



**ARCHAEOLOGICAL INVESTIGATIONS AT CANONS
ASHBY, NORTHAMPTONSHIRE**

*WALKOVER SURVEY AND
PALAEOENVIRONMENTAL SAMPLING REPORT*

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NON-TECHNICAL SUMMARY

This report presents the results of a walkover survey and programme of palaeoenvironmental sampling at the Stew Ponds (former medieval fish ponds) at Canons Ashby, Northamptonshire. The investigation was undertaken as part of a wider feasibility study by the National Trust to examine whether the Stew Ponds can be successfully de-silted and reinstated.

The Stew Ponds at Canons Ashby form part of the Scheduled Ancient Monument of Canons Ashby (Heritage List 1015534) and Scheduled Monument Consent (SMC) was received for this work. There were originally three ponds, however the southern pond has been completely in-filled and now exists in an area of agricultural land which is ploughed regularly. The remaining two ponds were heavily silted and vegetated with mature trees and aquatic plants, with open water being present only in the northern pond.

The walkover survey indicated that the main source of water for the ponds is likely to have been a leat from the former moat to the north-west. Possible traces of outflow leats associated with the two northern ponds were noted, though no structural evidence was visible. The medieval priory features, including the fish ponds and moat, were incorporated into the post-Dissolution garden of John Cope, established in 1538. Other garden features surviving as structures and earthworks include a raised walkway, a prospect mound, a walled garden and a possible building platform. Though around a third of the raised walkway has been levelled in the 20th century, the surviving features form part of one of the earliest post-medieval gardens identified in the country, and as such are of national significance.

The palaeoenvironmental coring was completed in conjunction with agb Environmental Ltd. In total 14 coring locations were targeted, spread out evenly between the two ponds. A series of samples were taken from each location, either at 0.5m increments or where a sediment change occurred. The samples were then considered in terms of location, depth and sediment character in consideration for pollen and botanical macrofossil analysis. In total, six samples were submitted for pollen analysis and four for plant microfossil analysis. The preservation of organic remains proved to be good in both the pollen samples and the plant macrofossil samples, with most of the identified taxa prevailing from wetland and aquatic habitats, such as sedge, reeds/rushes, water plantain, milfoil, and pondweed, all of which indicate slow-moving or stagnant water. These remains indicate that an open grazed/cultivated landscape was prevalent within the immediate landscape during the time that the ponds were silting up, with a strong indication of agricultural activity.

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1 INTRODUCTION

This report presents the results of a walkover survey and programme of palaeoenvironmental sampling at the Stew Ponds (former medieval fish ponds) at Canons Ashby, Northamptonshire. The investigation was undertaken as part of a wider feasibility study by the National Trust to examine whether the Stew Ponds can be successfully de-silted and reinstated.

The Stew Ponds at Canons Ashby form part of the Scheduled Ancient Monument of Canons Ashby (Heritage List 1015534) and Scheduled Monument Consent (SMC) was received for this work. There were originally three ponds, however the southerly pond has been completely in-filled and now exists in an area of agricultural land which is ploughed regularly. The remaining two ponds were heavily silted and vegetated with mature trees and aquatic plants, with open water being present only in the northern pond.

A walkover survey was undertaken to identify the extent of surviving earthworks associated with the ponds and their water supply system, and to understand the landscape context of the ponds. The palaeoenvironmental coring was completed in conjunction with agb Environmental Ltd, to identify whether the pond silts had the potential for preserving palaeoenvironmental data associated with the medieval to post-medieval use of the ponds. A series of samples was taken for pollen and plant macrofossil analysis.

2 LOCATION, GEOLOGY AND TOPOGRAPHY

The hamlet of Canons Ashby, comprising the Church, Canons Ashby House, Church Cottage, and a small row of cottages, lies 18km south-west of Northampton on the former B4525 to Banbury road. The hamlet occupies a slight spur in the landscape, with the underlying geology consisting of Jurassic and Cretaceous Clay (British Geological Survey 2014). The site of the Stew Ponds is located to the south-east of St Mary's Church at Canons Ashby, Northamptonshire (NGR: SP 5793 5037; Figure 1).

The site lies within the boundary of the scheduled monument: Canons Ashby Priory and Village (Heritage List ID: 1000488) and encompasses an area of 0.7ha, bounded by hedging and fencing on all four sides. The site comprises two ponds, which are likely to have their origins as fishponds that served the Augustinian priory. The northernmost pond still holds water and was subject to some vegetation clearance work and de-silting sometime in the early 2000s, with the southerly pond made up of boggy ground. A third pond once existed, but is now only present as a slight depression in the landscape to the south of the existing ponds, part of an agricultural landscape that is regularly ploughed. The existing two ponds are currently obscured by emergent aquatic plants, with the area surrounding the ponds comprising a mosaic of rank grassland, nettles, brambles and other tall ruderals typical of disturbed and nutrient-rich ground conditions (Plate 1).

3 METHODOLOGY

3.1 Aims

The aims of the work were as follows:

- To determine, as far as possible, the former profiles of the ponds, to allow the volume of silt to be calculated, and to guide any subsequent de-silting activity
- To determine the nature of the silts and whether they are of historic and/or palaeoenvironmental interest
- To determine whether there is any contamination in the silts which may have an implication in the removal/storage/disposal of these deposits
- To determine the presence of any structures or landscape features associated with the ponds
- To fully record and understand the significances of the site, so its historic and natural values can be accounted for in any grant-funded work

3.2 Methodology

Walkover Survey

The walkover survey was undertaken on the 29th October 2014 by Rowan May. The 1992 RCHME survey and features shown on historic maps were digitised onto a GIS, and plans produced at a scale of 1:1000, which were used as a base map in the field. These were annotated with sketch plans, and the locations of features were recorded using a hand-held GPS, accurate to 5m. An updated survey plan has been produced using information from the RCHME survey and observations made during the walkover. This is reproduced in Figure 2. Digital photographs were taken of all features, where possible. The weather conditions at the time of survey comprised light rain. A gazetteer of features is given in Appendix 4.

Palaeoenvironmental Coring

In total 14 coring locations were targeted, with seven in each pond (Figure 3). Sample locations 001 and 004 in Pond 1 required the use of a pontoon in order to access deposits that were overlain by water that was too deep to safely stand in. Each sample location was recorded with a handheld Garmin GPS device.

The extraction and collection of sediment samples was overseen by agb Environmental. A 'Dutch' auger was used to collect the samples (Plate 2), which were retained by agb Environmental for contamination analysis. Sub-samples were collected for palaeoenvironmental purposes at increments ranging between 0.5m and 1m, depending on the amount of sediment collected, or where a sediment change occurred. A sediment log was maintained for each auger location and the depth of all samples was recorded.

The palaeoenvironmental sub-samples were considered in terms of location, depth and sediment characteristics in consideration of pollen and botanical macrofossil analysis. In total, six samples were submitted for pollen analysis (three from each pond) and four for plant microfossil analysis; analytical work was carried out by the University of Sheffield, Department of Archaeology.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Scheduling details

The Stew Ponds form part of the Scheduled Ancient Monument of Canons Ashby (Heritage List 1015534). The following information is summarised from the Scheduled Ancient Monument Heritage List entry.

Canons Ashby is situated on a low hill which slopes gradually down to the west and south. The present village, which stands at the top of the hill, originated in the early medieval period as a small settlement aligned along a trackway which ran from south west to north east up the hill in the area now partly occupied by Canons Ashby House and gardens. The place name, Canons Ashby, derives from a priory of Augustinian Canons that was established on the site in the early 12th century. Stephen de Leye, who held the manor at the time, granted four virgates, a mill, meadow, field land, the church and mansions and crofts in Ashby for the foundation of the priory with a Prior and twelve canons. Although the fabric of the priory was subsequently significantly reduced, probably following the reformation or dissolution of the monasteries in 1536 to 1541, the medieval priory church still survives in part at Canons Ashby.

After the Dissolution the monastic buildings were converted into a secular residence which was succeeded in less than 20 years by a country house established in the original core of the village, now Canons Ashby House. With the development of the house and gardens during the 16th to 18th centuries the early trackway was diverted to the south-east through the former gateway into the monastic precinct, north of the church. During the medieval and post-medieval periods a flight of dammed pools was created along the watercourse to the west providing power for a series of watermills. In the late 18th century the earthwork remains of the medieval castle and settlement and some of the fields and pools were partly altered and incorporated into the design of a landscape park. Canons Ashby House, gardens and park and St Mary's Church are now managed by the National Trust as a site open to the public.

The present St Mary's Church represents the standing remains of the western part of the nave of the monastic church. Adjacent to the east is a raised rectangular platform about 50m long and 20m wide which was partly excavated in the 19th century revealing the foundations of the eastern parts of the original church. Adjacent to the south of the remains of the church are those of the monastic cloister, also revealed by part excavation; these were found to have been converted in the late 16th century into domestic outbuildings associated with a country house which was constructed on the site by Sir John Cope, who bought the property from Sir Francis Bryan soon after the Dissolution. The remains of the house are believed to survive as buried features beneath the present houses and gardens.

The boundary of the monastic precinct and of the country house which developed out of it is represented by a series of earthworks and buried deposits and by a fragment of standing masonry. Along the northern and eastern sides of the present churchyard is a linear depression which is considered to represent the north eastern part of the precinct boundary; where this is projected across the present road north of the church, the chamfered jamb of a gateway stands to a height of about 1.4m built into a later stone wall. This fragment, which is included in the scheduling, represents the standing remains of the gateway through which the monastic precinct was entered from the north; further remains of this gateway are believed to survive as buried features. Adjacent to the south of the churchyard, the eastern boundary of

the monastic precinct is overlain by part of a walled garden, believed to have originated in the 16th century in association with Cope's house. The standing parts of the north and east walls of this garden are included in the scheduling. The south eastern part of the precinct boundary is represented by the earthwork remains of an L-shaped moat with an external bank, which is also thought to have been altered and reused as the boundary of the post-Dissolution house. The western part of the precinct boundary is overlain by post-medieval and modern features to the west and south of the present road, and its position is indicated by the recorded extent of ridge and furrow cultivation which lay adjacent to the west. The monastic precinct occupied an area approximately 180m square.

To the east of the monastic precinct is an area of pasture known as Canons Walk, bounded on the north and east by a linear bank approximately 1m high and 2m wide at the top with a ditch on each side. The interior of the enclosure is largely level; on its western side is a shallow depression representing the site of a building, and to the south is a circular mound about 0.5m high. These features are considered to represent the remains of a post-Dissolution garden established by Cope in the mid-16th century. The linear bank served as a raised walk from which planting on the interior of the garden would have been viewed; the circular mound is a prospect mound constructed as a vantage point from which the whole garden could be seen. Adjacent to the south-east, also within the enclosure defined by the linear bank, are a series of waterlogged depressions; these are thought to have originated as medieval fishponds associated with the priory and to have served in the post-medieval period as a feature of the garden.

Adjacent to the north of the monastic precinct is a modern enclosure known as The Orchard which contains the remains of water-control features associated with the monastery and post-Dissolution house, including on its eastern perimeter a linear ditch and pond. This enclosure, referred to in a 15th-century documentary source as Well House Close, contains two wells which are believed to have originated in the medieval period. Over one of these is a stone-built well-house known as the Norwell, a structure of 16th-century date with 18th-century alterations, which is included within the scheduling. It is associated with two underground reservoirs which were located by part excavation in the 19th century, and with two courses of pipes: one, of lead, extends southwards through the churchyard to the site of the monastery and post-Dissolution house while the other, of oak, leads westwards to Canons Ashby House.

In the northern part of The Orchard and in the pasture field to the north of Canons Ashby House are the earthwork remains of the medieval village of Canons Ashby. The settlement grew during the 14th century but contracted in the later 15th century when the prior enclosed land for sheep-pasture. The population diminished further in the 16th and 17th centuries and by the early 18th century there remained about five dwellings.

Remains of ridge and furrow cultivation earthworks represent part of a wider agricultural landscape which was abandoned in favour of sheep-rearing in the mid-16th century. While parts of the parish later returned to arable, some of the earthworks were incorporated in the late 18th century into the design of the landscape park; tree-planting, which included the establishment of avenues aligned upon the house and its formal gardens, was partly achieved through the employment of medieval cultivation ridges as planting banks.

To the west of The Orchard stands Canons Ashby House, a country house first constructed on an H-shaped plan by John Dryden who acquired the former monastic estate on the death of Sir John Cope in 1558. The house, which is thought to incorporate part of an earlier farmhouse, overlies the buried remains of part of the medieval settlement and part of the trackway which formed its south west/north east axis. In the 1590s it was enlarged to create a courtyard and was further altered during succeeding centuries. Extending south westward from the house are a series of levelled rectangular terraces ranged down the natural slope in four steps; the terraces are separated from each other by scarps linked along a central linear path. These terraces represent part of a formal garden created in 1708-10 by Tilleman Bobart and Henry Wise for Edward Dryden.

Running south westward from the south west end of the formal gardens is a broad hollow way which represents the earthwork remains of the medieval trackway upon which the settlement of Canons Ashby was established. It runs towards an earthen dam which crosses the valley bottom on the north side of the Eydon Road. The dam is now retained on its northern side by a brick and stone wall of 18th century and later date but is believed to have originated in the medieval period to provide water-power for milling. The dam in the south western part of the monument is the lowest in a series of five earthen dams which extend up the valley north westward from the Eydon Road. The area of the ponds formed behind the dams varies between 2ha and 3ha. The shape of the two lower ponds, which are still water-filled, and of the dams behind them dates from the late 18th century when they were altered to form ornamental lakes within the landscape park around Canons Ashby House. The three upper ponds are now only partly water-filled and lie within a plantation. The full flight of five ponds is believed to have been developed during the medieval and post-medieval periods as a source of water-power. A sample of the deposits on the floor of each pond is included within the scheduling.

4.2 Monastic fish ponds

Fish was an important part of the monastic diet, in part due to religious dietary restrictions that forbade the consumption of meat for three days of the week and throughout the fast periods of Lent and Advent, and partly due to the cost of meat. Archaeological and historical studies have indicated that the majority of fish consumed even in inland monasteries were sea fish, often preserved by drying, salting or pickling (Bond 2004, 184-187). Freshwater fish were also sourced from rivers and lakes, but this could be an unreliable source, so artificial fish ponds were used to store and breed live freshwater fish to supplement the table. Artificial fish ponds became a common feature at religious and secular sites from the 12th century. Currie (1989) has argued that the main instigators behind the introduction of fish ponds to Britain were secular aristocrats, and some early records of fish ponds in a monastic setting indicate that they were pre-existing ponds granted to the monastery by secular benefactors (Bond 2004, 197). The mention of fish ponds and a mill in the de Leyes' foundation grant for Canons Ashby Priory in 1174 suggests that this may have the case here, with at least some ponds pre-dating the priory buildings.

Many monasteries had numerous ponds, and the number and size does not seem to have reflected the relative size or wealth of the institution. With a greater number of ponds, a larger quantity and variety of fish could be kept and their breeding and storage could be more closely regulated (Bond 1987, 95). Larger ponds, known as *vivaria*, were used for breeding fish,

whilst smaller ponds, known as *servatoria* or stews, were located close to the monastic precinct and used to store fish destined for the table (Bond 2004, 198). At Canons Ashby, the large ponds in the valley to the west of the Priory would have been the *vivaria*, as well as functioning as mill ponds, with the smaller ponds close to the precinct being the *servatoria*. Fish ponds also formed part of the water management system of the monastery, which was always an important consideration in the location, layout and orientation of the monastic precinct.

The construction and management of artificial pond systems required skills in practical engineering, site selection and an understanding of water levels and flow. The choice of site for small ponds may have been decided by observing which areas were naturally marshy or prone to collecting water (Aston 1988, 188). Small stream systems were normally used to supply ponds, as this minimised the risk of seasonal flooding. Ponds were excavated into the subsoil with puddled clay used as a lining where necessary to aid the retention of water. Wooden planking, charred and perhaps tarred, could be used if further support of the sides of the pond was required. Stews or storage ponds did not need to be large or deep, though deep enough to prevent the pond from freezing to its base in cold weather. A relatively small size would allow easy netting of fish (Chambers and Gray 1988, 115; 122). Regular cleansing and de-silting of the ponds was necessary, and chains of ponds had leats and sluiceways to allow individual ponds to be drained independently (Roberts 1988, 9-10). Records relating to the management of fish ponds belonging to four priory sites in Worcestershire in the early 16th century record the enlargement and cleansing of ponds, the use of thorns and stakes for reinforcing the banks and dams and clay for puddling the pond beds. The ponds were drained or bailed for stock-taking and repairs at intervals of four to ten years, prior to restocking (Bond 2004, 205-6). Leaving a pond dry for a period of a few months to a year was also common, to kill water weeds and improve the condition of the pond once refilled (Aston 1988, 194).

Historical records and archaeological evidence indicate that fish commonly kept in monastic ponds included pike, bream, perch, roach and eels; carp were also kept after their introduction to England around the 1460s (Bond 2004, 205). Currie calculates that, assuming 175 days a year on which fish were consumed and a minimum of 6 to 8 oz of fish per monk per day, a small house of 10 monks would need to produce 850lb of fish a year, requiring 21 acres under water, to be self-sufficient in fish production (Currie 1988, 275-6). It is problematic to establish the original number and extent of the large ponds in the valley west of the priory at Canons Ashby (HER 1266/01-05; NTSMR 60616), as the system is likely to have developed throughout the four centuries of the Priory's existence and also saw alterations in the post-medieval period to form ornamental ponds. Surviving earthworks and historic mapping suggest that at some point there were a total of five ponds. If these all existed during the medieval period, this would provide an area of around 20-25 acres under water, which would have been adequate to supply the majority of the freshwater fish requirements for a house of around 13 canons. It is also possible that surplus fish may have been raised as a commercial venture.

In 1988, Chambers recorded that few monastic fishponds had been examined by excavation, with only eight examples listed, several of which only comprised watching briefs on pipe trenches cutting through former ponds. Partial excavation of three linear ponds arranged in parallel at Thame in Oxfordshire were demonstrated to be unlined, despite a relatively porous subsoil, and had no revetment at the sides. One sluice was excavated, revealing traces of a

timber-lined channel. At Kidlington, Oxfordshire, two parallel linear ponds were sectioned by a pipe trench, and were also revealed to be unlined and simply dug into the ground. Watching briefs on ponds at Merton and Faringdon, also Oxfordshire, demonstrated that both were filled with spring water rather than taking water from the adjacent stream (Chambers 1988, 127-8). Whilst further excavation may have been undertaken on fishponds since 1988, no new examples are mentioned in Bond's 2004 volume on monastic landscapes and a grey literature search revealed no examples of ponds in a monastic setting.

Key issues for archaeological investigation would be the structure of the ponds, the use of timber lacing or stone revetment in their dams and sides, whether puddling has been used at the base and the nature of leats and sluices. There is also the possibility for the survival of artefacts relating to fishing, fish remains and other environmental evidence and organic remains, though the survival of medieval silt deposits may depend on later use of the ponds (Bond 1988, 103). The results of the auger sampling at Canons Ashby suggests that the ponds were regularly maintained until the 19th century, and the majority of deposits encountered relate to the silting up of the pond at the end of this period. Though the base of the sediment sequence was not reached in many of the boreholes, regular de-silting of the pond throughout the post-medieval period would limit the potential for the retrieval of significant environmental deposits relating to the medieval use of the ponds.

4.3 Monastic water supply systems

Whilst by the 12th century the choice of monastic site was determined in large part by the lands granted by the founding donor, finding a suitable location within the estate to site the monastic precinct was greatly influenced by water supply. Ideally a spring or well was required for drinking water, whilst a supply of water for cleaning and drainage could be taken from a stream or river. Aston (2002, 24) states that 'sites often seem to have been chosen with this [dual supply] as the paramount determining factor; the availability of springs and streams not only influenced where the house would be placed within its estates, but was also reflected in the exact orientation of the buildings on a particular site'. A gentle south-facing slope with a stream running below was the ideal arrangement, with the church built to the north of the cloister and the stream draining the claustral ranges of buildings to the south (Aston 2002, 102).

4.4 Tudor gardens

Documentary sources have recorded medieval gardens associated with many monastic houses, many practical rather than purely ornamental and including herb gardens for medicinal and culinary purposes, vegetable plots, orchards and vineyards. A few archaeological excavations have recorded traces of these, and further gardens in both monastic and secular contexts have been recorded through earthwork survey (Taylor 1983, 33, 37). Medieval gardens were often fairly small spaces enclosed by walls, hedges or banks, and paved or gravelled paths, seating areas, raised beds and ornamental ponds have also been recorded in documents. Research resulting from landscape survey has suggested that an interest in the more extensive landscape, in particular the creation or modification of deliberate views of garden features from significant points and entrances, was becoming an important factor in the design of later medieval parks and gardens, particularly for secular aristocrats (Everson 1998).

There are only sparse records of early Tudor gardens with surviving earthworks. Collyweston in Northamptonshire has well-preserved earthworks relating to Lady Margaret Beaufort's

gardens dating to c.1502-3 (Everson 1991, 13). The Duke of Buckingham's gardens at Thornbury Castle in Gloucestershire, arranged around a series courtyards, were laid out c.1510-1520, though the design was never completed (Bond and Iles 1991, 10). The excellent earthworks at Woodham Walter Hall in Essex may date to the reign of Henry VIII, laid out by the Earl of Sussex, but have not been definitively dated (Everson 1991, 13-16). These examples are extensive gardens laid out by the aristocracy; two examples of smaller gardens of landed gentry have been recorded by Bond and Iles (1991, 39-40), also in Gloucestershire. Horton Court was the seat of a civil servant and ambassador (later Bishop of Bath and Wells), whose travels were reflected in the direct Italian Renaissance influence visible in his loggia, probably constructed some time in the 1520s, and associated with earthwork terraces, some of which may be contemporary. Acton Court was built after 1538 for one of Henry VIII's courtiers, and includes an early sundial, though the earthworks of the gardens are obscured by later land use and modern dumping. John Cope's garden at Canon's Ashby, laid out c.1538-40, remains one of the earliest identified post-Dissolution pleasure grounds with surviving elements (Taylor 1983, 41).

Information on gardens from the mid-16th century onwards is more extensive, with treatises on garden management and design becoming common. From the mid-16th century to the early 18th century, gardens tended to be formal, with recurring features of pleasure gardens including terraces, mounts and ponds or canals, features which leave distinctive earthworks in the landscape (Taylor 1983, 41). The smaller medieval fish ponds (*servatoria*) often became an ornamental feature in pleasure gardens (Landsberg 1995, 69). Following on from the late medieval tradition, the position of the garden in terms of views to and from the wider landscape became an important factor in the post-medieval period, culminating in the great landscape parks of the later 18th and 19th centuries.

Later 16th-century gardens such as those at Holdenby, Northamptonshire (c.1579-1587) and Raglan Castle, Gwent (c.1570-1589) are on a grander scale, owned by wealthier individuals. Earthwork remains at Raglan Castle include long earthen terraces with the footings of summer houses at the ends and rectangular ponds (Taylor 1983, 42). The earthworks at Holdenby may be the best preserved 16th-century gardens in the country, located on sloping ground below the house, with a level platform created outside the house on which elaborate flower beds were laid out and flights of terraces to either side planted with rose beds and including a rectangular pond and a bowling green on the lowest terraces. On the lower slopes of the hillside were an artificial lake and 'wilderness' of trees and ponds, and an elaborate arrangement of sloping terraced pathways leading to a circular mount. On the other side of the house, a large walled courtyard linked the house to the village, which had been moved to accommodate the new gardens, with large hedged enclosures beyond (Taylor 1983, 44-46). Though this garden was on a far larger scale than that at Canon's Ashby, many of the same type of features can be identified at the latter.

The earthwork remains of a smaller garden at Leighton Bromswold in Cambridgeshire, laid out c.1616, comprise a rectangular area bounded on three sides by a low flat-topped terrace walkway with prospect mounds set on the corners. Slighter earthworks revealed the existence of flower beds and formal ponds (Taylor 1983, 47-8). At Kirby Hall in Northamptonshire, a small late 16th-century garden was replaced in 1680 by a much larger design which included terraces with brick and stone revetments, all revealed during clearance of the garden in the 20th century (Taylor 1983, 48).

5 RESULTS

5.1 Walkover survey

An updated survey plan has been produced using information from the RCHME survey and observations made during the walkover. This is reproduced in Figure 2. A gazetteer of features identified during the walkover survey is presented in Appendix 4; the unique feature numbers, prefixed 'C', are given in brackets in the text below. Most of the features identified by the RCHME survey were found, though some features recorded in 1992 seem to have been plotted from aerial photographs, and are not visible on the ground. This includes parts of the moat and the Canon's Walk, as well as the southernmost of the Stew Ponds.

Fields to the south and east of Hillview Cottages

The former stew ponds are located in a field to the south-east of Hillview Cottages. The original edges of the two northern ponds are in general difficult to discern as earthworks (Plate 3). The northern pond (C002) is the clearest, with definite banks surviving to the north, east and west, though the southern edge is ephemeral. There is water in the central part of the pond. The edges of the middle pond (C003) are unclear, and it was essentially dry (though marshy in places) at the time of survey. A shallow ditch (C001) connects the northern and middle ponds; only a small trickle of water was within this at the time of survey. It is c.1m wide and 0.3m deep, with no signs of any wood or stone supporting the sides. Stonework has reportedly been noted at the southern end of the north pond during maintenance works (Chris Smith pers. comm.), which could indicate that there was a stone-built sluice mechanism for the leat; however, no sign of this was noted during the walkover survey.

A field drainage ditch (C005) along the current field boundary to the south of the ponds seems to cut the original southern edge of the middle pond. The drainage ditch appears to be relatively modern in origin, though its south-east end may follow the route of an outflow leat from the middle pond. A narrow ditch a short distance to the north (C006), which runs from the approximate edge of the middle pond and terminates adjacent to the edge of the drainage ditch, may represent part of the original outflow leat (Plate 4). The location of the southernmost pond is no longer visible on the ground; this is in a field to the south which has been regularly ploughed, and the pond has been infilled.

The only visible means of feeding water into the ponds is a leat (C018) leading from the eastern end of the moat (C015). This was dry at the time of survey, as was the moat itself, but the leat is a well-defined ditch up to 3m wide at the top and 1m deep, with gently sloping sides. No clear link between the ponds and a ditch (C007) to the east of the Canons Walk was visible, suggesting that at least in the post-medieval period, this ditch was not a source of water for the ponds.

The southern arm of the moat (C015) is relatively well preserved. It is a substantial ditch c.2m wide at the base, with the northern side being up to 2m high and the southern side c.1.5m high, with a slight bank to the south (Plate 5). There were no visible signs of a northern return at the eastern end, though this is cut by the west end of leat C018. There are trees along the base of the moat at the western end, and dense shrubs and brambles along the eastern half, also obscuring any signs of the eastern corner. A slight terrace continues to the west of the

moat (C016); this is thought to be associated with the former poultry farm, which had sheds located to the north of the break of slope.

The eastern arm of the moat (C009) is now a very ephemeral earthwork to the south of Hillview Cottages. It terminates at the edge of the gardens associated with Hillview Cottages, and a feeder for the moat may have been culverted below the cottages and walled gardens.

A low, roughly circular earthen mound (C008) stands to the north of the stew ponds. This mound is around 20m in diameter and up to 1m in height. This is likely to be a prospect mound associated with the Tudor gardens, overlooking the ponds (see Plate 3), the garden enclosed by the Canon's Walk and the surrounding landscape.

The Canon's Walk, a raised pathway (C004), survives as a substantial earthwork along the north and east sides of the field to the east of Hillview Cottages, and to the east of the stew ponds. The walk is in the form of an earthen bank between 0.8m and 1.5m in height, with a level top visible in places, and a slight ditch to the south and west within the northern field. Adjacent to the stew ponds there is no ditch on the western side, with the bank sloping down to the edges of the ponds. There is no evidence for the bank cutting the sides of the ponds, suggesting that it is a later feature. The southern and western arms of the walk have been levelled (C017), in the fields to the south and west of the stew pond enclosure. No traces of the walk are visible on the ground in the southern field, though it is visible as a parch mark in aerial photographs. In the western field, a very slight earthwork is visible in places along the former route of the walk, terminating in a slight mound adjacent to the southern bank of the moat (C015). It is possible that there would have been a bridge over the moat at this point, but vegetation within the moat meant that it was not possible to ascertain whether any associated features survive at this location.

The Canon's Walk has suffered from erosion along its northern and eastern banks within the northern field, probably due to animal erosion from stock, as well as from animal burrows (Plate 6). There are also numerous burrows within the bank to the east of the stew ponds, where trees growing along the top of the bank are also likely to have caused damage to the structure (Plate 7). At the north-east corner of the walk animal and vehicular passage into the adjacent field have worn the bank away, and it is much less prominent in this area.

Aerial photographs from the 1980s show very slight ridge and furrow remains in the fields to the south of the moat, aligned east to west and visible only under slightly snowy/frosty conditions. The features were not visible on the ground at the time of survey, though light conditions were not conducive to visibility of shallow earthworks. The aerial photographs demonstrate that Canon's Walk cuts the earthworks, indicating that the walkway is a later feature. The ridge and furrow almost certainly relates to the medieval cultivation, possibly pre-dating the priory but, as it is outside the priory precinct, it could equally be contemporary. The design and function of the Canon's Walk suggest that it is most likely to have been part of Cope's Tudor period gardens. As with the prospect mound (C008), the walkway would have afforded views across the gardens, ponds and surrounding landscape.

A linear ditch (C007) runs along the western side of the Canon's Walk. This may be a feature associated with the walk, as with the more ephemeral ditch on the eastern and southern sides, to provide a distinct edge and higher profile to the walkway. The ditch is cut into the

natural slope of the ground, and lines up with a stream to the south, suggesting it may also have functioned as a water course or drainage ditch. The ditch is in a relatively good condition for much of its length, but towards the southern end it is suffering from severe erosion/damage associated with animal burrows (see Plate 7). The northern end of the ditch stops adjacent to the end of the Canon's Walk, though it is unclear if this is the original end or due to modern infilling associated with the access point at the corner of the field. A small L-shaped stone-built wall (C012) sticks out of a slope at the northern end of the field, north of the ditch. A spring was shown on the 1900 OS map in the area of this wall (the field boundary in this area appears to be recent), and it is possible that the wall relates to a former trough associated with the spring. No connection between the wall and the ditch survives, but it is possible that water from the spring may have been carried southwards along the ditch.

A pair of low earthwork scarps are located to the immediate east of Hillview Cottages (C010), the northernmost parallel with the southern end of the walled garden (C011). Both scarps are aligned east to west, with the northern scarp curving round to the south at its eastern end. They are relatively shallow, c.0.4m in height, defining a roughly rectangular area 30m by 20m in extent (see Plate 9). A fragment of brick walling is visible in an eroded patch within the southern bank, suggesting the scarps relate to a former building. The only structure shown in this area on historic maps is a small shed adjacent to the west end of the northern scarp, suggesting that the features relate to an earlier building, possibly associated with the Tudor house and gardens. It was not possible to ascertain the age of the bricks during the survey.

Walled garden and priory site

The church of St Mary is the main surviving element of the Augustinian priory. A roughly rectangular earthwork platform is located in the churchyard to the immediate east of the church (C014). This is thought to be composed of rubble relating to either the priory buildings or Cope's 1538 house. In the 19th century Henry Dryden recorded fragments of wall which appear to relate to the priory, shown on a plan drawn by the RCHME in 1908 (see Figure 6), and areas of flooring associated with the house were reportedly uncovered in the vicinity in 1970, though the exact location of these are uncertain (Hurst 1997, 169). The platform is c.30m by 25m in extent, and up to 1m in height, and no traces of walling are currently visible. Geophysical survey over this area in 2010 identified probable walls, which did not seem to correspond directly to Dryden's plan (Allen Archaeology 2010).

A linear hollow or ditch (C013) is located to the east of the earthwork platform. This is aligned north to south, and is currently largely overgrown (Plate 8). It is unclear whether the feature continues to the north of the priory field, as this area was fenced off and inaccessible, though it appeared that a possible ditch continued north towards a pond (C019). Hollow C013 is a maximum of c.8-10m wide at the top and 2-3m wide at the base, though the width varies along its length. It is around 1m deep. At the southern end, it becomes much more ephemeral, but very slight earthworks are visible running up to the edge of the walled garden (C011). It is on roughly the same alignment as the remnants of the moat to the south (C009), and may be a continuation of the moat, forming the eastern side of the priory precinct. It could also have been a feeder for the moat, and appears to be related to ditch C026 to the north, which may be a water channel.

Standing walling to the immediate south of the earthworks associated with the former priory are the remains of a walled garden (C011). The walls currently surround a garden area associated with Hillview Cottages, and only the east and north walls could be viewed at the time of survey. A western wall is shown on aerial photographs and maps, but could not be viewed, whilst the southern wall may have been demolished when the cottages were constructed. A detailed survey of the wall has been undertaken by Northamptonshire Archaeology c.1980 (Cookson and Tickner 2013, 46), and it will not be described in detail here. On the eastern side, the wall is around 2.5m in height, whereas the northern wall varies between c.2m and just over 1m in height above the ground surface, reflecting the changes in ground level within the churchyard. The walls are of relatively neatly coursed stone, but with stones of differing sizes used. Stone taken from the priory seems to have been re-used in the wall's construction. There is a doorway in the centre of the eastern wall (Plate 9), whilst straight joints and possible beam slots in the northern wall indicate the location of possible adjoining structures and at least one blocked entrance. The walled garden is likely to have been constructed as part of Cope's 1538 gardens, and is located to the south of the probable site of his house.

Norwell field

To the north of the priory is the field containing the Norwell (C025). In addition to the culvert and ditch feature C026, two other features associated with the well were noted. The well house itself is within an area of slightly sunken ground; the RCHME suggested that this reflected possible subsidence over the underground reservoirs associated with the spring and well head, and this seems plausible. A slight linear hollow, C023, runs roughly south-west from the well house (Plate 10). This feature may be associated with a pipeline leading to Canons Ashby House, on which it is generally aligned. No clear features associated with a pipe to the Priory are visible, though it is possible that shallow linear hollow C021 relates to this. A slight linear scarp, C020, aligned north to south near the southern end of the field, is on the same location and alignment as a field boundary shown on the 1884 and 1900 OS maps, and is probably a lynchet associated with this.

An oval pond hollow, C019, with no water in it at the time of survey, is located to the south of the Norwell, and appears to be along the line of ditch C026. The pond is well-defined, but the relationship with ditch C026 could not be established as this area was fenced off and inaccessible from the survey area. A channel may head south from the pond to join ditch/hollow C013; again this could not be examined in detail during the survey. At the northern end of the field is a substantial linear hollow (C024), which is truncated to the north by the current road. This is likely to be a feature associated with the remains of a medieval shrunken village to the north of the road, possibly part of a trackway or plot boundary. The RCHME survey of 1992 shows associated features north of the road.

5.2 Palaeoenvironmental coring

A sediment log for each sample location can be found in Appendix 1. The waterlogged nature of the deposits meant that many of the sampling locations were terminated before the base of the sediment sequence was encountered, due to suction creating difficulties in manually extracting the auger and unstable sediment leading to the collapse of some of the boreholes. The basic profile of each pond was similar (Figures 4 and 5), with waterlogged silt at the upper

surface, turning to organic silt with lenses of peat and finally gleyed stiff blue clay at the base at between 1.5m and 2.00m.

Six samples were submitted for pollen analysis (Appendix 2) and four samples were submitted for botanical macrofossil analysis (Appendix 3). The pollen preservation was found to be good in all of the samples processed, with the species present reflecting an open grazed/cultivated landscape, with a strong indication of agricultural activity. All of the assessed pollen samples include taxa from wetland and aquatic habitats, such as sedges (*Cyperaceae*), reeds/rushes (*Sparganium emersum*-type), water plantain (*Alisma plantago-aquatica*), milfoil (*Myriophyllum spicatum*) and pondweed (*Potamogeton natans*-type), all of which indicate slow-moving or stagnant water and are likely to have grown at the pond margins. Ash was the only arboreal taxon to make a significant contribution to the pollen assemblage.

The results of the plant macrofossil assessment found moderate to high density of waterlogged plant material present in sample 7, context 007 and sample 10, context 004 from Pond 1 as well as in sample 8, context 008 from Pond 2. However, the diversity of identifiable plant remains in these samples was low to moderate. Conversely, while the density of plant material in sample 9, context 012 from Pond 2 was low the diversity of identifiable plant material was moderate. The plant macrofossil assemblage from Pond 1 indicates the presence of water during the deposition of the sampled contexts due to the presence of the seeds of aquatic and marsh plant taxa such as celery leaved buttercup, marshworts, horned pondweed, rushes and sedges. A similar suite of plant taxa was also present in the sampled deposits from Pond 2, with the addition of water crowfoot, pondweed and sweet grass. The presence of water flea egg cases in the samples from both ponds further indicates the presence of water. Seeds of plant taxa commonly associated with fertile grassland, waste ground and cultivation were also represented in both ponds.

6 DISCUSSION

6.1 Walkover survey

6.1.1 *Canons Ashby water supply and stew ponds*

The layout of the priory at Canons Ashby seems to follow the 'ideal' situation detailed by Aston (2002, 102), located on a gentle south-facing slope with the surviving remains of the priory church at the north end of the supposed extent of a precinct that occupied an area c.180m square (see Figure 6). The claustral buildings are likely to have been located to the south, under the current cottages and walled garden, with the buildings possibly draining into the moat and fishponds to the south and thence to a small stream running south. Fresh water was taken from springs feeding underground reservoirs on the site of the current Norwell building (C025). A lead pipe leading through the priory from the direction of the well was identified in previous excavations, shown on the RCHME's 1908 plan, and this source is also likely to have been used to supply the post-Dissolution house of John Cope. It is possible that linear hollow C021 may relate to the route of the pipe, but this is uncertain. A geophysical survey in 2010 also identified an anomaly possibly relating to this pipe in the same location (Allen Archaeology 2010). A linear hollow to the west of Norwell appears to be aligned on the Canons Ashby House, and could be the location of a pipe to the Dryden's later 16th-century house.

The monastic precinct appears to have been surrounded by a moat, as has been recorded at other monastic sites, including the Augustinian Norton Priory at Runcorn (SAM 1015603). The surviving remains of the moat comprise only part of the southern edge (C015), though a linear hollow to the east of the priory remains (C013) may form part of the eastern edge of the precinct. An overflow from the Norwell reservoirs currently leads into a ditch to the east, which runs south towards the line of hollow C013, and it is possible that the moat was at least partially filled from this source. Current mapping shows a spring issuing within the western end of the south arm of the moat, suggesting that the moat may originally also have been fed from its own spring. Drainage from the claustral buildings is likely to have fed into the southern arm of the moat.

The only clear source of water for the stew ponds is currently a feeder leat (C018) from the east end of the surviving stretch of moat to the north-west corner of the northern pond (C002), which suggests that the moat drained into the fishponds. The inclusion of effluent from the claustral buildings within this water supply is not inconsistent with other known examples, and this would have helped to fertilise the water, supporting the growth of plankton to feed fish stored in the stew ponds (Bond 1988, 101). The walkover survey and hydrological assessment have not identified an alternate water source, though prior to the construction of the Canon's Walk earthworks, it is possible that water from a spring to the north-east (close to C012) may have been channelled into the ponds. There is currently no visible evidence for this arrangement. A linear hollow or leat links the northern and middle ponds (C001), though this is currently a fairly ephemeral feature, and it is unclear if this is an original feature or later modification. Stonework was noted by Chris Smith within the bank of the northern pond close to the leat. This could not be found during the walkover survey, but it is possible that this may relate to a sluice system.

The middle pond has been truncated at its southern end by a modern field boundary and drainage ditch, and the southern pond has been infilled and no visible traces remain above ground. There are also no visible traces of an outflow leat from the southern pond; it is assumed that this would have fed into a small stream running along the eastern side of the field, continuing the alignment of ditch C007. The northern pond is currently the only one with relatively clear traces of its outline surviving as earthworks. The ponds appear to have been located in a natural hollow, part of a narrow, shallow valley. The hydrological report indicates that the subsoil and bedrock are both relatively impermeable (boulder clay over mudstone formation), which may mean that a puddled clay lining was not necessary for retaining water. The alignment of the chain of ponds reflects the orientation of the valley and the gradual slope southwards, facilitating the drainage of water through the ponds and out to a stream to the south-east.

6.1.2 *Tudor garden features*

The garden of John Cope at Canons Ashby is one of the earliest post-medieval pleasure gardens to be identified. Cope purchased the site in 1538, two years after the dissolution of the priory, and built himself a house incorporating part of the priory buildings, with others demolished. Pleasure gardens were laid out around the house, apparently incorporating many existing elements, such as the moat (C015) and the fish ponds (C002-3), as well as the orchard located in the field surrounding Norwell. New features probably included the walled garden (C011), a prospect mound (C008) overlooking the ponds, and the Canon's Walk (C004), a flat-

topped terrace walk, which allowed view across the countryside as well as the internal garden. Cope's garden 'appears to have combined the traditional idea of a garden, with its enclosed spaces, with new concepts abandoning the old cloistered effect' (Taylor 1983, 42).

These features all survive at the site to varying degrees and in different states of preservation (see Figure 7). The extent of any Tudor modification to the fish ponds is unclear on the basis of visible evidence, but limited stratigraphic relationships suggest that the Canon's Walk post-dates the ponds as well as the medieval ridge and furrow cultivation in the fields to the south and east of the ponds. Only two of the ponds survive, and the southern and western arms of the Walk have been levelled. The prospect mound survives and the northern and eastern arms of the Canon's Walk remain prominent, though suffering from erosion. The area enclosed by the Canon's Walk may have been laid out as a parterre, though no visible earthworks relating to divisions were noted. The north and east walls of the walled garden, shown on historic maps as the Vineyard, survive well, though the condition of the western wall could not be ascertained during the survey and the southern wall seems to have been demolished to accommodate the cottages. The southern arm of the moat survives, though the remainder has been levelled.

6.2 Palaeoenvironmental sampling

While a number of medieval fishponds have been documented in Northamptonshire (Steane 1970-71), few have been sampled for palaeoenvironmental remains (Monckton 2006, 280).

The results of the pollen and plant macrofossil assessments suggest that preservation is good in all of the samples processed, and there is a strong indication of agricultural activity and an open grazed/cultivated landscape during the time that the ponds were silting up. Further analysis of both the pollen and plant macrofossil remains is recommended, including a closer examination of fungal material to check for types associated with animal dung (e.g. indicating grazing around the pond or use of manure as fertiliser). It is possible that some rare types of plant taxa were missed during scanning, and further analysis may allow for identification to species of some of the plant taxa noted during preliminary assessment and may therefore contribute some additional palaeoenvironmental information. Diatom analysis may also be of interest in terms of changing conditions within the ponds.

No immediate dating material was retrieved either whilst undertaking the sampling or from the samples themselves, although an indication of date may have been identified in one of the pollen samples. A large number of small, dark spherical objects were encountered during the pollen assessment, which were particularly prevalent in sample 6. These have not been positively identified; they may be a type of fungal material, but it is possible that they are spheroidal carbonaceous particles, which usually indicate a date of post-1800 (see Rose 1990, Rose *et al.* 1995). This sample was taken towards the base of the sediment profile, at between 1.25 and 1.7 metres below the ground surface. If this assumption is correct, it would suggest that the ponds were regularly maintained until the last two centuries, when they began to silt up. Should more reliable and precise dating of the sediment sequence be required, material suitable for use in radiocarbon dating was present in all four of the samples submitted for plant macrofossil assessment.

7 STATEMENT OF SIGNIFICANCE

7.1 Evidential value

Fishponds, used to breed and store live fish, proliferated in Britain from the mid-12th century. Early examples recorded on monastic sites were often pre-existing ponds donated by the secular founders. This may be the case at Canon's Ashby, where the Augustinian Priory was granted several fishponds upon its foundation between 1147 and 1151, on land granted by the de Leye family, though this may relate to the larger ponds in the valley to the west. The 1536 *Valor Ecclesiasticus* records several ponds belonging to the priory, including ponds associated with water mills, again likely to relate to the western ponds. The 'stewes in the said orchard' of the priory site are mentioned in the 1573 deeds (NRO D (CA) 598). These latter ponds are likely to be those to the south-east of the priory, focus of the current survey and palaeoenvironmental sampling. Ponds can be distinguished as *vivaria*, larger ponds in which fish could breed and grow, and *servatoria*, smaller ponds used to store fish destined for the table. At Canon's Ashby, the flight of valley ponds are likely to have been the *vivaria*, doubling as mill ponds, whilst the smaller 'stew' ponds south-east of the abbey would have been the more accessible *servatoria*. Chains of two or more ponds were common, allowing the storage and management of a wider range of fish.

The Priory and its lands were granted to Sir Francis Bryan after the dissolution in 1536, and Bryan sold them to Sir John Cope in 1538. Cope built himself a new house on the site of the priory, incorporating some of the existing buildings and demolishing others. Though there is no clear documentary evidence relating to the grounds, it is highly likely that the house was surrounded by formal gardens characteristic of the Tudor period. Common features of Tudor landscape gardens of the mid- and later 16th century include terraces, mounts, ponds, rabbit warrens, water gardens and wilderness gardens. Some of these features survive to a reasonable extent at Canons Ashby.

The gardens of Cope's house are likely to have incorporated the Priory's orchard, as well as the moat that may have defined the Priory precinct, and the three fish ponds to the south-east. The walled garden, a raised earthwork walk known as the Canon's Walk, and a prospect mound overlooking the fish ponds and gardens are all likely to have been created as part of the gardens. Though the Canon's Walk and moat have been partially levelled, the remaining features represent one of the earliest identified surviving examples of a Tudor garden (Taylor 1983, 41). After Cope's death in 1557, his daughter and son-in-law began construction of a new house across the road, which became Canons Ashby House and the focus of the current formal gardens; the old house and gardens do not appear to have been further modified. Cope's house was gradually demolished after 1665, by which date it may have already been ruinous.

The relatively short lifespan of Cope's house and gardens means that the earthwork remains have not been greatly impacted by subsequent garden designs, as is common in many gardens that survived for a longer period. The main losses of the earthworks appear to have occurred in the later 20th century, including the levelling of part of the Canon's Walk, the eastern arm of the moat and the southern fish pond. Some damage has occurred to the remaining parts of the Canon's Walk through animal and vehicular erosion and trees growing on the bank will also have disturbed the monument.

All of the earthwork features together form part of a landscape designated as a Scheduled Monument of national significance. A key significance of the landscape is the evidence for multiple and changing uses and ownership over a period of over 600 years, from medieval secular castle and village to monastic site and thence to the post-Dissolution house, later 16th-century house and designed landscape. The scheduling states that ‘the Augustinian priory and post-Dissolution house at Canons Ashby are part of a rare piece of the landscape in which a concentration of superimposed archaeological remains enables the impact of successive generations of inhabitants to be deciphered. The preservation of the stratigraphic and spatial relationships between the remains of a variety of religious, domestic and economic activities over a period of nearly a thousand years will enable us to understand how these activities developed and interrelated within a particular historical and environmental setting’.

7.2 Historical value

The stew ponds and the moat are likely to be features originally associated with the Augustinian Priory, and it is possible that the ponds were an earlier feature granted to the priors as part of the foundation of the Priory. These aspects relate directly to the surviving elements of the church and earthwork remains of the Priory, and provide valuable information about the layout of the Priory precincts. The features then appear to have been adapted to form part of the Tudor gardens of John Cope’s house, dating to c.1538. Together with features constructed specifically for the gardens, including the Canon’s Walk, prospect mound and walled gardens, these form the visible elements of Cope’s gardens, an important early survival of mid-16th-century formal gardens. The house and gardens were short lived, but form the earliest element of the post-Dissolution history of the Canons Ashby estate, and the surviving remains illustrate the changing aesthetic of garden design within the estate, as well as the re-use of the existing Priory features in a new context and the change from a religious to a secular purpose.

7.3 Aesthetic value

Currently, the stew ponds and garden earthworks are divided between three separate fields, and do not form an easily intelligible landscape. The earthworks of the prospect mound, Canon’s Walk and moat are at risk from stock movement, and parts of the Canon’s Walk and moat have been levelled, though the surviving elements stand in relatively good condition. Taken together, the features present a useful illustration of mid-16th-century garden design utilising pre-existing features associated with the Priory. Restoration of two of the ponds would allow a greater appreciation of the design of the gardens, and clearance of trees and vegetation from the Canon’s Walk would also improve the visibility and understanding of the monument. If possible, provision of access between the field containing the stew ponds and the field to the north would give further coherence to the Canon’s Walk as well as providing a greater appreciation of the core elements of the Tudor gardens.

7.4 Communal value

The land containing the stew ponds and Tudor garden features are not currently open to the public. The surviving features associated with the stew pond and moat relate to the remains of the Priory, and as such have a residual spiritual value, forming part of the precincts of a site originally associated with monastic life. Their isolation from the standing remains of the church and priory earthworks means that they are currently little visited or understood as

such. These features, in combination with the other earthwork garden features relate to a former elite landscape, providing an important contrast with and precursor of the restored gardens at Canons Ashby House, with associative links to the history of the Canons Ashby estate and an important link demonstrating the change from a religious to a secular landscape.

7 CONCLUSIONS

The walkover survey demonstrated that two of the stew ponds survive as earthworks, though the edges of the middle pond are difficult to ascertain and both ponds are heavily silted. Possible outflow leats survive, though both may have been modified in more recent times. The only identifiable source of water is a leat from the moat. It is not possible to definitively state that the ponds are of medieval date, associated with the priory, and were later incorporated into the post-Dissolution gardens of John Cope, but this seems the most likely theory. The moat is also likely to be medieval in origin, forming part of the monastic precinct boundary, and again is likely to have been incorporated into Cope's gardens. Other features associated with the gardens survive, including a walled garden, a prospect mound, a raised walkway and a possible building platform. Some of these features are in a relatively good condition, though a substantial part of the terraced walkway has been levelled in the 20th century. The remains of the garden form one of the earliest identified post-Dissolution gardens known in the country, and are thus of national significance.

The preservation of organic remains proved to be good in both the pollen samples and the plant macrofossil samples taken from the ponds, with most of the identified taxa prevailing from wetland and aquatic habitats, such as sedges (*Cyperaceae*), reeds/rushes (*Sparganium emersum*-type), water plantain (*Alisma plantago-aquatica*), milfoil (*Myriophyllum spicatum*) and pondweed (*Potamogeton natans*-type), all of which indicate slow-moving or stagnant water and are likely to have grown at the pond margins. The overall assemblage indicates that an open grazed/cultivated landscape was prevalent within the immediate landscape during the time that the ponds were silting up, with a strong indication of agricultural activity.

8 ACKNOWLEDGEMENTS

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FIGURES



Figure 1: Site location

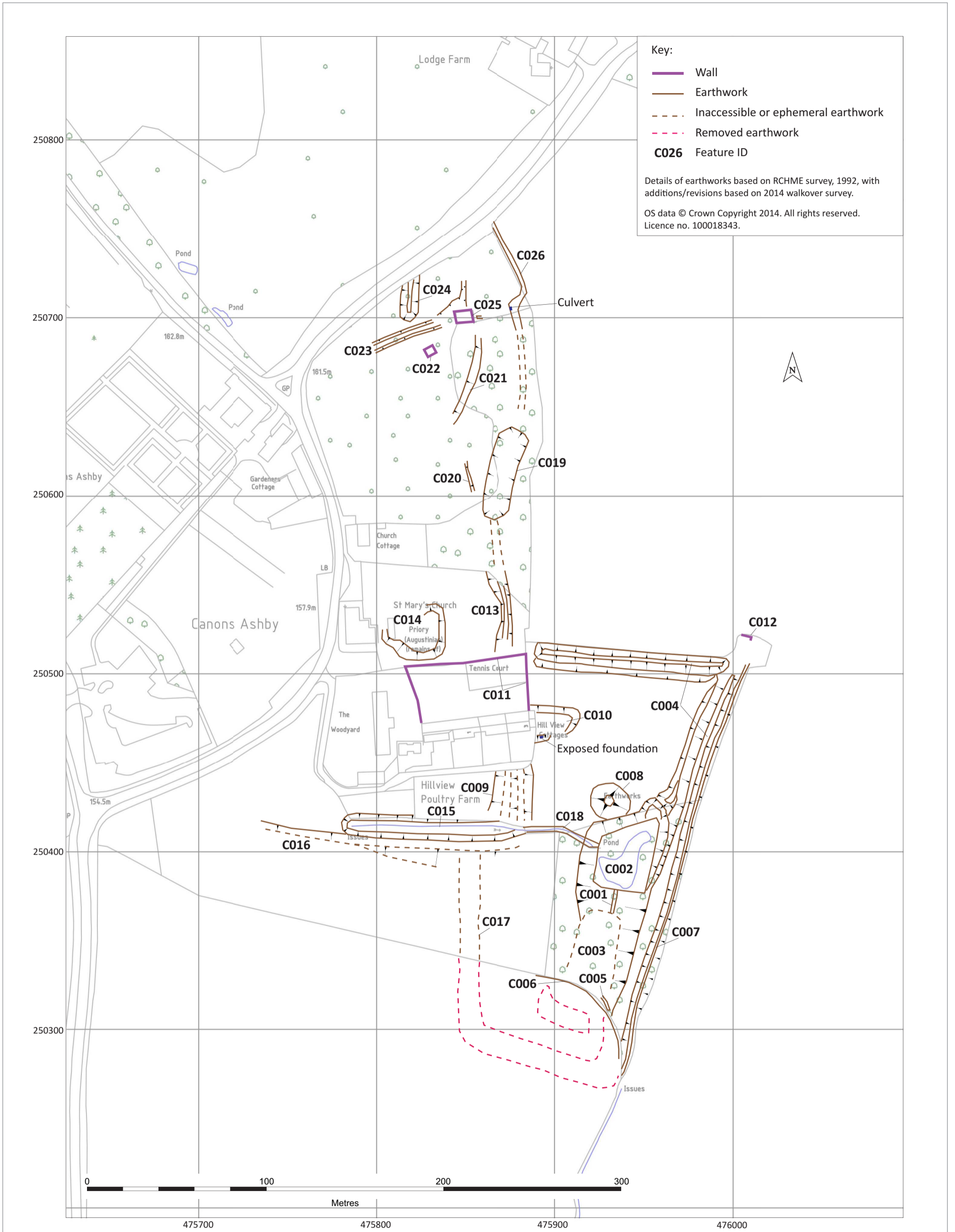
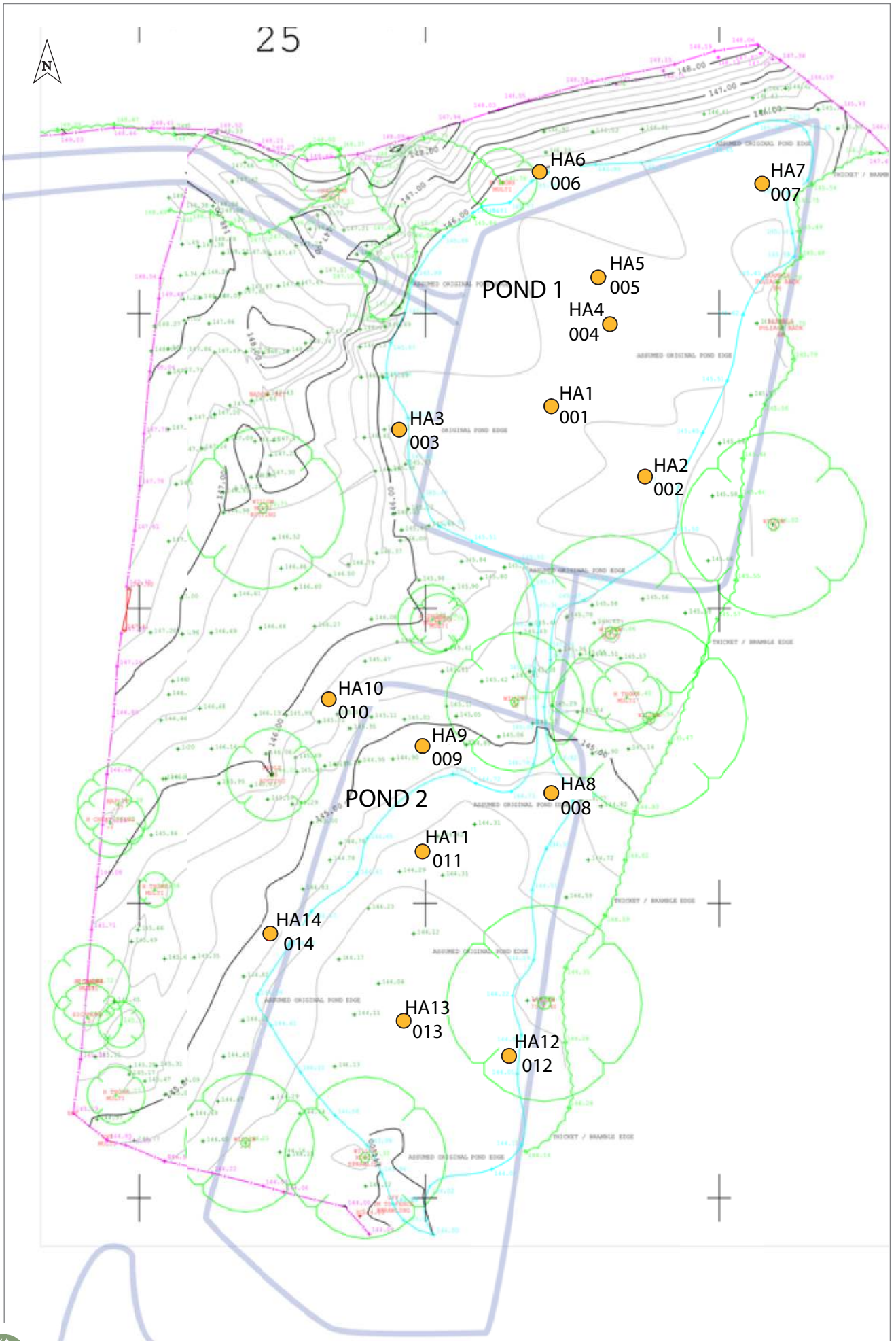
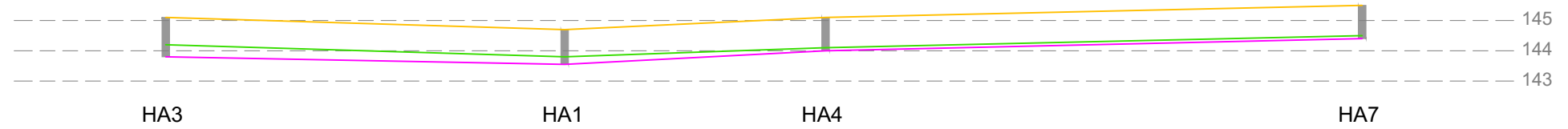


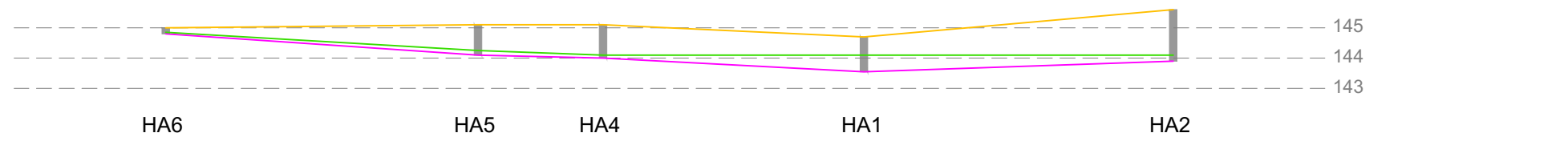
Figure 2: Plan showing features identified in the walkover survey



NORTH POND (POND 1)



North - South



West - East

- Organic silt
- Organic silt with peat
- Silty clay

After agb Environmental Ltd

Figure 4: Representative sections through Pond 1

SOUTH POND (POND 2)



North - South



West - East

- Organic silt
- Organic clay
- Organic clay with peat
- Silty clay

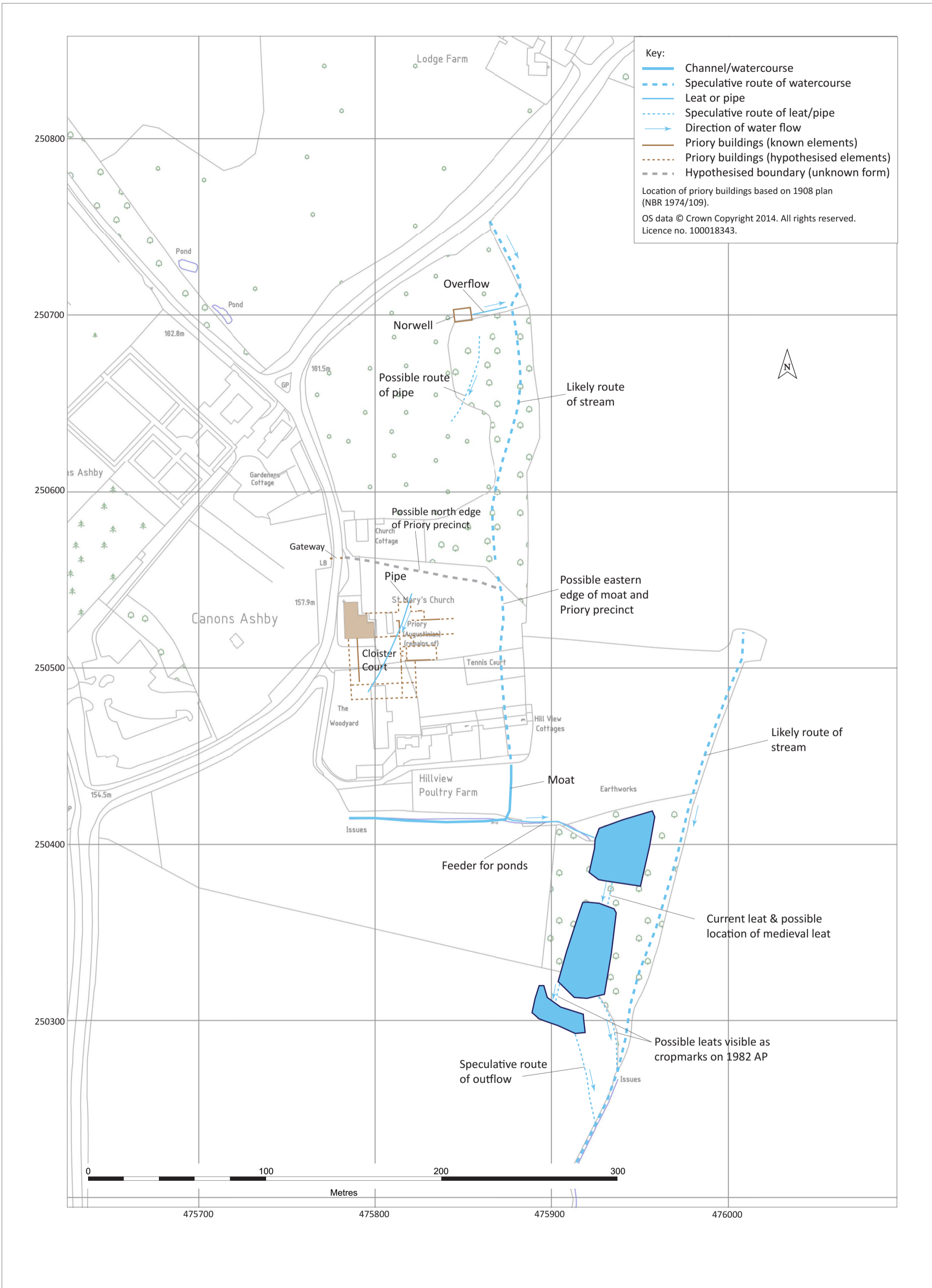


Figure 6: Plan showing water management features associated with the Priory

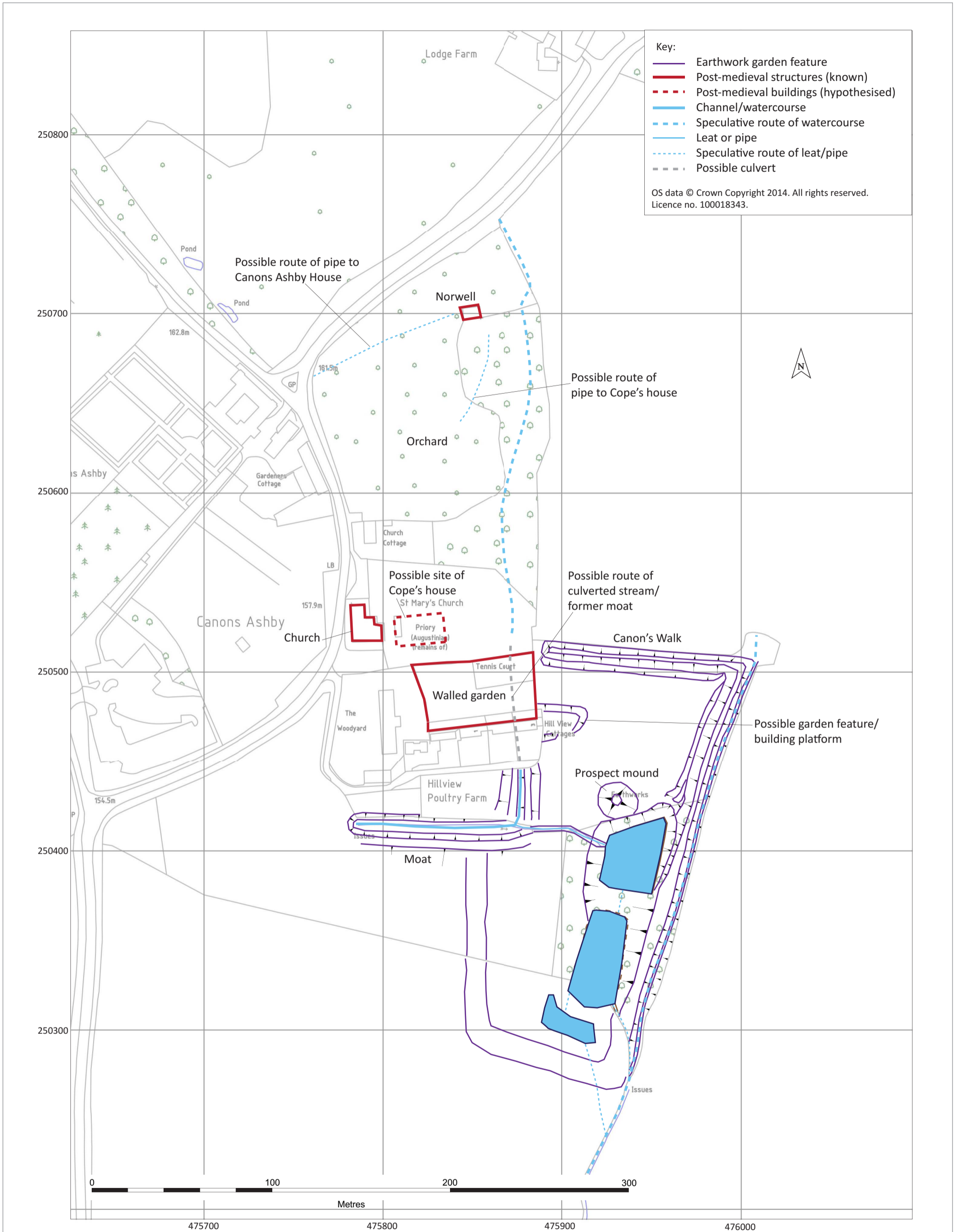


Figure 7: Plan showing Cope's Tudor garden features

PLATES



Plate 1: General view of Pond 1, looking south-west



Plate 2: Core sampling off the pontoon at Pond 1



Plate 3: View over the ponds from the prospect mound (C008), facing south



Plate 4: Possible outflow leat C005 from pond C003, viewed facing south-east



Plate 5: Southern arm of moat C015, showing vegetation growth, viewed facing north-east



Plate 6: Northern bank of the Canon's Walk C004, showing erosion scars, viewed facing north



Plate 7: Eastern bank of the Canon's Walk C004 (on left) and ditch C007, showing animal burrow erosion and modern tree growth, viewed facing north



Plate 8: Linear ditch C013 forming east side of monastic precinct, viewed facing north



Plate 9: Eastern wall of the walled garden (C011), showing gateway, with scarp C010 in foreground, viewed facing north-west



Plate 10: Linear hollow C023 on probable pipeline route, viewed facing east towards Norwell

APPENDIX 1 – SEDIMENT LOGS

Sample Location	Thickness	Reduced level (at base of unit)	Description
001	0.00 – 0.60m	144.90	Water
001	0.60 – 0.80m	144.70	Very soft, dark grey-brown, organic SILT
001	0.80 – 1.70m	143.80	Soft, very dark grey and black, organic SILT with occasional peat lenses
001	1.70 – 1.95m	143.55	Firm, dark grey, grey and locally black, silty CLAY

Sample Location	Thickness	Reduced level (at base of unit)	Description
002	0.00 – 1.50m	144.10	Soft, dark grey, dark brown and black, very organic SILT
002	1.50 – 1.70m	143.90	Soft, locally firm, grey, silty, organic CLAY with occasional orange-brown sand and gravel of sandstone. Obstruction (gravel?) at 1.70, could not continue

Sample Location	Thickness	Reduced level (at base of unit)	Description
003	0.00 – 0.40m	145.10	Very soft, dark brown, organic SILT
003	0.40 – 0.80m	144.70	Very soft, light grey organic, SILT
003	0.80 – 1.30m	144.20	Very soft, very dark grey and black, organic SILT with occasional peat
003	1.30 – 1.70m	143.80	Soft, locally firm, light grey and blue-grey, silty, organic CLAY

Sample Location	Thickness	Reduced level (at base of unit)	Description
004	0.00 – 0.40m	145.10	Water
004	0.40 – 1.20m	144.30	Very soft, dark brown, brown, dark grey, grey and black, slightly sandy, organic SILT
004	1.20 – 1.45m	144.05	Very soft, dark brown, dark grey and black, slightly sandy, organic SILT
004	1.45 – 1.50m	144.00	Soft, locally firm, light grey and blue-grey clayey, organic SILT with occasional sandstone gravel. Cannot penetrate further due to gravel

Sample Location	Thickness	Reduced level (at base of unit)	Description
005	0.00 – 0.40m	145.10	Water
005	0.40 – 1.25m	144.25	Very soft, dark brown, brown, dark grey, grey and black, slightly sandy, organic SILT
005	1.25 – 1.40m	144.10	Soft, locally firm, light grey and blue-grey silty, organic CLAY with occasional sandstone gravel

Sample Location	Thickness	Reduced level (at base of unit)	Description
006	0.00 – 0.50m	145.00	Very soft, dark brown, organic SILT
006	0.50 – 0.60m	144.85	Very soft, dark brown, grey and light grey, organic SILT
006	0.60 – 1.10m	144.80	Very soft, dark brown, grey and light grey, organic SILT with occasional sandstone gravel

Sample Location	Thickness	Reduced level (at base of unit)	Description
007	0.00 – 1.00m	144.50	Very soft, brown and dark brown, organic SILT
007	1.00m – 1.10m	144.40	Very soft, brown and dark brown, organic SILT with occasional gravel of sandstone and flint

Sample Location	Thickness	Reduced level (at base of unit)	Description
008	0.00 – 0.30m	144.40	Very soft, grey, dark grey and black, slightly sandy, organic SILT
008	0.30 – 0.50m	144.20	Soft, locally firm, grey, dark grey and locally orange-brown, silty, organic CLAY
008	0.50 – 1.60m	143.10	Very soft, grey, light grey, silty, organic CLAY with fibrous peat lenses

Sample Location	Thickness	Reduced level (at base of unit)	Description
009	0.00 – 0.30m	144.20	Soft, locally firm, brown, grey and orange-brown, slightly sandy, organic SILT
009	0.30 – 1.00m	143.50	Soft, locally firm, grey, brown, locally orange-brown, silty, organic CLAY with pockets of peat
009	1- 1.70m	142.80	Soft, locally very soft, grey, light grey, brown, orange-brown and black, silty, organic CLAY with fibrous peat lenses.

Sample Location	Thickness	Reduced level (at base of unit)	Description
010	0.00 – 0.30m	144.60	Soft, locally firm, brown and grey-brown, slightly sandy, silty, organic SILT
010	0.30 – 1.00m	143.90	Soft, locally firm, brown and orange-brown, slightly sandy, silty CLAY with occasional sandstone gravel
010	1.00 – 1.90m	143.00	Soft, grey, light grey and black, silty, organic CLAY with peat lenses
010	1.90 – 2.00m	142.90	Soft becoming firm, grey and blue-grey, silty CLAY

Sample Location	Thickness	Reduced level (at base of unit)	Description
011	0.00 – 0.30m	143.80	Soft, locally firm, brown and grey-brown, slightly sandy, silty, organic SILT.
011	0.30 – 0.60m	143.50	Soft, locally firm, brown and orange-brown, slightly sandy, silty CLAY with occasional sandstone gravel.
011	0.60 – 1.50m	142.60	Soft, grey, light grey and black, silty, organic CLAY with peat lenses.
011	1.50 – 1.80m	142.30	Soft becoming firm, grey and blue-grey, silty CLAY

Sample Location	Thickness	Reduced level (at base of unit)	Description
012	0.00 – 0.20m	143.90	Soft, locally firm, brown and grey-brown, slightly sandy, silty, organic SILT.
012	0.20 – 1.25m	142.85	Soft, locally firm, grey and brown, CLAY.
012	1.25 – 1.70m	142.40	Soft, grey, light grey and black, silty, organic CLAY with peat lenses.
012	1.70 – 1.95m	142.15	Soft becoming firm, grey and blue-grey, silty CLAY.

Sample Location	Thickness	Reduced level (at base of unit)	Description
013	0.00 – 0.30m	143.75	Soft, locally firm, brown, grey-brown and dark grey, slightly sandy, silty, organic SILT.
013	0.30 – 0.60m	143.45	Soft, locally firm, grey and light grey, CLAY.
013	0.60 – 1.50m	142.55	Soft, grey, light grey and black, silty, organic CLAY with peat lenses.
013	1.50 – 1.64m	142.41	Soft, locally firm, grey and blue-grey, silty CLAY.
013	1.64 – 1.65m	142.40	Firm, grey and blue-grey, silty CLAY with flint gravel.

Sample Location	Thickness	Reduced level (at base of unit)	Description
014	0.00 – 0.30m	144.00	Soft, locally firm, brown, grey-brown, and dark grey, slightly sandy, silty, organic SILT.
014	0.30 – 1.20m	143.10	Firm, brown and orange-brown, slightly sandy CLAY with occasional sandstone and flint.
014	1.20 – 1.40m	142.90	Dark brown and black fibrous PEAT.
014	1.40 – 2.00m	142.30	Firm, locally soft, grey, brown and orange-brown CLAY.

APPENDIX 2 – POLLEN ASSESSMENT

Emily Forster, University of Sheffield Department of Archaeology

Methodology

Six samples from Stew Ponds 1 and 2 were processed for pollen analysis. Subsamples of 1cm³ were prepared using standard extraction procedures of potassium hydroxide digestion, hydrofluoric acid (HF) treatment, acetolysis and staining with safranin (after Moore et al. 1991). Two *Lycopodium* tablets (batch 3862: 9666 spores per tablet) were added to each sample prior to extraction to facilitate calculation of pollen concentrations (after Stockmarr 1971). Samples were mounted in silicon oil and scanned at x200 magnification in order to judge the pollen content and state of preservation. Three samples were then counted to a total of 150 land pollen grains at x400 magnification, using a Zeiss Axiolab light microscope. The key of Moore et al. (1991) and the pollen reference collection at the University of Sheffield's Department of Archaeology were used to aid more difficult identifications. The nomenclature follows Bennett (1994) and van Geel (1998) was used as a reference for non-pollen palynomorphs.

Results

The samples consist of organic sediment and clay with little observable plant material, and are not thought to be calcareous as there was no reaction with hydrochloric acid (see Troels-Smith 1955). All six of the samples processed contained well-preserved pollen in sufficient quantities for analysis (Table 1). Samples 2 (pond 1), 4 and 6 (pond 2) were selected for assessment as these were seen to have high pollen concentrations following the preliminary scan of the slides.

Table 2 shows the pollen counts and total land pollen concentrations for the three assessed samples. Concentrations were high, with the lowest being more than 27000 land pollen grains per cm³ of sediment in sample 6. There is no great difference between the samples in terms of composition, although some of the rarer types are not present in all three samples. Arboreal pollen values are low, indicating a largely open landscape, although appropriately ash (*Fraxinus excelsior*) was found to constitute a significant proportion of the assemblage. The pollen is dominated by taxa of open ground, with a notable number of indicators of anthropogenic activity. Large grass grains that fall within the size range for cereals (after Andersen 1979 and Tweddle et al. 2005) were found in all three samples, together with indicators of grazing, disturbance and cultivation (e.g. nettles (*Urtica* sp.), plantains (*Plantago* sp.), cornflowers (*Centaurea cyanus*))(see Table 3, Appendix). The assemblage strongly supports the interpretation that agricultural activity was taking place in the landscape surrounding the ponds.

As would be expected, all three samples include taxa from wetland and aquatic habitats, such as sedges (Cyperaceae), reeds/rushes (*Sparganium emersum*-type), water plantain (*Alisma plantago-aquatica*), milfoil (*Myriophyllum spicatum*) and pondweed (*Potamogeton natans*-type). These taxa indicate slow-moving or stagnant water and are likely to have grown at the pond margins (see Table 3, Appendix). Meadowsweet (*Filipendula*) and buttercups (*Ranunculus acris*-type) may also have grown in wetter areas around the ponds, and it is probable that some of the grass pollen (Poaceae) originates from wetland or aquatic grasses.

Although there are a relatively large number of broken and degraded grains within the assemblage (Table 2), the majority of the pollen encountered was well-preserved and identifiable.

Fungal material was present in all of the samples and seems to consist mostly of ascospores, which originate from various fungi. Microcharcoal was also observed, which may indicate burning in the local area. A large number of small, dark spherical objects were encountered – these were particularly prevalent in sample 6. Owing to time constraints it was not possible to investigate these further; they may be a type of fungal material, but it is possible that they are SCPs (spheroidal carbonaceous particles), which usually indicate a date of post-1800 (see Rose 1990, Rose et al. 1995).

Summary and recommendations

Pollen preservation was good in all of the samples processed and there is a strong indication of agricultural activity in the pollen assemblages. The pollen reflects an open grazed/cultivated landscape, with ash being the only arboreal taxon to make a significant contribution to the assemblage. Further analysis is recommended, including a closer examination of fungal material to check for types associated with animal dung (e.g. indicating grazing around the pond or use of manure as fertiliser). Diatom analysis may also be of interest in terms of changing conditions within the ponds. Greater stratigraphic constraint of samples would be desirable for full pollen analysis (e.g. slices covering 1cm depth or cores/Kubiena tins taken from the section) as it would be difficult to comment on changes over time using the existing samples, owing to the range of depths incorporated. Given the possible presence of SCPs it would be advisable to obtain radiocarbon dates on the sequence before proceeding with analysis.

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Table 1: Sampling locations and results of initial scan

Sample no	Location	Depth (m)	Pollen preservation	Assessment count?
1	Pond 1 003	0.8-1.3	Good	No
2	Pond 1 004	1.2-1.45	Good	Yes
3	Pond 1 006	0.6-1.1	Good	No
4	Pond 2 010	1.5-1.9	Good	Yes
5	Pond 2 011	0.6-1.5	Good	No
6	Pond 2 012	1.25-1.7	Good	Yes

Table 2: Pollen assessment counts

		sample 2	sample 4	sample 6
Trees/shrubs	<i>Alnus glutinosa</i>			1
Trees/shrubs	<i>Betula</i>	1		
Trees/shrubs	<i>Corylus avellana</i> -type	1	1	
Trees/shrubs	<i>Quercus</i>	5	3	7
Trees/shrubs	<i>Fraxinus excelsior</i>	23	18	9
Trees/shrubs	<i>Pinus sylvestris</i>	1.5	2.5	
Trees/shrubs	<i>Ulmus</i>	2	2	
Herbs	Apiaceae undiff.	4		2
Herbs	<i>Achillea</i> -type		1	
Herbs	Asteraceae undiff.	1		
Herbs	<i>Centaurea cyanus</i>	1		
Herbs	<i>Centaurea nigra</i>	2	1	1
Herbs	<i>Solidago virgaurea</i> -type	1		4
Herbs	<i>Cichorium intybus</i> -type	5	1	7
Herbs	Brassicaceae		4	3
Herbs	<i>Spergula</i> -type	1	1	
Herbs	Chenopodiaceae		1	
Herbs	Cyperaceae undiff.	2	17	7
Herbs	<i>Succisa pratensis</i>			1
Herbs	Fabaceae undiff.			1
Herbs	<i>Lotus</i>		2	2
Herbs	<i>Trifolium</i> -type		1	
Herbs	<i>Mentha</i> -type		1	2
Herbs	<i>Plantago lanceolata</i>	4	3	3
Herbs	<i>Plantago media/major</i>	3		2
Herbs	Large grasses/cereals	2	3	2
Herbs	Poaceae undiff.	64	67	60
Herbs	<i>Rumex acetosa</i>	2		3
Herbs	<i>Ranunculus acris</i> -type	2	3	8
Herbs	<i>Filipendula</i>	2		2
Herbs	Rosaceae undiff.	2	3	10
Herbs	Rubiaceae		1	
Herbs	<i>Urtica dioica</i>	6	7	10
Herbs	<i>Urtica urens</i>	13	13	10
	Broken/degraded - unidentifiable pollen	34	19	62
Ferns	<i>Polypodium</i>	1		
Ferns	<i>Pteridium aquilinum</i>			2
Ferns	Pteropsida monolete indet.		1	
Aquatics/reeds	<i>Alisma-plantago aquatica</i>	1	1	1
Aquatics/reeds	<i>Myriophyllum spicatum</i>			1
Aquatics/reeds	<i>Potamogeton natans</i> -type	1	2	
Aquatics/reeds	<i>Sparganium emersum</i> -type	3.25	2.5	1.25
	<i>Lycopodium</i> (marker spores)	81	69	109
	Land pollen sum	150.5	156.5	156
	Land pollen concentration	35919	43847	27668

Table 3: Summary of taxa identified (information on ecology and anthropogenic indicators summarised from Turner 1964, Behre 1981, Berglund et al. 1986, Vorren 1986, Stace 2010)

Family	Taxon	Common name	Comments
Trees and shrubs			
Betulaceae	<i>Alnus glutinosa</i>	alder	wet woodland
Betulaceae	<i>Betula</i>	birch	effective coloniser of open ground
Betulaceae/ Myricaceae	<i>Corylus avellana</i> -type	hazel, bog myrtle	usually assumed to be hazel, but <i>Myrica</i> is indistinguishable
Fagaceae	<i>Quercus</i>	oak	deciduous woodland tree
Oleaceae	<i>Fraxinus excelsior</i>	ash	woods, hedges and scrub - favours calcareous soils and wetter places
Pinaceae	<i>Pinus sylvestris</i>	Scots pine	colonising conifer – pollen can travel vast distances
Ulmaceae	<i>Ulmus</i>	elm	grows in woods, hedges, beside streams
Herbs			
Apiaceae	Apiaceae undiff.	carrot family	wide range of habitats - plants include cultivated taxa (e.g. carrot, celery, parsley, chervil), but also many wild plants
Asteraceae	<i>Achillea</i> -type (<i>Anthemis</i> -type)	daisies, tansies and similar plants	wide range of habitats
Asteraceae	Asteraceae undiff.	daisy family	wide range of habitats
Asteraceae	<i>Centaurea cyanus</i>	cornflower, bluebottle	arable indicator
Asteraceae	<i>Centaurea nigra</i>	lesser knapweed, hardheads	grasslands, waysides
Asteraceae	<i>Solidago virgaurea</i> - type (<i>Aster</i> -type)	daisies, goldenrod, fleabane, etc.	wide range of habitats
Asteraceae (Lactuceae)	<i>Cichorium intybus</i> - type (<i>Taraxacum</i> - type)	chicory, dandelions and similar plants	wide range of habitats
Brassicaceae	Brassicaceae	cabbage family	wide range of habitats - plants include cultivated taxa (e.g. cabbage, mustard, rape, radish), but also many wild plants
Caryophyllaceae	<i>Spergula</i> -type	spurries, pinks	grassland - variable habitats
Chenopodiaceae	Chenopodiaceae	Fat hen and goosefoot	waste and cultivated ground
Cyperaceae	Cyperaceae undiff.	sedges, rushes	wet areas
Dipsacaceae	<i>Succisa pratensis</i>	devils-bit scabious	wide range of habitats
Fabaceae	Fabaceae undiff.	legume family	wide range of habitats - includes peas/beans, but many wild flowering plants
Fabaceae	<i>Lotus</i>	bird's-foot trefoils, deervetches	wide range of habitats
Fabaceae	<i>Trifolium</i> -type	clovers, trefoils	grassland
Lamiaceae	<i>Mentha</i> -type	mints	wide range of habitats, mostly damp/wet places
Plantaginaceae	<i>Plantago lanceolata</i>	ribwort plantain	grassy places (common in pasture, disturbed or arable ground)
Plantaginaceae	<i>Plantago media</i> /major	great/hoary plantain	open, grassy places, including cultivated ground
Poaceae	Large grasses/cereals	wheat, barley, oats (not rye)	includes some large wild grasses, but other indicators of cultivation support cereal identification here
Poaceae	Poaceae undiff.	grasses	very wide range of habitats - includes aquatics
Polygonaceae	<i>Rumex acetosa</i>	sorrel, dock	grassland, clearings in woodland
Ranunculaceae	<i>Ranunculus acris</i> -type	buttercups, anemones	wide range of habitats, some aquatic
Rosaceae	<i>Filipendula</i>	meadowsweet/ dropwort	grasslands, wet places
Rosaceae	Rosaceae undiff.	rose family	wide range of habitats
Rubiaceae	Rubiaceae	madders, bedstraws, goosegrass, etc.	wide range of habitats - some in arable/waste ground and pasture but

			also damp, marshy environments
Urticaceae	<i>Urtica dioica</i>	stinging nettles	range of habitats, favours nitrate-rich soils (grazed/fertilised)
Urticaceae	<i>Urtica urens</i>	small nettles	waste places and cultivated ground
N/A	Broken/ degraded - unidentifiable pollen	N/A	
Ferns			
Polypodiaceae	<i>Polypodium</i>	polypody	epiphyte associated with oak trees/woodland, also grows on rocks and walls
Dennstaedtiaceae	<i>Pteridium aquilinum</i>	bracken	range of habitats including grazed land
N/A	<i>Pteropsida monolete</i> indet.	ferns	very wide range of habitats
Reeds and aquatics			
Alismataceae	<i>Alisma-plantago aquatica</i>	water plantain, mad dog weed	wet places, mud
Haloragaceae	<i>Myriophyllum spicatum</i>	water milfoil	water bodies, particularly still/slow-moving water
Potamogetonaceae	<i>Potamogeton natans</i> -type	pondweed	water bodies, marshes, ditches
Typhaceae	<i>Sparganium emersum</i> -type	reeds	water bodies, rivers, reed swamps

APPENDIX 3 – PLANT MACROFOSSIL ASSESSMENT

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Introduction

Auger cores were taken from three probable medieval fish ponds at the National Trust property of Canons Ashby, Northamptonshire, in advance of possible restoration of the ponds. This report summarises the results of a preliminary assessment of two sediment samples from pond 1 and two sediment samples from pond 2, which were processed for the recovery of plant macrofossils preserved by anoxic waterlogging.

Recovery, processing and laboratory methods

Samples of organic rich material were processed for the recovery of waterlogged plant macrofossils, broadly following the techniques outlined in Kenward *et al* (1980). The samples were disaggregated in water, before being processed by gently washing material through a stack of sieves of mesh size 2mm, 1mm, 500µm and 250µm. Material from each size sieve fraction was stored in 70% dilute ethanol and distilled water in airtight glass jars and kept refrigerated, in accordance with English Heritage guidelines for the curation of waterlogged macroscopic and invertebrate remains (Robinson, 2008). Any material suitable for radiocarbon dating was removed from the samples prior to the addition of ethanol and stored in distilled water in glass tubes with plastic stoppers.

The samples were assessed in accordance with English Heritage guidelines for environmental archaeology assessments (Jones, 2011). The main aim of this assessment was to determine the concentration and state of preservation of any archaeobotanical material present within the samples, as well as to evaluate the potential of this material to provide evidence for the nature of the local and wider environment, the function of the contexts or for the agricultural economy of the site.

A preliminary assessment of the samples was made by scanning under a low power binocular microscope (x7-x45) and recording the abundance of the main classes of plant material present. Preliminary identification of plant material was carried out by comparison with material in the reference collections at the Department of Archaeology, University of Sheffield and various reference works (Berggren, 1969; Berggren, 1981; Anderberg, 1994; Cappers *et al*, 2006). Nomenclature follows Stace (2010). The data recorded for each sample is presented in full below in table 1.

Results of preliminary assessment

Pond 1

Context 004

Sample 10 contained a moderate density and a low diversity of organic material preserved by anoxic waterlogging. The dominant class of plant material present was indeterminate herbaceous plant roots or stems. A low density of small diameter twigs and leaf fragments were also present. Identifiable seeds of plant taxa included common nettle (*Urtica dioica*), redshank / pale persicaria (*Persicaria maculosa* / *lapathifolia*) and horned pondweed (*Zanichella palustris*). Other palaeo-environmental remains present included a moderate

density of invertebrate remains (Coleoptera), water flea egg cases (*Daphnia* sp.) and snail shells (Mollusca).

Context 007

Sample 7 contained a high density and a moderate diversity of organic material preserved by anoxic waterlogging. The dominant class of plant material present was indeterminate herbaceous plant roots or stems. A very low density of moss fragments was also present. Identifiable seeds of plant taxa included celery leaved buttercup (*Ranunculus scleratus*), common nettle (*Urtica dioica*), docks (*Rumex* spp.), marshwort (*Apium* sp.), hedge parsley (*Torilis* sp.), grasses (Poaceae), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Other palaeo-environmental remains present included a high density of invertebrate remains (Coleoptera) along with a low density of water flea egg cases (*Daphnia* sp.) and snail shells (Mollusca).

Pond 2

Context 008

Sample 8 contained a moderate density and diversity of plant material preserved by anoxic waterlogging. The dominant class of plant material present was indeterminate herbaceous plant roots or stems. A low density of small diameter twigs and leaf fragments were also present, including a whole probable hawthorn leaf (cf. *Crataegus*). A single stonewort (*Chara* sp.) oospore was also noted. Identifiable seeds of plant taxa included celery leaved buttercup (*Ranunculus scleratus*), common nettle (*Urtica dioica*), chickweed (*Stellaria media*), docks (*Rumex* spp.), thistles (*Carduus* / *Cirsium*), hedge parsley (*Torilis* sp.), horned pondweed (*Zanichella palustris*), sweet grass (*Glyceria* sp.) grasses (Poaceae) and sedges (*Carex* spp.). Other palaeo-environmental remains present included a moderate density of invertebrate remains (Coleoptera) along with a moderate density of water flea egg cases (*Daphnia* sp.) and low density of snail shells (Mollusca).

Context 012

Sample 9 contained a low density but a moderate diversity of plant material preserved by anoxic waterlogging. The dominant classes of plant material present were indeterminate herbaceous plant roots and stems as well as wood fragments and small diameter twigs. Identifiable seeds of plant taxa included water crowfoot (*Ranunculus* subgen. *Batrachium* agg.), bulbous / meadow / creeping buttercup (*Ranunculus bulbosus/acris/repens*), common nettle (*Urtica dioica*), chickweed (*Stellaria media*), docks (*Rumex* spp.), speedwell (*Veronica* sp.), greater plantain (*Plantago major* ssp. *major*), selfheal (*Prunella vulgaris*), thistles (*Carduus* / *Cirsium*), prickly sow thistle (*Sonchus asper*), marshwort (*Apium* sp.), hedge parsley (*Torilis* sp.), pondweed (*Potamogeton* sp.), grasses (Poaceae), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Other palaeo-environmental remains present included a low density of invertebrate remains (Coleoptera) and a low density of water flea egg cases (*Daphnia* sp.).

Interpretation and discussion

A moderate to high density of plant material preserved by anoxic waterlogging was present in sample 7, context 007 and sample 10, context 004 from pond 1 as well as in sample 8, context 008 from pond 2. The diversity of identifiable plant remains in these samples was however low to moderate. Conversely, while the density of plant material in sample 9, context 012

from pond 2 was low the diversity of identifiable plant material was moderate. Overall the conditions for the preservation of organic material were generally good.

The plant macrofossil assemblage from pond 1 indicates the presence of water during the deposition of the sampled contexts due to the presence of the seeds of aquatic and marsh plant taxa such as celery leaved buttercup, marshworts, horned pondweed, rushes and sedges. A similar suite of plant taxa was also present in the sampled deposits from pond 2, with the addition of water crowfoot, pondweed and sweet grass. The presence of water flea egg cases in the samples from both ponds further indicates the presence of water.

Seeds of plant taxa commonly associated with fertile grassland, waste ground and cultivation were also represented in both ponds. In pond 1 these plant taxa included common nettle, redshank / pale persicaria, docks, hedge parsley and grasses while in pond 2 bulbous / meadow / creeping buttercup, common nettle, chickweed, docks, greater plantain, selfheal, thistles, prickly sow thistle, hedge parsley and grasses were represented.

Statement of potential and recommendations for further work

While a number of medieval fishponds have been documented in Northamptonshire (Steane 1970-71), few have been sampled for palaeo-environmental remains (Monckton 2006, 280). Full sorting and analysis of the waterlogged plant material present sample 7, context 007 from pond 1 and sample 8, context 008 from pond 2 would therefore be recommended. It is possible that some rare types of plant taxa were missed during scanning, and identification to species of some of the plant taxa noted during preliminary assessment may add some additional palaeo-environmental information. Although sample 9, context 12 from pond 2 was found to contain a high diversity of plant remains, it is unlikely that further palaeo-environmental information would be obtained from this sample with further study due the low density of material in this sample.

If further sediment from the ponds were to become available, it would be recommended that samples of five litres in volume be recovered in order to increase the range of plant material available for study, due to the moderate density of identifiable material present within the deposits. It would also be recommended that the processed material from all four samples be retained for possible analysis of other classes of palaeo-environmental material. It is possible that analysis of the Coleoptera present in samples 7, 8 and 10 and the Mollusca present in sample 10 may provide additional palaeo-environmental evidence.

Material suitable for use in radiocarbon dating was present in all four samples in the form of large leaf or herbaceous plant stem fragments in samples 7, 8 and 10 and a fragment of roundwood greater than 4mm in size in sample 9. It is generally considered preferable to use single items of wood or plant material for radiocarbon dating where possible, in order to minimise the potential for contamination. It is also preferable to date short life material such as stems, seeds or roundwood.

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Table 4: Preliminary assessment of macrofossils preserved by anoxic waterlogging at Canons Ashby, Northamptonshire.

CONTEXT NUMBER	004	007	008	012
SAMPLE NUMBER	10	7	8	9
POND NUMBER	1	1	2	2
DEPTH	0.00-1.2	0.40-0.50	0.90-1.6	1.7-1.95
PROVISIONAL DATE	Medieval	Medieval	Medieval	Medieval
VOLUME OF SEDIMENT PROCESSED (ml)	250	500	300	200
Non-seed material				
Mosses (Bryophyta)		-		
Bark				
Twigs	-		+	-
Wood fragments (>2mm)				
Wood fragments (< 2mm)				+
Wood charcoal (> 2mm)				
Wood charcoal (< 2mm)				
Indeterminate herbaceous plant roots/stems	+++++	+++++	++++	+
Leaf fragments	-		-	
Probable hawthorn leaf (cf. <i>Crataegus</i>)			-	
Stonewort (<i>Chara</i> sp.) oospore			-	
Invertebrate material*				
Beetle remains (Coleoptera)	++	++++	++	-
Water flea (<i>Daphnea</i> sp.) egg cases	+++	-	++	-
Snail shells (Mollusca)	+++	-	+	
Wild / weed plant seeds				
Water crowfoot (<i>Ranunculus</i> subgen. <i>Batrachium</i> agg)				-
Meadow/creeping buttercup (<i>Ranunculus bulbosus/acris/repens</i>)				-
Celery leaved buttercup (<i>Ranunculus scleratus</i>)		-	+	-
Common nettle (<i>Urtica dioica</i>)	-	+	+	+
Redshank / pale persicaria (<i>Persicaria maculosa / lapathifolia</i>)	-			
Chickweed (<i>Stellaria media</i>)			-	-
Docks (<i>Rumex</i> spp.)		-	-	-
Speedwell (<i>Veronica</i> sp.)				-
Greater plantain (<i>Plantago major</i> ssp. <i>major</i>)				-
Selfheal (<i>Prunella vulgaris</i>)				-
Thistle (<i>Carduus / Cirsium</i>)			-	-
Prickly sow-thistle (<i>Sonchus asper</i>)				-
Marshwort (<i>Apium</i> sp.)		-		-
Hedge parsley (<i>Torilis</i> sp.)		+	+	-
Pondweed (<i>Potamogeton</i> sp.)				-
Horned pondweed (<i>Zanichella palustris</i>)	+		-	
Sweet grass (<i>Glyceria</i> sp.)			-	

CONTEXT NUMBER	004	007	008	012
SAMPLE NUMBER	10	7	8	9
POND NUMBER	1	1	2	2
DEPTH	0.00-1.2	0.40-0.50	0.90-1.6	1.7-1.95
PROVISIONAL DATE	Medieval	Medieval	Medieval	Medieval
VOLUME OF SEDIMENT PROCESSED (ml)	250	500	300	200
Small grass seed (< 2mm Poaceae)		+	+	+
Rushes (<i>Juncus</i> spp.)		++		+
Sedge (<i>Carex</i> sp.)		+++	++	-
Sample summary information and recommendations				
Diversity of waterlogged plant remains	Low	Moderate	Moderate	Moderate - High
Density of waterlogged plant remains	Moderate	High	Moderate	Low
Further analysis of plant macrofossils recommended	No	Yes	Yes	No
Material suitable for C ¹⁴ dating	Yes	Yes	Yes	Yes
Retain material for possible analysis of additional palaeo-environmental material	Yes	Yes	Yes	Yes

Key - = < 10, + = 11 – 50, ++ = 51 – 100, +++ = 101 – 200, ++++ = 201 – 500, +++++ = > 500 items. (c) = charred

APPENDIX 4 – WALKOVER SURVEY GAZETTEER

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C001	Conduit associated with stew ponds, Canon's Ashby	Conduit	Narrow channel connecting the northern and middle stew ponds. The channel is up to 1m in width, 0.3m in depth at the north end, becoming more ephemeral to the south. A trickle of water runs through. There was no visible stonework at the time of survey, and the sides are relatively indistinct due to vegetation coverage.	Poor	SP 57935 50375	1900 OS map
C002	Northern stew pond, Canon's Ashby	Fish pond	Northern pond of an original run of three, now only two visible. The northern pond is currently the most visible, and contains some water in the centre, with a slight bank around the probable original south edge, higher banks to the west and north. The extent of the pond to the east is unclear, it may have extended up to the edge of the Canon's Walk (C004), which may enhance a natural rise in the ground level. There is no evidence for the pond cutting into the walk. The pond is assumed to have originated as a fish pond associated with the priory to the north, later used as an ornamental pond in the Tudor-period garden. A leat (C018) may have fed water from the moat into the northwest corner of the pond, and a second leat (C001) feeds water from the northern to the middle pond.	Poor	SP 57938 50397	1884 OS map
C003	Middle stew pond, Canon's Ashby	Fish pond	The middle pond of an original run of three, of which only two are now visible. The edges of the pond are difficult to trace on the ground, due in part to vegetation coverage and silting of the pond, but a slight bank on the western side seems to mark the edge of the pond and a slight change in ground levels may represent the northern edge. The eastern edge may be formed by the base of the Canon's Walk (feature C004), whilst the southern edge is difficult to define and may have been cut by a modern field boundary. The pond is currently dry, with some damp areas, and has a possibly modern outlet leat to the southeast (C005). It is fed by a leat (C001) from the northern pond (C002).	Poor	SP 57926 50345	1884 OS map

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C004	Canon's Walk, Canon's Ashby	Walk - Earthwork bank	An earthen bank formerly forming a roughly rectangular walkway leading from the walled garden (C011) in the north, around the fish ponds (C002-003) at the south east, and originally heading back northwards towards the moat (C015). It is likely to have been constructed as part of the Tudor gardens on the former priory site. The northern and eastern sections of the walk survive as earthworks, whilst the southern and western parts of the circuit have been levelled. The full course of the walk is shown on the RCHME survey plan. Where it survives, the bank varies between 0.80m and 1.5m in height. In places it has a clearly defined level top, but parallel with the middle stew pond (C003) it becomes broader, wider and less defined. Along the northern stretch, the bank is overgrown with hawthorn and brambles, and on the eastern stretch adjacent to the stew ponds it is covered with young trees and shrubs. There is erosion on the bank, which in part seems to derive from cattle poaching, and rabbit burrows are visible in places along the eastern bank. Within the northern field, the bank has a slight ditch on the south and west sides, though this is not visible adjacent to the stew ponds further south. There is a more substantial ditch to the east and north (feature C007). The junction of the north-south and east-west banks at the northeast corner of the walk has been eroded and worn by animal and vehicular passage between two fields, and the bank is substantially lower in this area; the ditch is barely visible at this point also.	Average	SP 57982 50444	1884 OS map
C005	Outlet conduit for middle stew pond, Canon's Ashby	Conduit	A drainage ditch or outlet leat leading from the southeast corner of the middle stew pond (C003) and heading southeast towards the field boundary. The ditch is up to 1m wide with straight cut edges, and holds some (stagnant) water. The cut ditch seems to start a little to the east of the pond edge, and the exit from the pond is more of a shallow soakaway than a deliberate outlet, though this could reflect the lack of water currently in the pond. The outlet leat does not continue for much more than 15m, and does not seem to join any other feature, so its function is unclear. It ends relatively close to, but at a substantially higher level than, a modern drainage ditch running along the field boundary. It is possible that it overflows into this ditch when full, but this seems fairly inefficient. A feature in this approximate area is shown on maps from 1900 onwards, and it is possible that its function was destroyed by the later construction of the drainage ditch and field boundary. There is a fairly modern appearance to the part of the ditch containing standing water, suggesting it may have been altered or re-excavated in relatively recently. Two low mounds to the north probably relate to spoil removed from the ditch.	Average	SP 57933 50317	None

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C006	Drainage ditch cutting stew pond, Canon's Ashby	Drainage ditch	A modern drainage ditch running along the north side of the field to the immediate south of the two surviving stew ponds. It is a steep sided, V-shaped profile ditch, 0.6m wide and around 0.6m deep with a low bank along its southern side. It is of modern appearance and marks a boundary of recent origin (not shown on any historic maps up to 1982). Map evidence suggests that it cuts the original southern edge of the middle stew pond (C003).	Good	SP 57920 50315	None
C007	Ditch adjacent to Canon's Walk, Canon's Ashby	Ditch	A linear ditch running parallel with and immediately east and north of Canon's Walk (C004), and possibly part of the same monument. The ditch is U-shaped in profile, up to 3m wide at the top and 1m wide at the base. The ditch does not hold any water currently, and it is unclear whether it was originally intended for this purpose, or is merely defining the edge of the raised walkway. The ground level to the east of the ditch is higher than that of the walk, making the ditch deeper on the east side than the west. There are numerous rabbit burrows in the eastern side of the ditch (particularly at SP 57950 50328). The ditch is at a higher ground level than the fish ponds to the west, with no visible link between them at the time of survey, so it is uncertain whether the ditch was initially used as a feeder for the ponds. To the north of the northern arm of Canon's Walk, the ditch is overgrown with hawthorn, brambles and nettles, and could not be investigated in detail.	Average	SP 57980 50426	1884 OS map
C008	Prospect mound, Canon's Ashby	Prospect mound	A low, flat-topped mound with shallow sloping sides, up to 1m in height. This appears to be the remains of a prospect mound overlooking the fish ponds to the south and the Tudor gardens. Photographs include the view from the mound.	Average	SP 57930 50431	
C009	Infilled moat, Canon's Ashby	Moat	Very slight banks and ditch representing the remains of the moat to the immediate south of Hill View Cottages. The feature now represents more of a slight terrace than a moat. The features are ephemeral, visible as a shallow hollow running north-south from the more obvious remains of the east-west arm of the moat to the south (C015). The western bank is a gradual slope down from the higher ground to the west, whilst the east bank is a very slight earthwork no more than 0.6m high on the east side and lower on the west. The slight hollow between the two is presumably the remains of the moat ditch. This stretch of the moat was still depicted on the 1952 OS map, but no longer shown by 1979.	Poor	SP 57874 50437	1884 OS map

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C010	Building platform, Canon's Ashby	Building platform	Two earthwork scarps aligned east to west, defining a roughly rectangular area. Part of a brick wall foundation 3 courses in height is visible in the southern bank where it has been eroded (possibly by cattle poaching). The southern scarp is c.0.4m in height and the northern scarp, which curves around the south at its eastern end, is a similar height. The feature is just to the southeast of the walled garden. No buildings other than a small shed are shown on any historic maps in this area, and it is possible that a structure or feature in this area could be associated with the Tudor manor house or garden occupying the former priory site.	Average	SP 57900 50482	None
C011	Walled garden, Canon's Ashby	Walled garden	Stone-built garden wall surrounding a rectangular area to the south of the priory site. The wall is of stone construction with mortar bonding, neatly coursed though using different sized stones in various areas. Only the east and north walls were seen during the survey. The west wall has a doorway in the centre with moulded lintel and reveals. It is unclear if the walls are related to the priory or the Tudor house, but the latter is more likely. A modern gate has been inserted further to the south. Straight joints in the stonework on the west and north walls may indicate the location of earlier joining features or areas of rebuild. Two rows of beam slots, set at slightly different intervals and heights, are visible in the north wall, starting around 10m from the eastern end of the wall. This wall also continues slightly beyond the junction with the eastern wall, possibly indicating that a former continuation has been demolished. A more detailed survey/record of this wall would be useful. It is likely to be a walled garden associated with the Tudor manor house, and is depicted as 'vineyard garden' on the 1884 OS map. The northern arm of the Canon's Walk starts just to the east of the north end of the garden.	Good	SP 57853 50490	1884 OS map
C012	Former trough, Canon's Ashby	Wall	Low L-shaped wall, stone-built, constructed into the face of a bank at the north edge of a fenced area between two fields and north of Canon's Walk. The wall is 4m long, aligned east to west, with a 1m return heading south, roughly at a right angle. The wall is up to 0.5m high, and is roughly coursed, surviving up to three courses in height. There has historically been some tree root damage to part of the structure, with a tree stump sticking out of it. The purpose of the feature is unclear: it does not clearly relate to the ditch east of Canon's Walk (C007), which stops further to the south and is not aligned on the stonework of feature C012. There is no sign of any pipework. The fenced area is not shown on historic maps, but a small square structure labelled 'spring' is first shown on the 1900 25 inch: 1 mile OS map in this location. It is possible that the stonework is the remains of a trough fed by the spring used for watering livestock.	Poor	SP 58006 50521	1900 OS map

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C013	Ditch east of priory site, Canon's Ashby	Ditch	A linear ditch or hollow to the east of the priory site and overgrown with nettles and brambles. The vegetation makes it difficult to see, but the southern end looks a bit wider than is depicted on the RCHME survey, and it is possible to trace the line of the edges of the feature as slight earthworks up to the northern wall of the walled garden (C011). The feature is c.8-10m wide at the top, 2-3m wide at the base and c.1m deep. There is a sunken hollow in one area, which may be a recent investigation pit. No water is visible within the feature. The feature is on a similar alignment to that of the infilled stretch of moat to the south (C009), and it is possible that it represents a continuation of the moat around the eastern side of the priory precinct, or a feeder channel from the Norwell (C025) to the moat. The feature is not shown on historic maps, but there is a field boundary in a similar location on the 1884 OS map.	Poor	SP 57873 50531	None
C014	Site of Augustinian priory, Canon's Ashby	Priory - earthwork	Low rectangular mound to the east of the priory church and representing the site of the main buildings of the Augustinian priory. The southern side is formed by a scarp c.1m in height, whereas on the south and west sides the slope is more gradual. To the east, the ground continues at the higher level up to the edge of the chapel.	Average	SP 57824 50524	1884 OS map
C015	Moat, Canon's Ashby	Moat	Fairly well-preserved stretch of moat, aligned east to west, though there are no signs of a north-south return at the western end and the return at the eastern end is mostly filled in (C009). The moat is c.2m wide at the base, with the northern side being c.2m high and that to the south being c.1.5m high to a slight bank. There is a further slope down to the south of this bank, forming part of terraced ground C016. There is no water visible within the moat at the time of the survey. There are trees along the bottom edge of the north bank at the west end, and more dense hawthorn and nettle vegetation in the eastern part.	Average	SP 57840 50420	1884 OS map
C016	Terraced ground, Canon's Ashby	Terraced ground	Terraced ground to the south and west of the moat (C015). It is unclear if this is the natural landform or a deliberate platform into which the moat was cut. The edge to the west of the moat is fairly amorphous and there is a second level of slight terracing to the north. The upper terracing to the north is c.1m high, the lower 1.5-2m high.	Average	SP 57763 50411	None
C017	Levelled remains of Canon's Walk, Canon's Ashby	Walk - Earthwork bank	Levelled remains of Canon's Walk to the south of the moat (C015). It is barely visible, comprising a very slight earthwork mound at the south end of the field and an almost invisible rise running north from it to a lower point in the terrace south of the moat, presumably the point at which the walk crossed the moat. The bank is generally no more than 0.1m high, up to 0.3m at the south end, and the hollow patch over the terrace is c.4m wide. The moat is overgrown in this area so it is not possible to ascertain whether there was a bridge in this area.	Poor	SP 57852 50414	1884 OS map

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C018	Conduit linking moat and stew ponds, Canon's Ashby	Conduit	Ditch continuing line of moat towards the top northwest corner of the northern stew pond (C002). No water within the ditch at the time of survey. The ditch is c.3m wide at the top, and c.1m wide at the base, 1m deep, with gently sloping sides. It is overgrown with hawthorn bushes and was not accessible at the time of survey.	Average	SP 57898 50420	1884 OS map
C019	Former pond south of Norwell, Canon's Ashby	Pond	A pond in the field to the north of the priory site. It was fenced off at the time of survey so could not be accessed. No water was visible within the pond. It is c.1m deep with a concave base. The bank to the east seems to represent the natural ground level on the east side. The pond appears to be deeper at its south end, and is more heavily vegetated in this area. A ditch or leat leads out of the south end towards ditch feature C013. The leat is c.1m wide and up to 0.6m.	Good	SP 57871 50613	None
C020	Earthwork scarp south of Norwell, Canon's Ashby	Scarp	A slight linear scarp aligned northwest to southeast, with a maximum height is 0.3m. It seems to be on the same alignment as a field boundary shown on historic mapping and is probably the remains of this.	Poor	SP 57853 50611	1884 OS map
C021	Earthwork scarp south of Norwell, Canon's Ashby	Scarp	A linear hollow shown as a scarp on the RCHME survey. It has a slight bank or rise on its east side and is aligned roughly north to south. The northeast end has an abrupt start, and it tapers out to the southwest. It is 0.8m high on its west side, 0.3m high on the east side.	Average	SP 57853 50666	None
C022	Manhole southwest of Norwell, Canon's Ashby	Manhole	Square concrete pad with a manhole cover in the centre, to the southwest of Norwell.	Good	SP 57830 50681	None
C023	Ditch west of Norwell, Canon's Ashby	Bank and ditch	Linear hollow with a bank to the south, heading west from Norwell for c.15m in a roughly east to west alignment. The bank may continue as a more ephemeral feature to the western edge of the field. Possibly associated with a pipeline leading from Norwell to Canons Ashby House.	Average	SP 57831 50700	None
C024	Hollow northwest of Norwell, Canon's Ashby	Hollow	Sub-oval hollow at the north edge of the Norwell field, northeast of Norwell. The hollow is c.1.5m deep, with slight banking to the east and south which may be part of bank C023. Its purpose is unclear, but it may be associated with earthwork remains of the Shrunken Medieval Village in the field to the north of the road. The feature was identified on the RCHME survey.	Average	SP 57818 50710	None

Feature ID	Feature name	Feature type	Description	Condition	NGR	Historic map
C025	Norwell, Canon's Ashby	Well & well house	Norwell. A small stone well-house in a slightly sunken enclosure, bounded by an iron fence. A slight hollow to the southeast of the well doesn't continue outside the enclosure. The well is thought to be associated with the priory, though the building may be of later date. A shallow hollow or ditch runs from north of the well around the northwest edge of the enclosure and heads towards ditch C023. This hollow is of unclear purpose.	Good	SP 57849 50700	1884 OS map
C026	Ditch and culvert running to east of Norwell, Canon's Ashby	Ditch/conduit	A ditch runs along the east side of the Norwell field, outside the fenced boundary, aligned roughly north to south then turning to the west a short distance to the north of Norwell. It is intersected by a culvert that runs towards (or from) the Norwell enclosure, then continues south towards pond C019. Its exact route in this area is unclear as it is inaccessible due to the fence and vegetation. It may be a drainage ditch. The ditch is not shown on historic maps, but a possible channel leading east from the Norwell is shown on the 1900 OS map, in the approximate location of the current culvert.	Good	SP 57866 50706	1900 OS map



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