known archaeological sites, and archaeological remains were likely to be present. The proposed pipeline trench would destroy any remains to a depth of 1.5m (Introduction, above), whilst the stripping of the easement and subsequent passage of machines might damage ephemeral features present at the top of the subsoil.

It was not possible to undertake fieldwalking to investigate areas of potential interest prior to construction work because relevant fields were still under crop. The first stage of fieldwork was thus to strip the topsoil down to the top of the subsoil with a mechanical digger supplied by the contractor. Generally it is at the interface between topsoil and subsoil (especially in heavily ploughed fields), that archaeological remains can be most easily seen. Where features were identified, small scale excavation was conducted.

5 BACKGROUND INFORMATION

5.1 Geology and topography:

The pipeline crosses an area of chalk marl, between the fen edge c. 1 mile to the north west, and the chalk upland to the south east. To the southwest of Downing College Farm, (moated site 01123a, Fig. 2), it crosses a small stream and associated narrow tongue of peat. The area is uniformly lowlying, being entirely below the 10m contour.

5.2 Prehistoric and Roman Periods:

A considerable number of monuments, many now ploughed out, demonstrate human activity in the Bottisham area from at least the Bronze Age. In Bottisham Parish alone the Royal Commission Inventory records the presence of 12 single barrows and ring ditches, plus one large barrow group (RCHM, 1972 pp. 11-13). A number of these sites have been excavated and although the work was not recent, useful dating evidence was recovered. Flint flakes, scrapers, small fragments of Bronze Age pottery, and cremated bones were found in one barrow west of Bottisham Heath Farm (RCHM 45; TL 5702/5808) and a small inverted Bronze Age collared urn containing two cremations was recovered from a barrow on a hilltop,

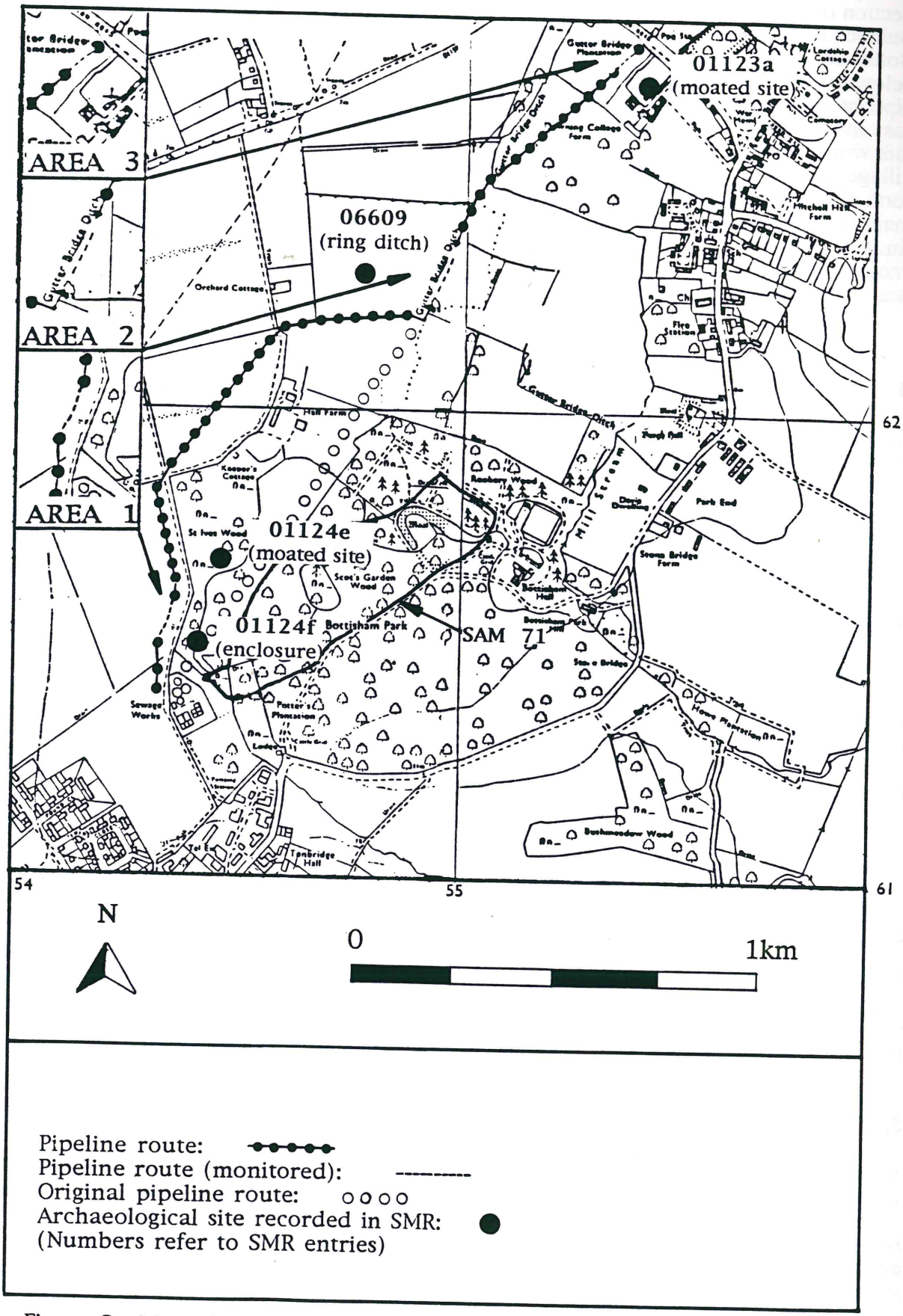

Figure 2. Map of pipeline route and known archaeological sites

possibly that on Allington Hill (RCHM 49; TL 5801/5874). This cannot be treated as unequivocal evidence of settlement in the immediate locality (p.10 below), but is indicative of prehistoric activity and suggests that other prehistoric features might be present.

There is much clearer evidence of settlement itself from the Romano-British period: on the fen edge there are Roman "lodes" or canals at Swaffham Bulbeck and Lode, and at Long Meadow a large Roman building and finds of Roman coins and pottery (Taylor, C, 1973, Fig. 3). Away from the fen, there is a Roman settlement near Allington Hill, and coin and pottery evidence from Bottisham itself. At Reach Bridge in nearby Swaffham Prior the ground plan of an impressive villa is known, but well dispersed small farm estates seem most typical of Romano-British settlement in the area (Robinson, 1992).

5.3 Anglo-Saxon and Medieval Periods:

Bottisham is listed in Domesday Book in 1086 as a single 10 hide manor, but Taylor believes that a number of satellite settlements within the parish, first referred to in 12th and 13th century documents, may in fact date to the Saxon period. These include Lode hamlet, Long Meadow, and Anglesey, with its potentially early Anglo-Saxon tribal name and probable fifth century pagan burial (Taylor, C, 1973). Bottisham itself was probably much earlier than the first early 11th century reference, whilst Swaffham Bulbeck also has a potentially early tribal name (the Swabians' ham). A rich Anglo-Saxon cemetery and a settlement are known from the neighbouring parish of Great Wilbraham (Taylor, A, 1985).

By the medieval period it now seems that there were seven or eight settlements dispersed around Bottisham Parish alone. The present village seems to have coalesced from three distinct parts spaced along a ridge, whilst the deserted medieval village (DMV) in Bottisham Park (p.10 below and Fig. 3) may be the lost hamlet of Angerhale (Taylor, C, 1973, p.235). Waterways in the fens, especially "lodes", gave much potential for waterborne traffic, and nearby villages such as Reach served as ports. Many of the local small rivers would have been navigable, and the importance of water in medieval communication is perhaps easily overlooked.

5.4 Post-medieval:

The survival of earthworks related to the DMV in Bottisham Park is largely the result of later patterns of land use. In the 17th century, it is likely that the former Bottisham Hall was surrounded by a small garden not extending beyond its moat (RCHM, 1972). During the 18th and 19th centuries an extensive area of parkland was developed covering about 46 hectares and including an avenue, tree belts and plantations. This was accomplished in several phases of alterations and additions. Sometime after the rebuilding of the hall on a new site in 1797 the park was extended to the north, west, and southwest to its present limits, taking in much of the known area of the DMV for the first time. The park has remained an area of pasture and woodland to the present day, with the earthworks within undisturbed by cultivation.

6 RESULTS

6.1 Desktop evaluation: known archaeological sites adjacent to the route of the pipeline:

MEDIEVAL MOATED SITE; TL 544/616; SMR 01124e; RCHM 65;
AREA 1, FIG. 2.

This site lies partly in St. Ives Wood (Fig. 3) and consists of a rectangular enclosure bounded by a ditch, enclosing 0.2 hectares. The ditch measures 7.5m wide and 1.2m deep, and was dry when examined in October 1992. To the south is another enclosure, attached to the first and of similar size, also bounded by a ditch that was likewise dry. Positioned to the south of RCHM

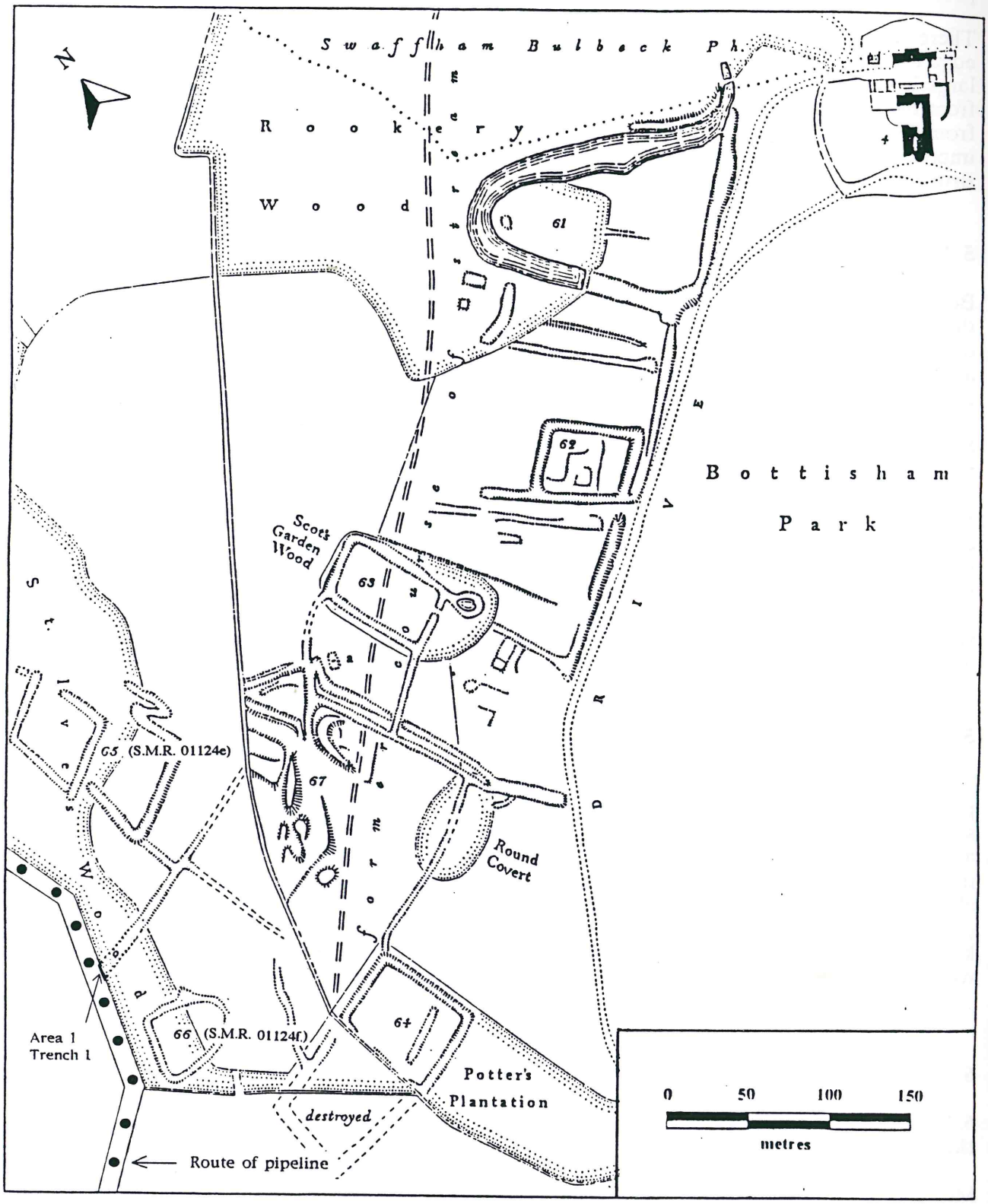

Figure 3. Plan of earthworks in Bottisham Park (RCHME Crown Copyright)

65 is what appears to be a system of ditches (Fig. 3), one of which extends into St. Ives wood, where any evidence above ground in the form of earthworks is now lost.

MEDIEVAL/POST MEDIEVAL ENCLOSURE; TL 544/615; SMR 01124f; RCHM 66; AREA 1, FIG. 2.

An enclosure situated 155m to the SSW of RCHM 65. Most of the site is contained within St. Ives wood (Fig. 3) and is roughly triangular in shape. It is bounded by a ditch again dry when visited, 4.5m wide and 0.6 - 1.0m deep. The enclosed area has no known internal features.

Both of these sites appear to be elements of a deserted medieval village (DMV) that extends eastwards across Bottisham Park. Most of this area is protected as a scheduled ancient monument (SAM 71, Fig. 2). It is of particular interest because of the preservation of a complex system of ditches: altogether four interlinked moated sites can be seen arranged in line along the valley (Taylor, C, 1973).

BRONZE AGE (?) RING DITCH; TL 5473/ 6226; SMR 06609;
AREA 2, FIG. 2.

The ring ditch is approximately 55m in diameter. It is possible that the ditch is all that remains of a ploughed-out barrow (burial mound) although its size may indicate that it functioned as a henge or Neolithic ceremonial monument.

MEDIEVAL MOATED SITE; TL 554/627; SMR 01123a;
AREA 3, FIG. 2.

Downing College Farm is enclosed by the fragmentary remains of a moated site. The Inclosure Map (1800) provides evidence of a rectangular enclosure surrounded by a wet ditch, but the moat has been heavily ploughed within living memory (RCHM, 1972), and today a shallow depression to the southwest of the farm is all that can be clearly observed.

C17/18 WATERMEADOWS; TL 550/625, 551/625, FIG. 2.

A series of artificial channels or leats, carrying water from the Mill Stream to irrigate pasture east of Gutter Bridge Ditch, then draining into the Ditch; used in the late winter to stimulate the growth of early spring grass (Taylor, C, 1987).

6.2 Fieldwork:

It was decided to carry out detailed observation in three areas along the pipeline route (Fig. 2):

AREA 1. West of St. Ives Wood, close to SMRs 01124e and 01124f, where the pipeline skirts the deserted medieval village.

AREA 2. East of SMR 06609, where the pipeline runs within 100m of the ring ditch.

AREA 3. West of SMR 01123a, where the pipeline runs within 200m of the Downing College Farm moated site.

The chosen areas were each 25m long, totalling 3.75% of the length of the 2km pipeline. The area of C17/C18 watermeadow (above) was not closely investigated.

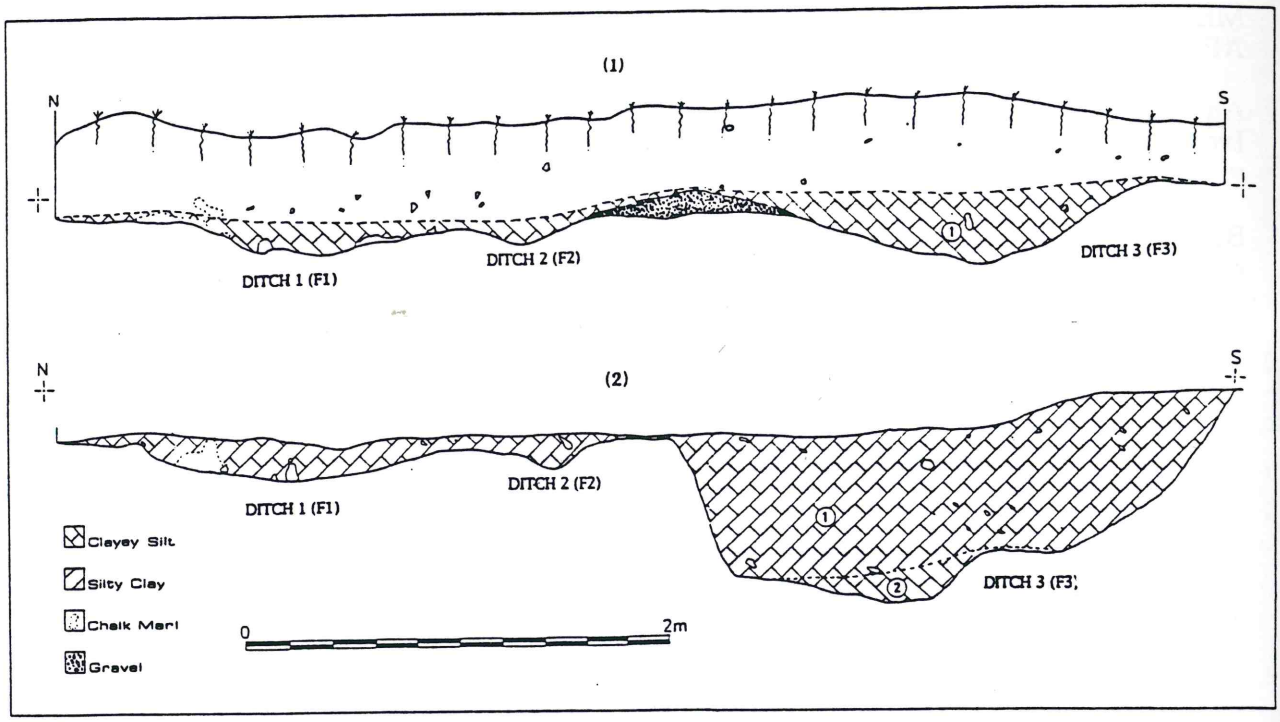

Figure 4. West-facing sections of excavated features, Area 1
(1) East side of trench
(2) West side of trench

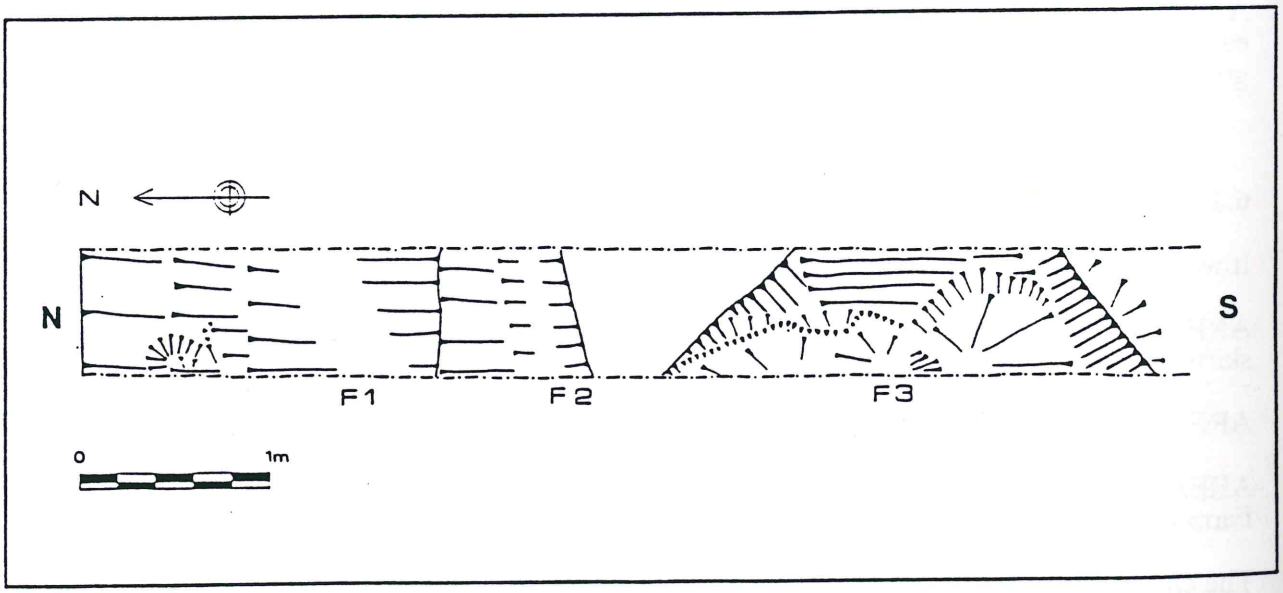

Figure 5. Plan of excavated features, Area 1

AREA 1 (FIG. 3).

A ditch was uncovered 50m from the corner of St. Ives Wood, directly in line with the ditch shown on the RCHM plan of the deserted medieval village, moving in a south/westerly direction away from the St. Ives Wood (Fig. 2).

Excavation revealed that this ditch had three cuts to it, all of which were single phase (Fig. 3). Ditch 1 (F1) is a fairly shallow scoop 1.3m across and 0.2m deep; Ditch 2 (F2) a small gully 0.4m across and 0.1m deep; Ditch 3 (F3) a larger ditch 2.1m across and 0.3m deep. All measurements above relate to section 1 (Fig. 4), whereas section 2 shows a dramatic increase in the depth of F3, from 0.3m to 0.8m. The reason for the increased depth is uncertain as the width of the trial trench could not be increased, so interpretations must remain tentative. However, the direction of the ditches in plan (Fig. 5) seems to indicate that F1and F2 would have separated from the larger ditch F3 at some point further west.

The primary fill of F1 and F2 was a clayey silt, possibly waterborne erosion material from the moated system of the DMV. The clayey silt of F3 was a secondary fill, the primary fill being a silty clay or colluvial deposit. Colluvium derives from hillwash.

AREA 2 (FIG. 2).

When the topsoil was removed down to the top of the subsoil no archaeological features were revealed. This area was examined in order to record any features that might be related to the ring ditch; within the limited area of the pipeline easement, none was present.

AREA 3 (FIG. 2).

Removal of the topsoil down to the top of the subsoil again failed to reveal any archaeological features in the width of the pipe easement, or any finds that might relate to the Downing College Farm moated site.

7 DISCUSSION

The stripping of Area 2 was potentially interesting because of the possibility that Bronze Age features of the same period as the nearby ring ditch might be uncovered. It has sometimes been argued that barrows and ring ditches were predominantly sited away from areas of settlement and cultivation, but in East Anglia their concentration on easily farmed lighter soils and along the fen edge does not suggest any serious intention to choose isolated sites away from other activity (Taylor, A, 1981). The absence of features in Area 2 meant that no additional contribution could be made to this issue. No positive evidence for Bronze Age activity was found, but the area of the pipeline easement investigated was necessarily small, and features could exist elsewhere in the locality.

In Area 1 (Fig. 3), it would appear that the ditch uncovered was one element of the system of moated sites associated with the deserted medieval village in Bottisham Park. These moated sites are of particular interest because of the way in which they are interlinked, with the natural drainage being diverted and complex waterworks constructed to carry water to where it was needed. Taylor refers to "four moated sites arranged in a line on the side of a valley..." which, by "...an accident of preservation, ...still retain a wonderful system of ditches by which water was taken from the stream to fill each moat in turn and then returned to the stream" (Taylor, C, 1973, p. 127). These are the four sites referred to by RCHM as 64, 67, 63, and 62 (Fig. 3, and RCHM, 1972, p.15). Water was drawn from the original course of the stream to fill the ditches of moated site 64 in the southwest corner of the complex, and eventually returned via site 62 in the north east. Sites 65 and 66, the two lying closest to the route of the pipeline, seem to have been detatched from the main complex, being fed by "small tributary streams" (RCHM, 1972, p. 15). The ditch discovered during pipeline work along the easement in Area

1 appears to be part of this latter system, allowing water to be channelled around moated site 65.

It is becoming increasingly clear that parishes may have a large number of moated sites (Swaffham Prior, adjacent to Swaffham Bulbeck, has at least six (RCHM, 1972)), and that they should not be regarded as isolated features within the landscape. Complexes of moated sites are found elsewhere of the county, as at Town Farm, Whaddon, where the last of a series of eight survives (Malim, T, 1990). Most such sites seem to date from the thirteenth and fourteenth centuries, and typically surround the homes of local lords and wealthy farmers such as the de Bretton family at Burrough Green (Taylor, C, 1973). A number of theories have been advanced to explain their function: they may have been for defence in times of trouble, for protection against wild animals, or have served as fish ponds or convenient sources of water for putting out fires. However, the most compelling suggestion is perhaps that they developed into symbols of prestige or fashion as householders attempted to show off their prosperity by imitating the moated castles of the upper ranks of society (Taylor, C, 1973). Whereas today the vast majority use water only for very functional purposes, in the past many householders, by no means at the apex of medieval society, may have had the resources to manage water as a means of social display. It seems appropriate that work on a modern water management system should have provided the opportunity to increase our knowledge of medieval patterns of water management.

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GLOSSARY OF ARCHAEOLOGICAL TERMS.

Anglo-Saxon. The period dating between the withdrawal of the Roman legions in 410 and the Norman invasion of 1066. Within this period several ethnic groups from northern Europe vied for control of the British Isles, including the Angles, Saxons, Jutes, Danes, and Norwegians. The latter two groups are collectively known as the Vikings and became involved in British politics from the eighth century, later than the others. The Vikings were successful in occupying a large part of the north and Midlands of England, before providing a King (Cnut) for the whole of England. For most of this time England was divided up into several kingdoms until Saxon resistance to Viking incursions led to the unification of England under Aethelstan and Alfred.

Artefact. Any object made by people. Generally, this word is used for finds such as pottery, stone tools, or metal objects, but it can be used in a much wider context in that the landscape we have today is a product of human activity and is thus an artefact itself.

Bronze Age. Prehistoric period c. 2000 - 700 BC when bronze was used for many types of tools and weapons.

Cropmarks. Archaeological features below the ploughsoil can affect the growth of sensitive crops through moisture retention or loss. For example, the growth of cereal crops over buried ditches or pits will encourage rapid growth leading to tall, dark coloured plants, whereas walls and roads will lead to stunting and faster yellowing of the crop. These discrepancies in crop growth can be easily detected from the air, and by taking photographs the cropmark patterns can be plotted onto maps and given provisional interpretation.

DMV. Deserted medieval villge. For various reasons medieval settlements were sometimes abandoned or shifted their location. Earthworks of the old village can often be seen showing the position of house patforms, crofts, lanes, and ponds.

Earthworks. Archaeological features that are still extant above ground as banks and ditches, platforms, roads, ponds, canals, etc. They were either constructed of soil or became covered by it at a later date, leaving the archaeology showing in relief.

Enclosures. An area defined by a continuous surrounding ditch. These may be enclosures around human settlements, fields, or paddocks for stock. Rectilinear enclosures are ones with straight sides and corners, whilst curvilinear enclosures are ones with rounded sides.

Fieldwalking. Technique of archaeological survey. Walking over ploughed and weathered soil, an experienced observer can collect many ancient artefacts, and by plotting the distribution of such find spots on maps an idea of the use of the landscape can be built up for each period of the past.

Geophysical Survey. Investigation of changes occuring in the magnetic and electrical characteristics of the soil, which can often be induced by human activity.

Iron Age. Prehistoric period c. 700 BC - AD 43 when iron was used extensively for tools and weapons. The period traditionally ends with the Roman invasions of AD 43 but in fact there was a considerable time of adjustment after this date when the Iron Age way of life continued with little change from Roman influence.

Medieval. Historic period that begins with William the Conqueror's invasion in 1066. Post-Medieval is generally considered to date from 1500.

Moated site. In the medieval period moated enclosures proliferated. An area surrounded by water filled ditches would leave a platform or island on which to build a house. There were several reasons for this: defence in times of lawlessness, a ready source of water for the needs of the house and an anti-fire measure, a handy reservoir for fish and water fowl, and a response to the demands of fashion and prestige. These moated sites were often manors, and occasionally old manor houses are still to be found enclosed by their moat.

Neolithic. Prehistoric period c. 3500 - 2000 BC when farming and pottery were introduced. Stone tools of fine workmanship were produced and exchanged over long distances, but before the use of metals.

Ridge and Furrow. Medieval cultivation techniques led to a phenomenon of corrugated fields. Strips of land were allotted to individuals and a furrow was left between one person's strip and the next, leading to a corrugated ridge and furrow effect. Ridge and furrow shows up as cropmarks on air photographs and more rarely as earthworks in pasture fields.

Ring-ditch. A continuous circular ditch which is all that remains of a ploughed out round barrow, or the drainage ditch (eavesdrip gully) that surrounded a round-house.

Roman. Historic period AD 43 - 410 when much of Britain was part of the Roman empire. The term **Romano-British** is now widely used to describe the people of this period, as few were Roman themselves, but they were a provincial manifestation of the empire developing in a unique way. AD 410 was the date the legions were withdrawn, but the Romano-British culture continued for some time into the 5th century in tandem with Anglo-Saxon migration.

Round barrow. A Bronze Age burial mound formed by heaping up earth over a central burial. They have several forms, including numbers of encircling ditches, and can have many burials in them. The first burial is known as the primary burial , subsequent ones are referred to as secondary burials. It has often been suggested that these burial mounds are a way of marking tribal territories, and they are often placed in prominent locations. They can occur in clusters known as "barrow cemeteries".

Water meadow. Area of pasture in which artificial channels have been cut to allow the field to be flooded with water. Used particularly to stimulate early season growth of grass.

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