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SNY	859
ENY	586
CNY	1984
Parish	1025
Rec'd	01/10/1999

Proposed development on land at Mill Farm, Gilling West, North Yorkshire:

Archaeological Evaluation

Archaeological Services
University of Durham

October 1999

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GNY 58

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Archaeological Evaluation

by: *Archaeological Services*
University of Durham
on behalf of:
Thornaby Angling Association

Contents

Summary

This report presents the results of a staged programme of archaeological investigation on land at Mill Farm, 0.5km west of Gilling West, North Yorkshire, where it is proposed to excavate two fishing lakes. The research was comissioned by Thornaby Angling Association and carried out according to a Scheme of Works supplied by the Heritage Unit at North Yorkshire County Council.

The research comprised a desk-based assessment of all available records, a field inspection with selected areas of topographic survey, an auger survey of peat deposits and retrieval of a core, assessment of the pollen record therein and an assessment of the likely impact of the proposed development.

Historical records indicate that Gilling West acted as a significant central place in both the pre- and post-Conquest periods. Several earthwork remains are evident around, but not within, the application area. Some of these features were associated with the mill that preceded Mill Farm while others are the remains of field boundaries. Limited peat deposits have been encountered in Area 2 of the proposed development area and extensive peat deposits encountered in Area 1. Pollen samples that have been assessed from Area 1 indicate that the pollen record largely reflects local changes in the vegetation, which appears to have been open rather than wooded for the duration of the accumulation of the peats. It has not been possible to ascertain dates for these deposits within the scope of the present assessment.

Excavation of a fishing lake in Area 1 would destroy most of the peat deposits there and detailed analysis of the pollen core, with radiocarbon dates, from this area is recommended. Area 2 contains relatively little peat and no further investigations are recommended in this area. However, given the historical significance of Gilling West it is possible that archaeological deposits or artefacts may still survive in the application areas.

1. Introduction

1.1 Project background

This report presents the results of a staged programme of archaeological assessment which has been carried out on land at Mill Farm, 0.5km west of Gilling West village in North Yorkshire. The work was commissioned by Thornaby Angling Association, who are proposing to excavate two fishing ponds on either side of Gilling Beck, and was carried out in accordance with a 'Scheme of Works' supplied by North Yorkshire County Council Heritage Unit.

The general aim of the evaluation was to provide an overview of the environmental, geomorphological and landscape history of the site, with reference to similar sites in the region, through a staged programme of works outlined below (Section 2.1).

1.2 Client

Thornaby Angling Association
30 Richardson Road
Thornaby
Teesside
TS17 8QG

1.3 Site location and description (Figure 1)

The proposed development areas comprise two wet pasture fields 0.5km west of Gilling West village, parish of Gilling with Hartforth and Sedbury, North Yorkshire. For the purposes of this report the western field is referred to as Area 1 and the eastern field as Area 2. The areas measure *c.*7.2ha in total, centred on NGR NZ 1775 0530. Both fields are predominantly level at a mean elevation of 90m A.O.D.

Geotechnical investigations have previously confirmed the presence of an upper layer of grey sandy clay alluvium overlying brown fibrous peat which in turn overlies more alluvium and blue-grey clay. The solid geology underlying the application area comprises Carboniferous Sandstone. There are no rock outcrops within the study area.

1.4 Dates

The research was undertaken between September 21st and October 13th 1999 and the report compiled between October 14th and 19th 1999.

1.5 Personnel

All personnel are employed by Archaeological Services, University of Durham (ASUD) unless stated otherwise. The desk-based research was conducted by C. Constable and D. Hale. A visual inspection of the proposed development areas and surrounding fields, followed by detailed topographic survey of selected areas, was conducted by D. Hale and D. Still. The auger survey and core retrieval was carried out by D. Hale and B. Westwood, the pollen analysis by D. Hale and confirmation of the identification of macrofossils by J.P. Huntley (English Heritage). This report was prepared by D. Hale with illustrations by L. Bosveld, B. Taylor and the author.

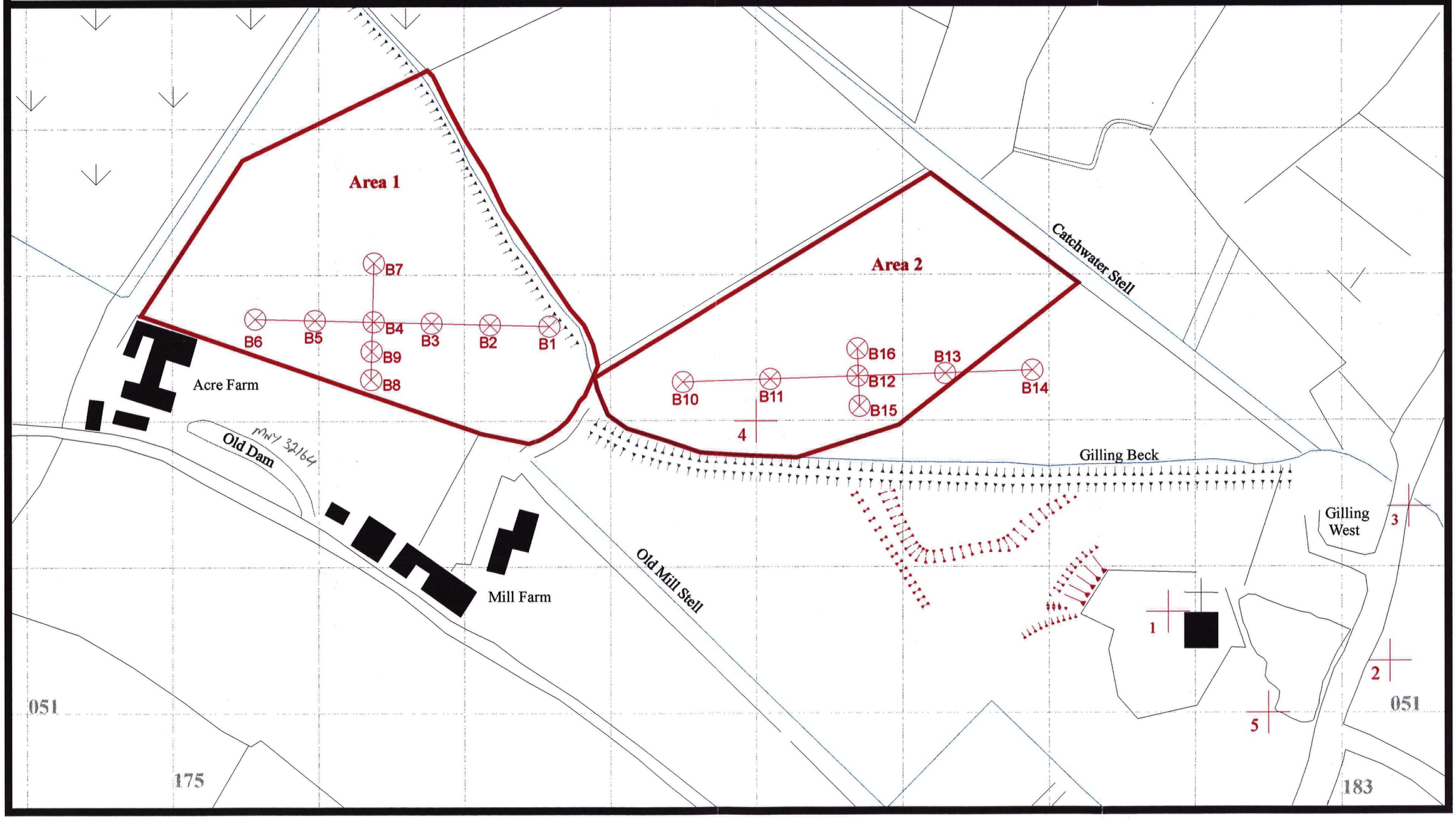
Figure 1:

Plan of proposed development area showing historic features and location of the auger survey

Research conducted by:
Archaeological Servives, University of Durham
On behalf of:
Thornaby Angling Association

Scale:
1:2500
0 metres 100

Key:
Earthworks surveyed by ASUD
Extant earthworks
Earthworks no longer visible
Auger point
Site listed on SMR



1.6 Acknowledgements

Archaeological Services is grateful to Thornaby Angling Association, Mr Bird at Mill Farm, J.P. Huntley of English Heritage and N. Campling at North Yorkshire County Council Heritage Unit for facilitating this scheme of works.

2. Project specification

2.1 Evaluation briefing

The 'Scheme of Works' supplied by North Yorkshire County Council required the following staged approach in the first instance:

1. a desk-based study of maps, documents and aerial photographs
2. a detailed inspection and topographic survey of earthwork features
3. an auger survey of deposits in the application areas
4. preparation and evaluation of pollen samples from a representative core
5. preparation of maps showing the history of the site
6. comparison with other palaeoenvironmental sites in the region
7. preparation of the evaluation report

3. The archaeological resource

3.1 Desk-based assessment

An examination of records, including maps and aerial photographs, was carried out at North Yorkshire Sites and Monuments Record Office (SMR), Archaeological Services University of Durham (ASUD) and Durham University Library in order to identify features of archaeological or historic interest both within 500m of the proposed development area and within the parish as a whole.

3.1.1 SMR records

The SMR office holds five records relating to the vicinity of the application area and a further nine records relating to the parish of Gilling with Hartforth and Sedbury. The numbers in brackets correspond to site locations on Figure 1:

St Agatha's Church and churchyard, Gilling West (1), NZ 1820 0515
The church at Gilling is historically referenced as an early monastic site, in part confirmed by a number of sculptural fragments which have been found in the area. The present church structure incorporates both Anglo-Saxon and Norman elements and stands in a circular enclosure. Excavations which were undertaken at the boundary of the enclosure confirmed that it has been badly damaged in the past (Webster & Cherry 1980, 223).

The Angel, Gilling West (2), NZ 1832 0515
This house to the east of the church contains 13th century masonry.

· **Anglo-Saxon sword (3), NZ 1835 0524** MNY 32161
This pattern-welded sword with silver gilt hilt was found 10m east of Gilling Beck Bridge, 1m from the beck itself. It is now part of the permanent collection at the Yorkshire Museum.

· **Anglo-Saxon sculpture (4), NZ 179 053** MNY 32162
Two fragments of Anglo-Saxon stone sculpture were found being used as drain covers in 1976 (Lang & Morris 1978).

Human remains (5), *c.*NZ 1825 0510
Whitaker (1823, 68) reports that eleven human bodies lying together and a further two bodies a short distance away were found *c.*75m south-east of the church.

Other SMR records relating to the parish:

Rock Castle, NZ 186 067
The site of an Iron Age farmstead which was partially excavated in 1987 and has been published in Fitts *et al.* (1994).

Scots Dyke, NZ 1948 0683 - NZ 1936 0612
National Monument no.26946 (Scheduled)
This monument is a linear boundary comprising a bank with flanking ditch to the east. Parts of the monument are visible in the landscape, other parts only survive on aerial photographs. The monument extends from the River Tees to the River Swale and is believed to date to the post-Roman period. The presence of the northern part of this length of monument has recently been confirmed geomagnetically by the author (GeoQuest Associates 1999). A copy of the Schedule Entry is provided in Appendix I.

Roman fort and prehistoric enclosure, NZ 1612 0833 & NZ 1616 0824
National Monument no.28289
This monument includes a Roman fort and an adjacent prehistoric enclosed settlement west of Carkin Moor Farm. The fort straddles the present course of the A66 road. A copy of the Schedule Entry is provided in Appendix I.

· **Enclosure and cropmarks, NZ 184 068** MNY 32163
Ordnance Survey Antiquity no.2 for Sheet NZ10NE
A sub-rectangular ditched enclosure and associated field ditches are visible on aerial photographs.

Sedbury Hall, NZ 1980 0508
Ordnance Survey Antiquity no.3 for Sheet NZ10NE
The former hall on this site was granted a licence to crenellate in 1463. Before the clearance of the property it comprised a three-storey tower contained within a later classical building.

The Folly, NZ 1706 0638
Ordnance Survey Antiquity no.7 for Sheet NZ10NE
A surviving arch on the present approach to Hartforth Hall contains the remains of a 15th century chapel. It is reported that further remains of this structure are visible to the east of the arch.

Hartforth Hall, NZ 1702 0649
Ordnance Survey Antiquity no.9 for Sheet NZ10NE
The hall dates from 1740 when it comprised a three-bay central portion and a two-bay left wing. More features, including another wing, were added in the 19th century.

Earthwork, NZ 1515 0485 - NZ 1525 0515
Ordnance Survey Antiquity no.12 for Sheet NZ10NE
This earthen bank is recorded as being part of Scots Dyke, however, this does not appear to be the case as Scots Dyke runs broadly north-south some 3km to the east of this earthwork. This feature currently marks part of the western boundary of Gilling with Hartforth and Sedbury Civil Parish and may originally have formed part of an estate boundary.

Gilling Castle, NZ 1639 0425
Ordnance Survey Antiquity no.13 for Sheet NZ10NE
The remains of the castle are believed to have been removed early in the 19th century.

3.1.2 Documentary evidence

Numerous journals, books and other types of documentary evidence, including extracts from Bede and the Domesday Book, have been consulted. Evidence relevant to this study is discussed below and a full list of sources is provided in Section 6. Extracts from the Domesday Book are provided in Appendix II.

Bede's *Ecclesiastical History of the English People* (Latham 1990) and the Domesday folio for Yorkshire (Faull & Stinson 1986) attest to the importance of Gilling in the pre-Conquest period.

Gilling is the site of the murder of King Oswin of Deira by his brother King Oswy of Bernicia. Bede states that Oswin ruled for seven years, but was unable to live peacefully with Oswy. The two kings raised armies against each other but Oswin realised that Oswy's army was considerably larger and so disbanded his army at Wilfar's Hill, ten miles north-west of Catterick. He then went to the house of a nobleman called Hunwald, who he regarded as his greatest friend. However, Hunwald betrayed Oswin to Oswy, who ordered his commander Ethelwin to put Oswin to death. Bede dates this crime to the twentieth of August in the ninth year of Oswy's reign, AD 651. At a later date a monastery was founded on the site which offered prayers for both kings each day. Bede makes a further mention of the monastery at Gilling when he records that Trumhere, the third Bishop of Rochester, was originally the Abbot of Gilling.

The establishment of a monastery at Gilling has been questioned by Haigh (1871, 253), based on the find of a single cross at Collingham which references King Oswini. However, recent scholarship has confirmed that Gilling West is the most likely location

for the monastery (Professor R. Cramp pers. com.). An examination of the map data below (below, Section 3.1.3) reveals that it is possible to determine the likely form of the monastic establishment from earlier plans of the village.

The continuing importance of the monastic site can be demonstrated by the eleven pieces of Anglo-Saxon sculptured stone which have been found in the vicinity (D. Craig pers. com.). The most recent finds of sculptured stone comprise two pieces which were employed as drain covers *c.*200m west of the church and this suggests that other fragments may yet be found.

The dating of the appearance in the landscape of nucleated villages in northern England has been questioned many times recently but it has been established by Pallister (1993), using data from the Domesday Book, that nucleated villages are most likely to date from before the Norman Conquest.

The references to Gilling in the Domesday Book show that the village retained its importance as the centre of a large estate or Wapentake. The survival of Gilling as a central place is emphasised by the valuation of the church at the dissolution of the chantries (Whitaker 1823). Gilling church was served by six priests and the vicar, with a further two priests serving in chantries. The parish of Gilling was also extensive, including several other villages: Forcett, Hutton Magna, South Cowton, Eryholme and the Chapelries of Barforth and Watham. Elements of the parish were detached from the main part of Giling Parish (Page 1914), indicating that the area controlled from this church was once more extensive and was probably similar to those villages listed in Domesday as part of the Wapentake of Gilling.

The data contained in the Domesday Book were collected before 1086 and it is likely that the folios for Yorkshire were among the first to be compiled (Pallister 1993). Domesday makes no reference to the settlement at Richmond and indicates that both Gilling West and Catterick retained their importance as estate centres into the immediate post-Conquest period. At Catterick there are the remains of a motte, commonly called Pallet Hill, adjacent to the church while at Gilling, Castle Hill may mark the location of a possible early castle in this area. The foundation date of Richmond's castle and borough remain unknown; however, the earls of Richmond received the grant of Richmondshire in 1071 (Peers 1953) and the first charter dated at Richmond was issued between 1109 and 1114 (Beresford 1967). It is therefore possible that Gilling continued as an important centre of Richmondshire for much of the immediate post-Conquest period.

Gilling remained, with Richmondshire, a demesne manor in the possession of the Dukes of Brittany until 1241 when Richmondshire and the other holdings of the earls were transferred to Peter de Sabudia (Calendar of Charter Rolls volume 1, 1226-1257, 259). An inquisition into the holdings of Peter de Sabudia listed that Gilling was held as a demesne manor with a capital messuage (Calendar of Inquisitions Edward I volume 2, 213). King Richard II confirmed the donation by Alan the Black, Earl of Richmond, of the parish church of Gilling with one carucate of land (Calendar of Charter Rolls volume 3, AD 1300-1326). On the 20th February 1475 Gilling, together with most of Richmondshire, was passed to Richard, Duke of Gloucester, the future Richard III (Calendar of Patent Rolls 1467-1477). After the end of the Plantagenet

dynasty Richmondshire returned to royal ownership until the 15th May 1495 when it was granted to John Norton with all lands, rents and services (Page 1914) except: knight's fees, advowsons, wards and marriages, reliefs, heriots escheates, waifs, strays, chattels of felons, fugitives, condemned persons, outlaws and confiscated goods. This means that Norton only received the rents from the estate while the crown retained the feudal rights of lordship in the manor. The land was held for one twentieth of a knight's fee and £25 11s $7^{1/2}$d (Calendar of Patent Rolls 1494-1509). In 1565 the manor of Gilling was leased for 21 years to Henry Brakenburg, which prior to this grant was in the possession of Henry Barker, part of the convent at St Mary's Abbey in York (Calendar of Patent Rolls 1563-1566). The manor was later granted to Richard Bowes of South Cowton, the Treasurer of Berwick on Tweed and Ambassador to Scotland (Page 1914). Ralph, the son of Richard Bowes, then sold the manor to Humphrey Watson whose family held the land until the publication of the Victoria County History (*ibid.*).

3.1.3 Cartographic evidence

Several maps have been examined in the SMR Office. Copies of map extracts are provided in Appendix III.

Map of the Glebe Lands belonging to the Rev. Robert Lacelless MA lying within the vicarage of Gilling in the North Ridings (1780). Four chains to one inch. Mic. 2129/2-6.

This scaled map is a graphical representation of lands attached to the living of the vicar and indicates the size of the individual land holdings. The map shows a radial arrangement of tofts around the churchyard. Land corresponding to Area 2 of this project is also shown on the plan as it is part of the vicar's glebe.

Enclosure plan of Gilling by Richmond (1815). No scale. Mic. 1529/173.

The field layout shown on this plan is broadly similar to that shown on the glebe map of 1780. To the north of Gilling Beck the field system is similar to many which had been enclosed at an early date, and by agreement between landowners. The characteristic long rectangular fields caused by the enclosure of groups of strips within their original furlong boundaries is clearly recognisable at Gilling.

Area 2 on this plan is described as 'Peat Mires' and is bounded by drains on all sides: Gilling Beck Drain to the north; Mill Drain to the east; Vicars Drain to the south and Alders Drain to the west. Another drain is shown to run south of Vicars Drain, apparently feeding Gilling Mill, which corresponds to the approximate location of the present farmhouse at Mill Farm. The drain then continues eastwards towards the church where it rejoins the Gilling Beck Drain. Part of the course of this drain has been identified in the field west of the church and has been surveyed as part of this project (see below, Section 3.2 and Figure 1).

Medieval common fields are shown on this map to the north, east and south of the present village centre. To the south and west of this area can be seen the larger, later enclosure fields. These most probably represent an area of common land outside the medieval arable fields which was later enclosed and divided up.

The radiating pattern of tofts around the churchyard had been removed by the time this plan was issued. A regular group of tofts face on to the western side of the main village street. These are differentiated from other tenements in the village by their long, regular form and shared back line, characteristic of medieval villages throughout the north of England. A group of three plots to the south-east of the parish church are very similar in size to those which were depicted to the north of the church on the 1780 plan. There is a further toft of similar size to the east of the churchyard and another, L-shaped plot is shown south of the church. This small group of plots around the church appears to represent a single, contemporary unit, almost certainly an early settlement nucleus and probably the former monastic site. The arrangement of tofts around the churchyard closely resembles that still visible at Escomb, County Durham, another early ecclesiastical site.

Tithe map for Gilling West (1852). Mic. 1793/341.
This map does not show the village plan, it is an apportionment of tithe for three fields within the parish. Evidently the tithes for Gilling had been apportioned to different properties at an earlier date.

Ordnance Survey 1st Edition 6" (1857). Mic. 1803/353.
Gilling Mill is now apparently out of use, labelled 'Gilling Old Mill', and some of the drains in the area have been infilled. Parts of the field system around the village have been changed with some smaller enclosure fields being combined to form larger fields. In particular, some field boundaries north of Gilling Beck have been removed.

Ordnance Survey 3rd Edition 25" (1924).
The field boundaries north of Gilling Beck which had been removed from the 1st Edition O.S. are now shown as earthworks. Another earthwork on the south side of Gilling Beck is shown on the this edition running west from Gilling Bridge to just beyond the present Area 1. A further earthwork labelled 'Old Dam' is depicted immediately north-west of Gilling Old Mill, south of Area 1. This feature is slightly up-slope from the former mill and presumably stored water for running the mill.

Ordnance Survey 1:25 000 (1989).
Additional buildings are evident at Mill Farm and a new farm (Acre Farm) has been built immediately south-west of Area 1. The churchyard has been extended on its western side and an earthwork is shown along only part of the southern side of Gilling Beck, immediately west of the church. This earthwork had previously been constructed as a flood bank some 800m in length, as shown on the earlier O.S. edition.

3.1.4 Aerial photographs

There are three aerial photographs in the SMR office which cover the proposed development area and the village of Gilling West:

North Riding 268/7250	184/71/147	1:10 000	7 December 1971
North Riding 268/7250	184/71/148	1:10 000	7 December 1971
North Riding	17/72/074	1:10 000	21 March 1972

These provide no further evidence for previous landuse within the application area although some former field boundaries and drains are evident in the surrounding fields. Copies of these photographs are provided in Appendix IV.

3.2 Field inspection and topographic survey

A detailed inspection of the proposed development area and surrounding fields has been made. Features that had previously been recorded on O.S. maps but are no longer extant have been noted. Other earthwork or water management features not shown on O.S. maps have been surveyed using a total station survey instrument with datalogger. This information was input into CAD software to produce scaled hachure plans of earthworks at 1:2500, overlying standard map information (see Figure 1).

An 'Old Dam' recorded immediately north-west of Gilling Old Mill on the 3rd Edition O.S. map no longer exists. This feature was apparently destroyed in the 1950s when new outbuildings were erected for Mill Farm. The Old Mill Stell (referred to as Vicars Drain on the Enclosure map) has been backfilled and is no longer apparent. The western part of the stell has been piped underground in recent years and now feeds into Gilling Beck next to the farm bridge between Areas 1 and 2 (Mr Bird, farmer, pers. com.).

An earthen bank shown on the 3rd Edition O.S. as running along the north-east boundary of Area 1 is still evident as a slight south-west-facing slope. The bank continues eastwards along the south side of Gilling Beck as a prominent earthwork. This part of the bank was apparently re-constructed in 1974 (Mr Bird, farmer, pers. com.).

Several other earthworks were also noted in this field west of the church and these have been accurately surveyed and are shown in Figure 1. Although these earthworks are not shown on any O.S. maps some of them are apparent on the 1815 Enclosure map. One was evidently part of the former Vicars Drain and another semi-circular feature formed part of the un-named drain heading east from the former mill, and part of another un-named drain. A hollow-way heading west from the churchyard has also been surveyed and is now part of a public footpath. There are no longer any visible traces of the glebe tofts that were once sited immediately north of the churchyard as this part of the field has been ploughed in recent years (Mr Bird, farmer, pers. com.).

Two earthworks recorded on the 3rd Edition O.S. north and west of Area 2 are barely visible on the ground today. Ploughing of this field has denuded the earthworks to such an extent that they only survive as very broad, slightly raised areas of land. These features correspond to field boundaries that are shown on the 1815 Enclosure map but do not appear on the 1857, 1st Edition O.S. map.

3.3 Auger survey of deposits

An auger survey of the two proposed development areas has been carried out in order to provide stratigraphic information regarding peat deposits in those areas and to allow determination of a specific site from which to take a core for palaeoenvirojmental assessment. The auger transects and borehole locations are shown in Figure 1. A field inspection was made by J.P. Huntley (English Heritage Regional Advisor) during the

fieldwork and the environmental scheme of works was conducted in accordance with her advice.

The stratigraphy of nine boreholes was recorded from Area 1 and seven from Area 2. This proved sufficient for a broad picture of the stratification to be compiled (Figures 2 and 3). Coring at each location proceeded until either basal sandy deposits or a depth of 3.5m was reached. Relatively little peat was encountered in the Area 2 boreholes, the maximum thickness of peat deposits recorded being 0.79m in B11. An extensive peat deposit was recorded in Area 2, the greatest thickness of peat being 2.48m from B4, the approximate centre of the area. A core was taken from this location for further analysis. It is currently held at Archaeological Services' Environmental Laboratory, Durham University.

3.4 Palaeoenvironmental analysis

3.4.1 Pollen processing

The deposits analysed here were peats (organic remains almost certainly deposited *in situ*) and so expected to contain sub-fossil pollen grains and spores in abundance. Consequently each sub-sample taken from the core comprised 1.5g of peat (*c.*1cm^3). These samples were taken at 0.32m intervals along the core. Exotic 'marker' grains were added to each sample prior to processing in order to calculate absolute pollen concentrations in the future, should further work be recommended and undertaken. This helps to distinguish between real and apparent changes in relative proportions of species over time.

For this project the method used to extract and concentrate the pollen involved potassium hydroxide digestion followed by a swirling and sieving technique described by Hunt (1985). This process is relatively quick and simple and particularly effective for sediments such as peats which are expected to be pollen-rich in the first place and in which mineral material is rare.

3.4.2 Results

Identifications of plant remains >125µm were confirmed by J.P. Huntley. The residues held on a 10µm sieve, including all pollen grains and spores, were stained with safranine and sub-samples mounted on microscope slides with glycerine jelly. Identification of the different pollen and spore types was carried out at x400 and x1000 magnifications.

For the purposes of this assessment a total of *c.*100 pollen grains and spores were counted for each sample. A pollen diagram is provided in Figure 4 and the pollen count record sheets are included in Appendix V. The following general observations have been made:

1. the preservation of pollen and spores is generally good throughout the core although relatively few pollen types were recorded, *c.*15 types per sample
2. the absolute numbers of grains present has been found to vary considerably from one sample to another
3. there is virtually no charcoal present in any of the samples

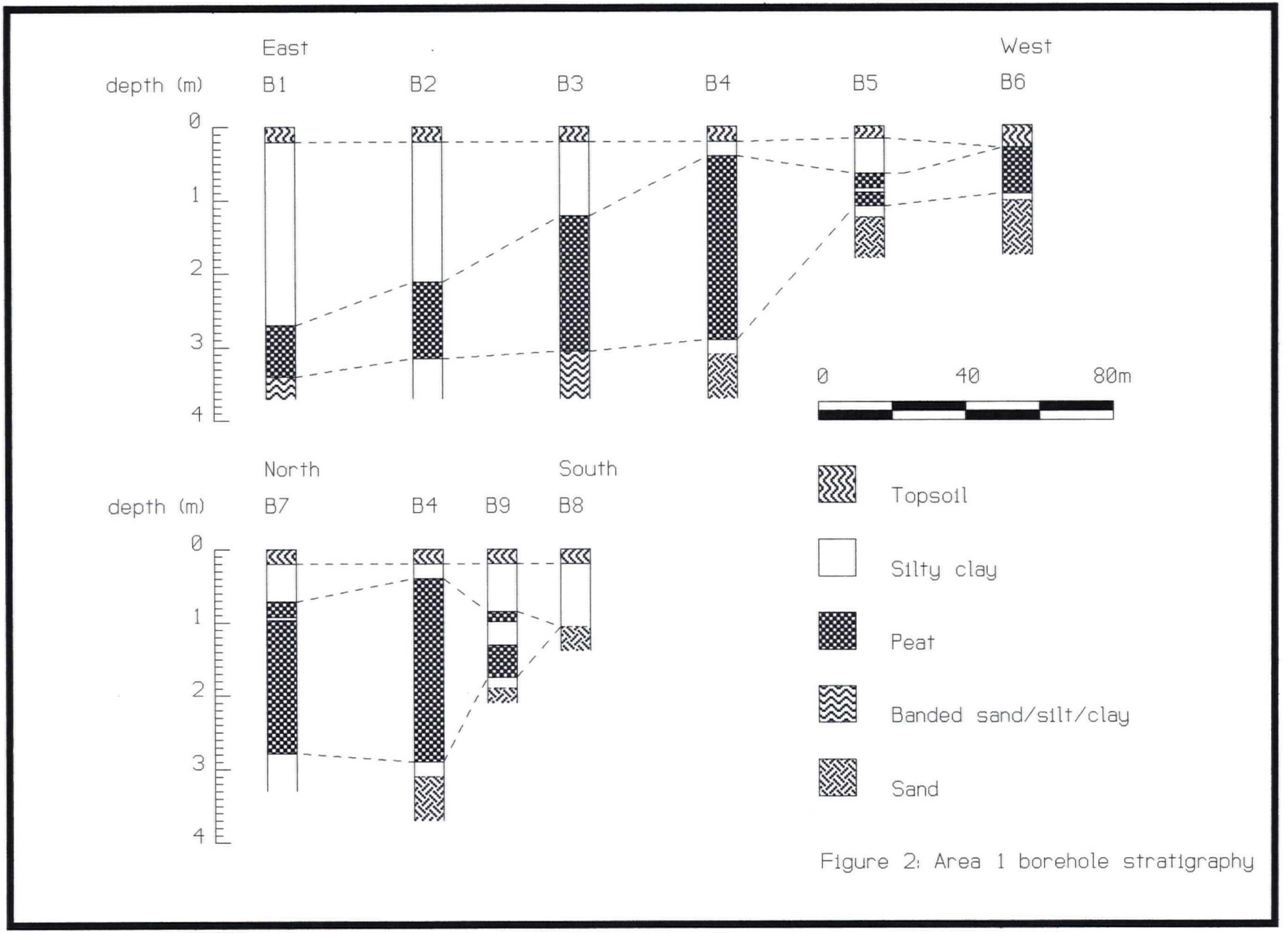


Figure 2: Area 1 borehole stratigraphy

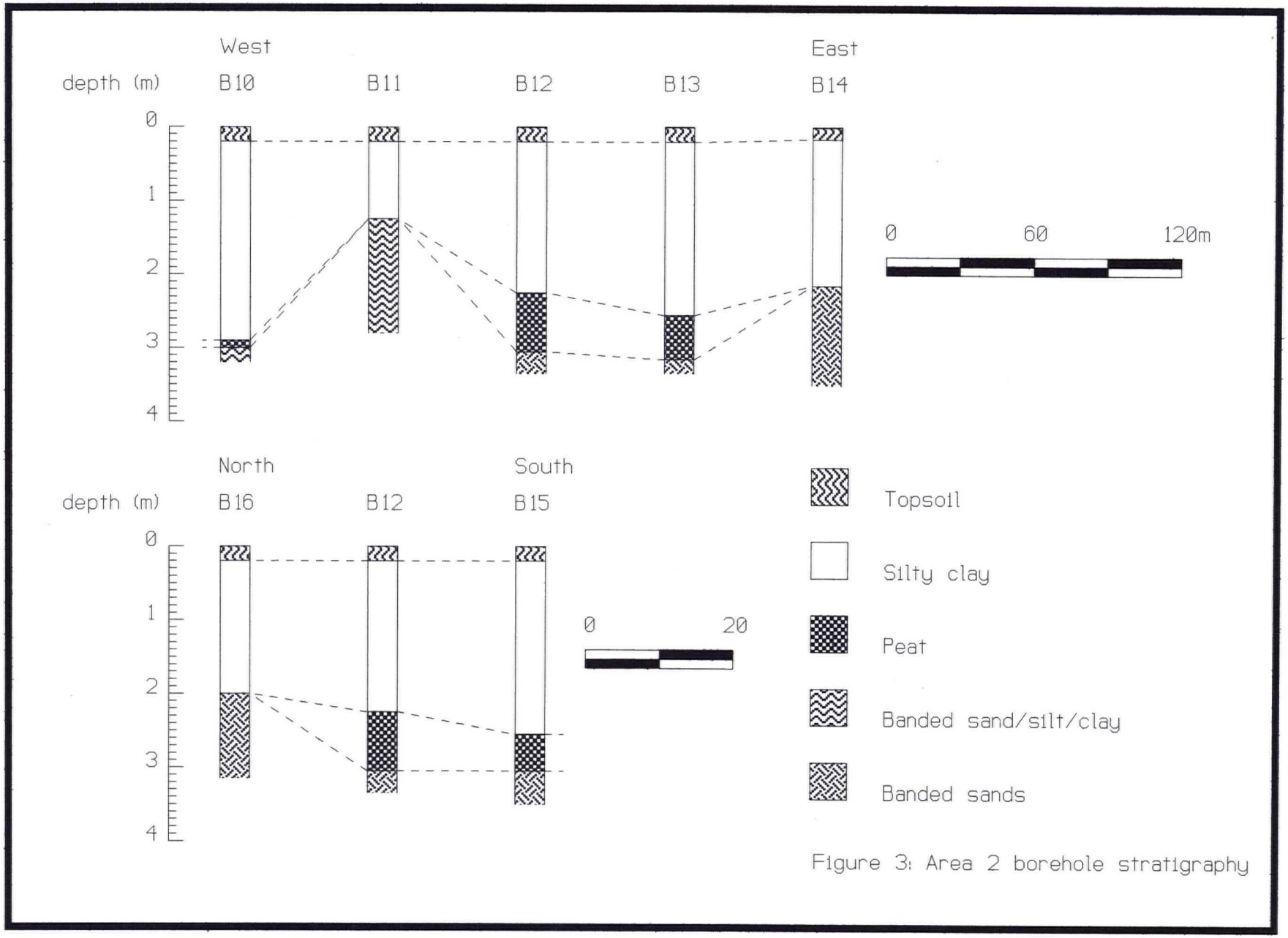


Figure 3: Area 2 borehole stratigraphy

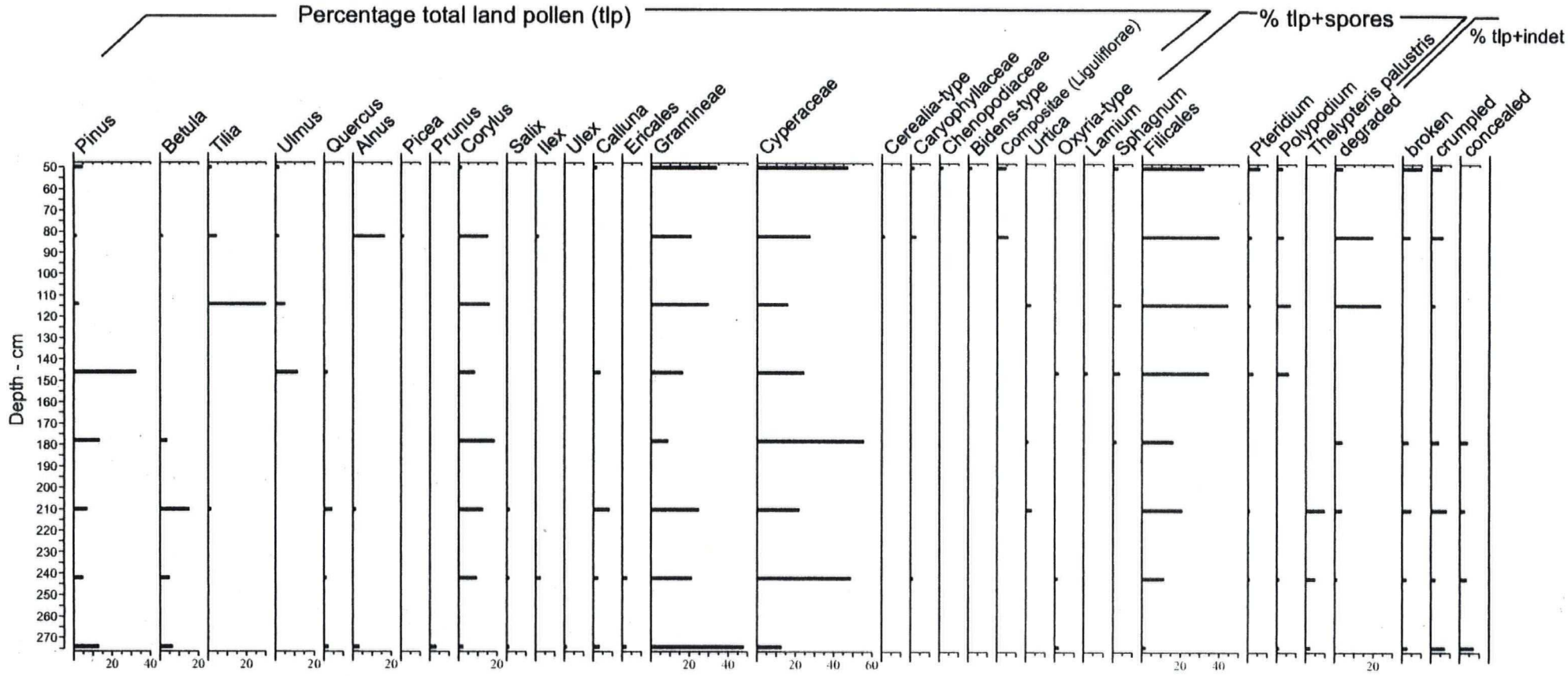


Figure 4: *Pollen diagram for Mill Farm, Gilling West*

The principal pollen components of each sample are listed below:

0.50m Filicales 32%, Cyperaceae 27%, Gramineae 19%, *Pteridium aquilinum* 6% (bracken).

0.82m Filicales 39%, Cyperaceae 15%, Gramineae 11%, *Alnus* 9% (alder), *Corylus* 8%. Only occurrence of Cerealia type pollen (cereal).

1.14m Filicales 45%, Gramineae13%, *Tilia* 13% (lime) and 7% each of Cyperaceae, *Coylus*, *Polypodium vulgare* (polypody).

1.46m Filicales 40%, *Pinus* 20%, Cyperaceae 15%, Gramineae 10%.

1.78m Cyperaceae 51%, Filicales 18%, *Corylus* 17%, *Pinus* 12%.

2.10m Filicales 22%, Gramineae 18%, Cyperaceae 16%, *Betula* 11%. Deepest occurrence of *Tilia* (lime) pollen.

2.42m Cyperaceae 42%, Gramineae 18%, Filicales 12% (undifferentiated fern spores), *Corylus* 8% (hazel).

2.74m Gramineae 45% (grasses), Cyperaceae 12% (sedges), *Pinus* 12% (Scots pine), *Betula* 6% (birch).

The principal macrofossil components of each sample are given below:

0.50m Fine, highly comminuted organic remains, some roots. Very occasional tiny charcoal fragments, occasional *Juncus* seeds (rush). Very little material >125μm.

0.82m Highly comminuted organic debris, monocotyledon remains including a few fragments of root stock. Occasional wood fragments, no charcoal.

1.14m Very fine monocotyledon roots and epidermis fragments. No charcoal.

1.46m Mixture of fine roots and coarser debris, woody roots <2mm diameter. No charcoal, no seeds. Less well humified than higher up the core.

1.78m Relatively coarse organic debris, leaf stem and root material. Occasional small fragments of wood. Alder catkin and seed of *Menyanthes* (bog bean).

2.10m Moderately coarse organic debris, some leaf and root material but principally bryophyte shoots and leaves (not *Sphagnum*, but some at least being *Acrocladium*). More than one species of monocotyledon present.

2.42m Roots, monocotyledon fragments, some bryophyte shoots and leaf fragments. Several birch and alder catkin scales, occasional sedge nutlets.

2.74m White rootlets and a little leaf/epidermis-type debris, otherwise blackish-brown highly humified organic debris. Very occasional fragments of charcoal.

It has not been possible to determine dates for the accumulation of these peat deposits within the scope of this assessment. However, the most frequent arboreal pollen types in the basal spectrum comprise *Pinus* and *Betula* (pine and birch) which in conjunction with high non-arboreal pollen frequencies are typical of an Upper Dryas, early Post-glacial, flora some 9-10 000 years B.P. If this is the case however it is interesting that *Salix* (willow)values are so low and that no *Juniperus* (juniper) is has been recorded.

Similarly, by comparison with the results of pollen analytical work at Neasham Fen (Bartley *et al.* 1976) it can be stated the pollen assemblage from sample 2.10m is extremely unlikely to pre-date c.7000-c.5000 BP (Boreal/early Atlantic Period) based on the earliest dated appearance of *Tilia*. A moderate number of *Ulmus* (elm) grains at 1.46m suggest a pre-elm decline date in the order of 5 000 years B.P.

The vegetation record reflected by the pollen appears to have been relatively open throughout the accumulation of the peat deposits, with few trees and a dominance of ferns, sedges and grasses. The range of herbs present increases in the two uppermost samples, including one occurrence of cereal pollen and a few pollen types that are often regarded as weeds of cultivation.

It must be stressed that these are only broad comments based on low pollen totals from very few samples. Although the pollen core from Mill Farm could cover much of the Post-glacial period, the pollen assemblages could just as easily reflect relatively recent flora.

Pollen analysis has only been undertaken at three lowland locations in the area: Neasham Fen (*ibid.*) and Burtree Lane (Bellamy *et al.* 1966), both within 6km of Darlington, and Pepper Arden Bottoms (Lillie & Gearey 1998), *c.*10km south of Darlington. The preliminary results of work on the Pepper Arden Bottoms core are not in the public domain yet but the vegetation sequence revealed so far is typical of early to mid-Holocene forest development in the British Isles, with *Tilia* pollen appearing in the later part of this sequence (Lillie pers. com.). Comparisons between the Mill Farm samples and the above analyses are not justifiable at this stage.

4. Impact assessment

The staged programme of investigation at Mill Farm, Gilling West, has revealed little direct evidence for archaeological activity within the two proposed development areas. Although there are peat deposits beneath each area, the deposits in Area 2 appear to be quite limited in both extent and depth. The substantial peat deposits beneath Area 1 have been assessed and found to contain well preserved sub-fossil pollen grains and spores in abundance. However, as expected, it has not been possible to determine the age of the deposits based on the pollen assemblages. More detailed analysis of the vegetation record preserved in the deposits could provide evidence for archaeological activity in the immediate vicinity. The proposed excavation of the fishing ponds would remove most of the peat deposits from the two fields.

Examinations of documentary records, maps, aerial photographs and a field inspection have not revealed evidence for features of archaeological or historic interest within the two areas of the proposed fishing ponds although several such features are known to have existed nearby. Most of these comprise water management features, some of which were associated with the former mill. The proposed developments will not have an adverse impact on these surrounding features, which have now been accurately surveyed.

The desk-based assessment has shown the village of Gilling West to have been an important central place in both the pre- and post-Conquest periods and it is possible that further archaeological features or artefacts may be preserved in the deposits beneath the application areas.

5. The archaeological response

If the peat deposits in Area 1 at Mill Farm are to be preserved *in situ* then no further investigations are considered necessary. However, if the excavation of the fishing pond is to take place in this area then it is recommended that further, detailed analysis of the pollen and plant macrofossil evidence, including radiocarbon dating of the deposits, is undertaken prior to the commencement of development works.

The peat deposits in Area 2 are limited in their extent and depth and no further investigations are recommended for this area.

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Appendix I

Scheduled monument entries

FILE REFERENCE: AA 22287/1

SCHEDULE ENTRY COPY

ENTRY IN THE SCHEDULE OF MONUMENTS COMPILED AND MAINTAINED BY THE SECRETARY OF STATE UNDER SECTION 1 OF THE ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT 1979 AS AMENDED.

MONUMENT: Section of Scots Dike linear boundary north of Kirklands Farm

PARISH: GILLING WITH HARTFORTH AND SEDBURY MELSONBY COUNTY: NORTH YORKSHIRE

DISTRICT: RICHMONDSHIRE

NATIONAL MONUMENT NO: 26946

NATIONAL GRID REFERENCE(S): NZ19480683 - NZ19360612

DESCRIPTION OF THE MONUMENT

The monument is a section of the linear boundary known as Scots Dike lying on Gatherley Moor and the hillside to the south. The monument includes a bank and flanking ditch, a section where the dyke has been reduced by agricultural activity but is preserved as a buried feature visible on aerial photographs and a section of Roman road (the line of which is followed by the present A66) passing through the line of the dyke. The earthwork extends for 250m north of Kirklands Farm and includes an earthen bank 1.5m high and 10m wide with the ditch lying to the east being 7m wide and 1m deep. To the east of the ditch lies a low counterscarp bank up to 5m wide.

There is a gap in the earthwork, 28m wide, 100m north of the southern end, where the bank has been levelled and the ditch infilled. This gap is believed to be of some antiquity. To the north of the earthwork section the Roman road passes through the line of the dyke. At this point the dyke dog legs dramatically before continuing northwards across Gatherley Moor. Although now partly disturbed by the modern A66, significant information about the Roman road and its relationship with Scots Dike will be preserved beneath the modern road surface. To the north of the road, the dyke has been reduced by agricultural activity and no longer stands as an earthwork. However buried remains of the ditch can be clearly seen on aerial photographs extending north east for 50m then turning north west to cross Gatherley Moor for 300m, curving gently to the north for a further 150m to end at a quarry, now infilled. The dyke continues again as a buried feature beyond the quarry, where it is the subject of a separate scheduling. At the south end the dyke has been truncated by Kirklands Farm and its outbuildings, although it continues south 70m beyond the farm where it is the subject of a separate scheduling.

All modern fences, gates and walls and the surface of the road are excluded from the scheduling although the ground beneath is included.

ASSESSMENT OF IMPORTANCE

Scots Dike is a linear earthwork extending for 14km from the River Swale to the River Tees in North Yorkshire. Significant sections remain visible as upstanding earthworks and indicate that the dyke system had an earthen rampart

(Continued ..)

SIGNED BY: A Middleton
On behalf of the Secretary of State for National Heritage.

ASSESSMENT OF IMPORTANCE (Continued)

flanked on the eastern side by a ditch. Where not preserved as an upstanding monument, the dyke is visible as a cropmark on aerial photographs and elswhere often survives as a low bank beneath present field boundaries. It was constructed in the post Roman period and encloses an area in the eastern foothills of the Pennines between the two rivers. This area contained wealthy arable and pastoral land as well as some of the mineral resources of the northern Pennines. Linear earthworks were used to divide territory for military, social, economic and political purposes, often using natural features such as rivers and watersheds to define an area. Scots Dike was built to consolidate territorial and economic units in response to changing political circumstances during the sixth and seventh centuries AD. These were brought about, at least in part, by the arrival of the Anglians in northern England. Fewer than 50 examples of linear earthworks of post Roman date have been identified in England. As a rare monument type of considerable importance to the study of early medieval territorial patterns, all surviving examples are identified as being of national importance.

This section of Scots Dike will retain significant archaeological remains and offers important information about the development of the landscape in the post Roman period. The section of Roman road passing through the monument offers scope for the study of both the road itself and the relationship between the dyke and the road and preserves important information about the date and nature of Scots Dike.

MAP EXTRACT

The site of the monument is shown on the attached map extract outlined in black and highlighted in red. It includes a 2 metre boundary around the archaeological features, considered to be essential for the monument's support and preservation.

SCHEDULING HISTORY

Monument included in the Schedule on 19th July 1972 as part of:
COUNTY/NUMBER: Yorkshire 1100
NAME: Scots Dike: Section 700 yards long at Kirklands

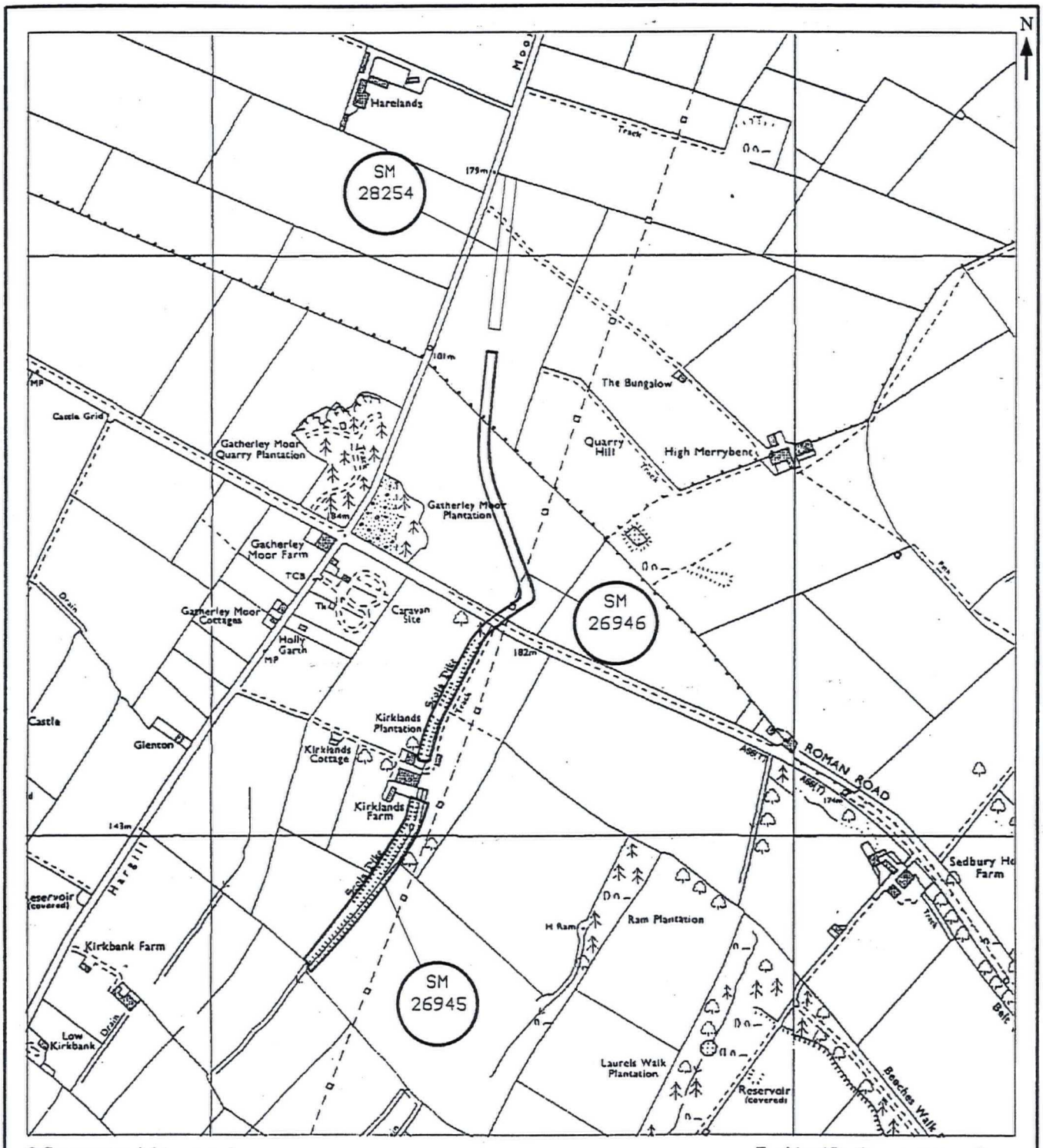
Scheduling amended on 1st April 1974 to:
COUNTY/NUMBER: North Yorkshire 1100
NAME: Scots Dike: Section 700 yards long at Kirklands

The reference of this monument is now:
NATIONAL MONUMENT NUMBER: 26946
NAME: Section of Scots Dike linear boundary north of Kirklands Farm

SCHEDULING REVISED ON 26th July 1996

SIGNED BY: A Middleton
On behalf of the Secretary of State for National Heritage.

Scheduled Monument



 For identification purposes only

Site Name: Section of Scots Dike linear boundary N of Kirklands Farm

County: Yorkshire, North	**District:** Richmondshire	**Parish:** see notes

Notes:
For exclusions - see text record. Linear site: from NZ 19480683 to NZ 19360612
2 parishes: Gilling with Hartforth & Sedbury/Melsonby

Key: Monument No. Location/extent of site

Scale: 1:10000 **Derived from:** 1:10000
Centred on NGR: NZ19530643
Extract from OS sheet: NZ10NE

Date: 1.5.96 **Monument No:** SM26946

English Heritage
Fortress House 23 Savile Row London W1X 1AB Telephone 071-973 3000 Fax 071-973 3001

DEPARTMENT OF NATIONAL HERITAGE BATCH NUMBER: 10138

FILE REFERENCE: AA 11521/1

SCHEDULE ENTRY COPY

ENTRY IN THE SCHEDULE OF MONUMENTS COMPILED AND MAINTAINED BY THE SECRETARY OF STATE UNDER SECTION 1 OF THE ANCIENT MONUMENTS AND ARCHAEOLOGICAL AREAS ACT 1979 AS AMENDED.

MONUMENT: Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm

PARISH: EAST LAYTON
FORCETT AND CARKIN
GILLING WITH HARTFORTH AND SEDBURY

DISTRICT: RICHMONDSHIRE

COUNTY: NORTH YORKSHIRE

NATIONAL MONUMENT NO: 28289

NATIONAL GRID REFERENCE(S): NZ16120838
NZ16160824

DESCRIPTION OF THE MONUMENT

The monument includes a Roman fort, an adjacent prehistoric enclosed settlement and the intervening archaeologically sensitive area situated on Carkin Moor at the east end of Teesdale.
The fort lies on the summit of a small flat-topped hill and is bisected in a deep cutting by the A66, a former Roman road, which runs east-west across the Pennines. The Roman fort is one of a series of Roman military establishments along this route. The fort is rectangular in shape and measures 150m north east to south west by 132m north west to south east. The north east corner of the fort survives as a raised platform up to 2m high in the field to the north of the road. The north angle of the fort and traces of an external ditch are clearly visible as earthworks in the plantation north of the road. To the south of the road the fort no longer survives as an upstanding earthwork although its extent is clearly visible on aerial photographs. Extensive remains will survive here beneath the modern ground surface.
The prehistoric enclosed settlement lies 200m north west of the fort. Although it no longer survives as an earthwork it is clearly visible on aerial photographs.
The enclosure is rectangular in shape and measures 100m by 75m. There are traces of internal features visible within it which include traces of one side of a smaller enclosure parallel with the western side.
There are several other similar enclosures identified by aerial photography in north east England. Excavations at one such site 3km to the south east demonstrated it to be an Iron Age farmstead with circular buildings within the enclosure. The example at Carkin Moor would have been broadly similar.
All modern fences and walls are excluded from the scheduling although the ground beneath them is included.

ASSESSMENT OF IMPORTANCE

(Continued ..)

AUTHORISED BY: A R Middleton
On behalf of the Secretary of State for National Heritage, under batch no: 10138

Continued from previous page .. NATIONAL MONUMENT NO: 28289

Roman forts served as permanent bases for auxiliary units of the Roman Army. In outline they were straight sided rectangular enclosures with rounded corners, defined by a single rampart of turf, puddled clay or earth with one or more outer ditches. Some forts had separately defended, subsidiary enclosures or annexes, allowing additional storage space or for the accommodation of troops and convoys in transit. Although built and used throughout the Roman period, the majority of forts were constructed between the mid first and mid second centuries AD. Some were only used for short periods of time but others were occupied for extended periods on a more or less permanent basis. In the earlier forts, timber was used for gateways, towers and breastworks. From the beginning of the second century AD there was a gradual replacement of timber with stone.
Roman forts are rare nationally and are extremely rare south of the Severn Trent line. As one of a small group of Roman military monuments, which are important in representing army strategy and therefore government policy, forts are of particular significance to our understanding of the period. All Roman forts with surviving archaeological potential are considered to be nationally important.

Rectangular prehistoric enclosures are a discrete area of land given over to a particular purpose. They often served as protected areas for crop growing or as stock pens although in this area of northern England monuments of this nature have also been found to enclose circular domestic buildings and associated agricultural structures. The size and form of enclosures may vary depending on their particular function. Their variation in form and relationship to other monument classes provide important information on the diversity of social organisation and farming practices amongst prehistoric communities.
Although partly disturbed, the Roman fort still survives in places as an earthwork and elsewhere significant archaeological remains will be preserved below ground. Important information about the internal arrangements will be preserved and as part of a network of forts in the north of England the monument offers scope for the study of the wider Roman military and administrative occupation of Britain. The prehistoric enclosure is clearly visible on aerial photographs and the site will retain evidence of how and when it was used and in particular its relationship with the adjacent fort.

MAP EXTRACT

The site of the monument is shown on the attached map extract outlined in black and highlighted in red. It includes a 2 metre boundary around the archaeological features, considered to be essential for the monument's support and preservation.

SCHEDULING HISTORY

Monument included in the Schedule on 14th July 1966 as:
COUNTY/NUMBER: Yorkshire 726

(Continued ..)

AUTHORISED BY: A R Middleton
On behalf of the Secretary of State for National Heritage, under batch no: 10138

DEPARTMENT OF NATIONAL HERITAGE BATCH NUMBER: 10138

Continued from previous page .. NATIONAL MONUMENT NO: 28289

SCHEDULING HISTORY (Continued)

NAME: Roman fort 1000ft SW Carkin Moor Farm

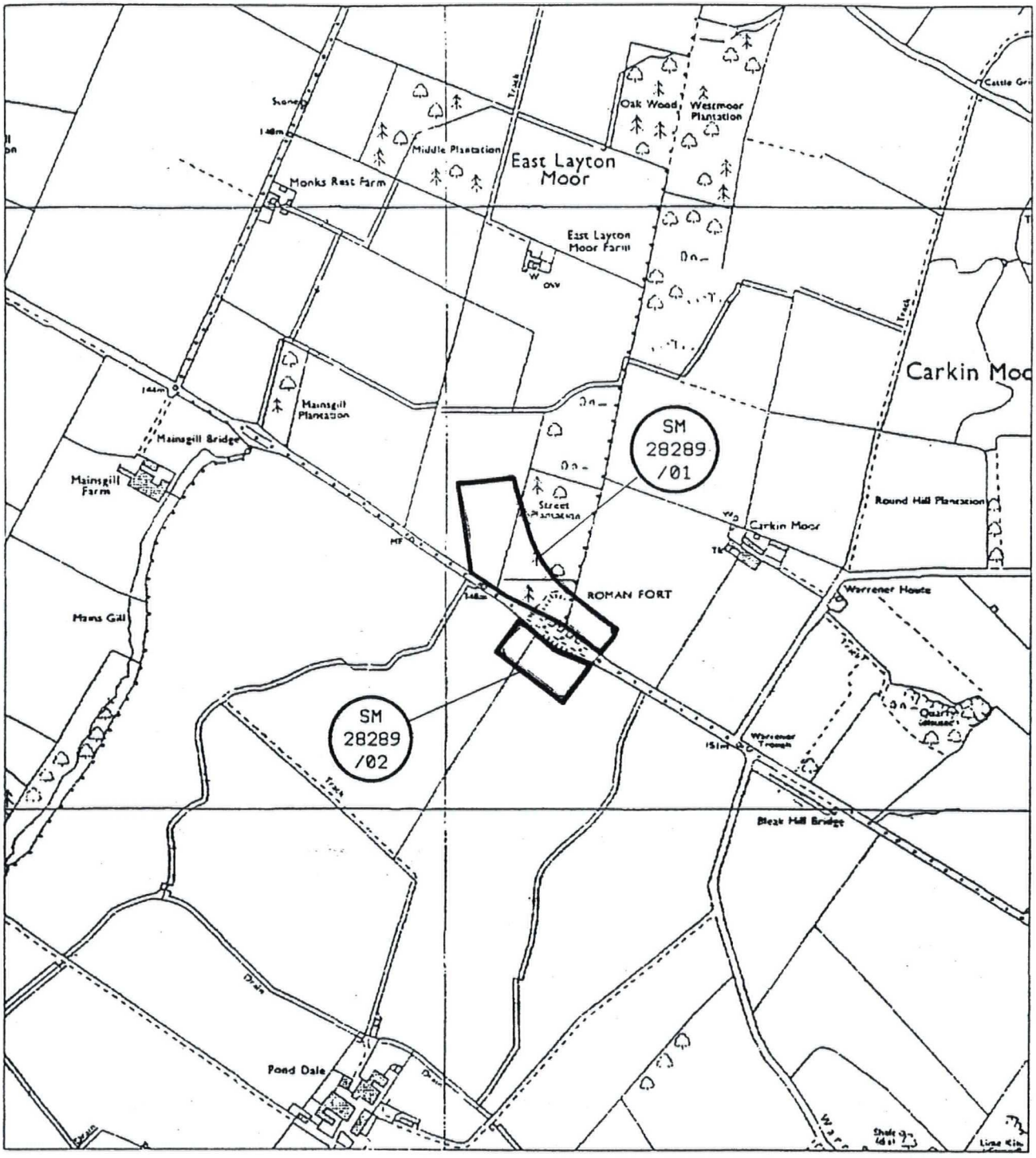
Scheduling amended on 1st April 1974 to:
COUNTY/NUMBER: North Yorkshire 726
NAME: Roman fort 1000ft SW Carkin Moor Farm

The reference of this monument is now:
NATIONAL MONUMENT NUMBER: 28289
NAME: Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm

SCHEDULING REVISED ON 14th February 1997

AUTHORISED BY: A R Middleton
On behalf of the Secretary of State for National Heritage, under batch no: 10138

Scheduled Monument



 For identification purposes only

Site Name: Roman fort and prehistoric enclosed settlement 400m W of Carkin Moor Farm

County: Yorkshire, North	**District:** Richmondshire	**Parish:** See notes

Notes: SM28289 consists of parts 1-2 Other NGR is NZ 1616 0824
3 parishes: East Layton/Forcett & Carkin/Gilling with Hartforth & Sedbury
For exclusions - see text record

Key: Monument No. Location/extent of site

Scale: 1:10000 **Derived from:** 1:10000
Centred on NGR: NZ16120838
Extract from OS sheet: NZ10NE

Date: 2.10.96 **Monument No:** SM28289

English Heritage
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Appendix II

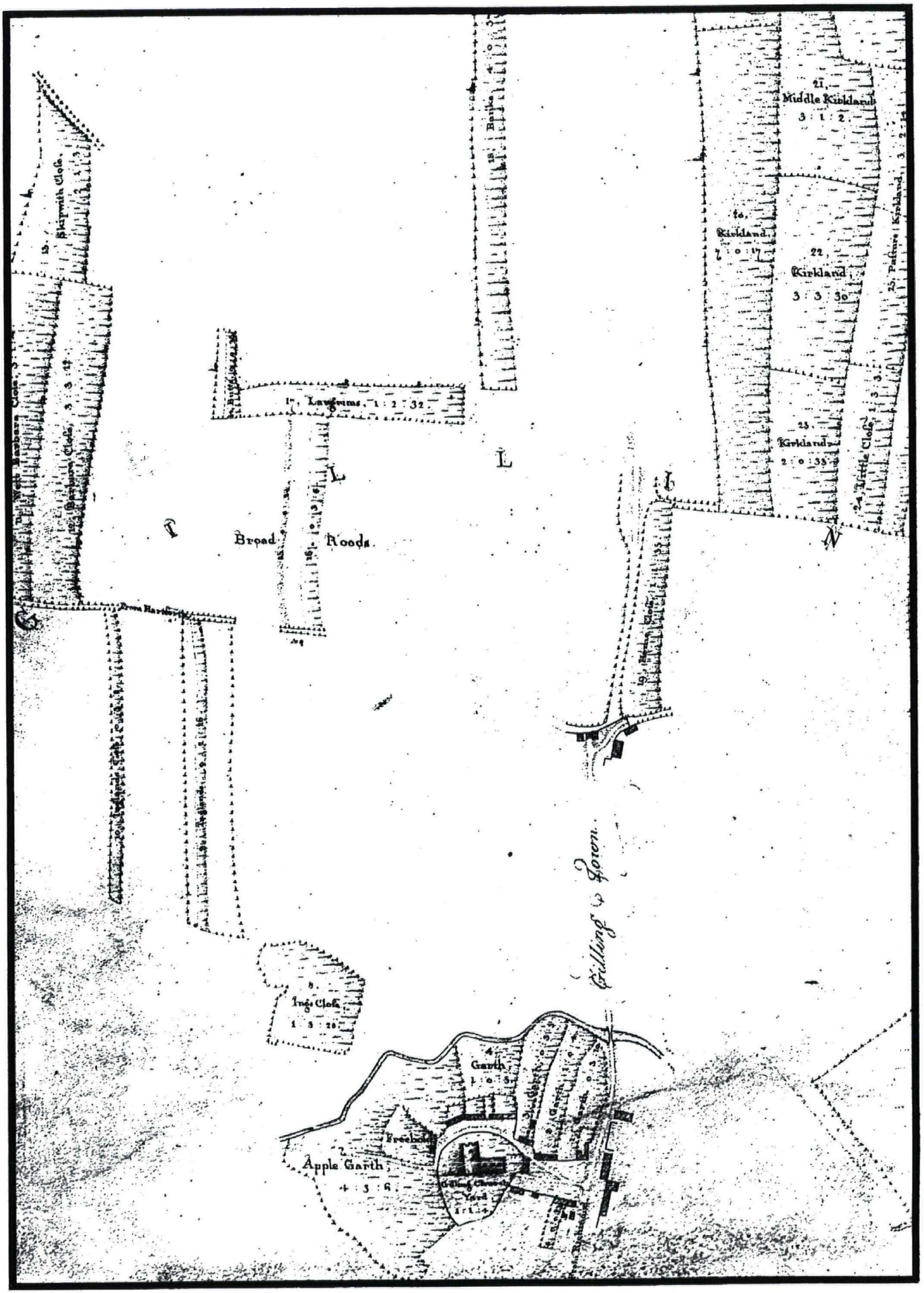
Domesday extracts

References to Gilling in the Domesday Book

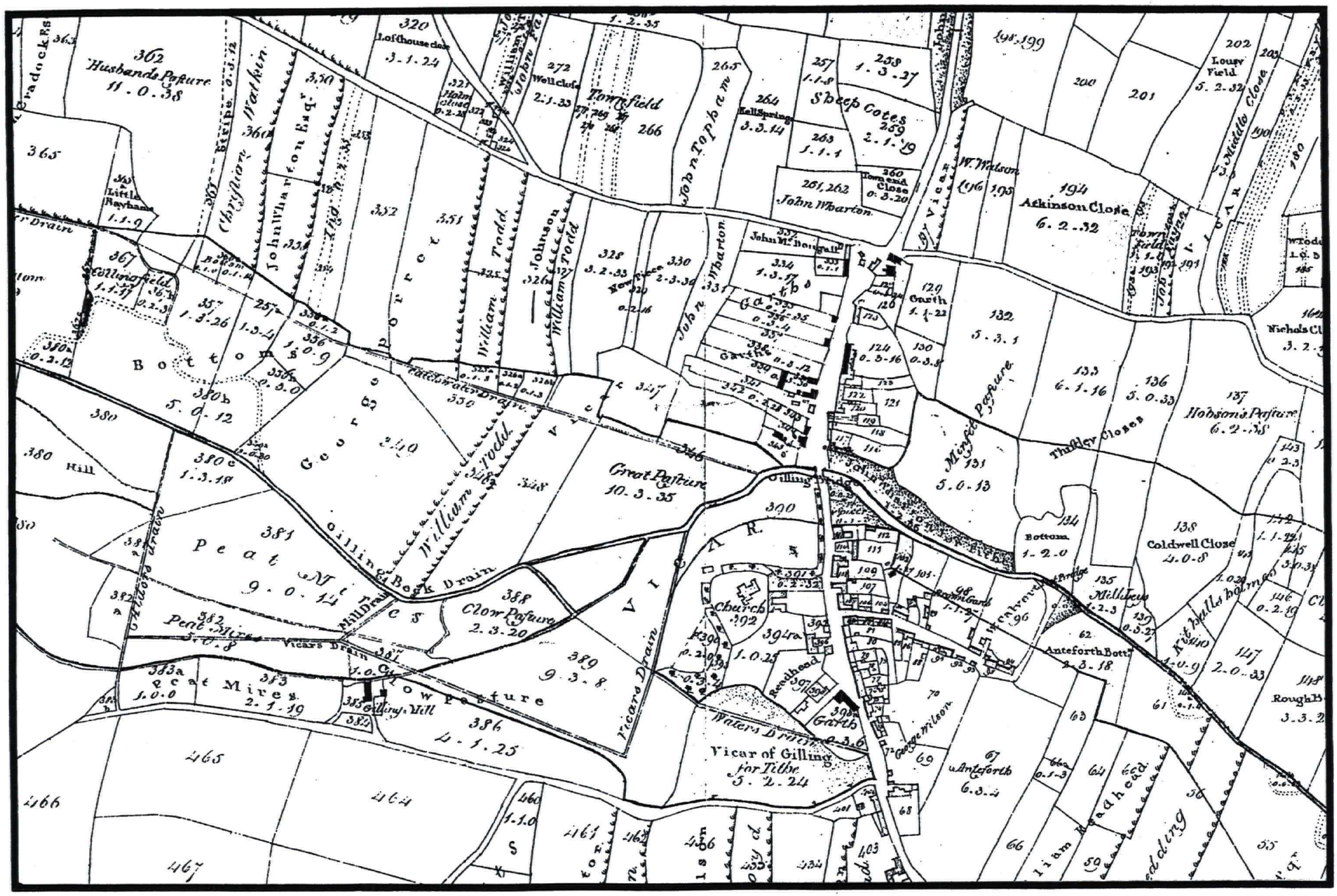
6N1
In GILLING, Earl Edwin had 1 manor of 4 carucates to the King's tax, in which 16 ploughs are possible. Now Count Alan has in lordship there 2 ploughs; and
7 villagers with 2 ploughs.
A church.
Meadow, 12 acres; underwood, 1 league long and 1 wide.
To this manor appertain these outliers: HARTFORTH, 3 c.; NEWTON (Morrell), 6 c.; (South) COWTON, 3 c.; another (North) COWTON, 3 c.; ERYHOLME, 6 c.; (Low) HAIL, 2 ½ c.; STAPLETON, 3 c.; FORCETT, 8 c.; BARFORTH (Hall), 3 c. Together 37 ½ carucates taxable; 37 ploughs possible. All now waste except that in HARTFORTH there is 1 man who has 3 ploughs, and in (South) COWTON Godric the Steward has, under the Count, 1 plough in lordship; and
5 villagers and 2 smallholders with 3 ploughs.
To the same manor itself also belongs this jurisdiction:
In MOULTON, 16 carucates taxable; 12 ploughs possible. Ulfr had 1 manor there, now Count Alan has in lordship 3 ploughs; and 4 villagers and 4 smallholders with 1 ½ ploughs.
In BARTON, 2 ½ c.; EPPLEBY, 7 c.; CLIFFE (Hall), 3 c.; CARLTON, 2 c.; BARFORTH (Hall), 1 c.; OVINGTON, 3 c.; GIRLINGTON (Hall), 3 c.; WYCLIFFE, 12 c.; THORPE (Hall), 3 c.; MORTHAM (Tower), 3 c.; EGGLESTONE, 3 c.; BRIGNALL, 12 c.; SCARGILL, 3 c.; BARNINGHAM, 4 c.; (West) LAYTON, 3 c.; (East) LAYTON, 3 c.; STANWICK, 3 c.; another STANWICK, 1 c. Together 71 ½ carucates taxable and as many ploughs are possible there. Now entirely waste. Besides, there is in MANFIELD a jurisdiction of this manor of 16 carucates taxable where as many ploughs are possible. Now Count Alan has there 3 Freemen who have 1 carucate and 6 bovates of this land; and 3 ploughs there. The remainder is waste.
1 fishery is there, paying 10s.
A church is there.
6N8
In STANWICK, Thorr had 3 carucates with full jurisdiction; 3 ploughs possible. Now Enisant has from the Count 1 plough in lordship; and
3 villagers with 2 ploughs.
Value before 1066, 3s; now 12s.
The whole, ½ league long and ½ wide.
In the same vill, 1 carucate taxable; and the jurisdiction in GILLING.
6N50
In MELSONBY and DIDDERSTON, an outlier, 11 carucates taxable; 10 ploughs possible. Thorfinnr had 1 manor there. Now Bodin has there 1 plough; and
15 villagers and 3 smallholders with 7 ploughs.
A church is there and a priest.
The whole, 1 league long and 1 wide.
Value before 1066, 40s; now 30s.
In this vill there are 4 carucates taxable, of which the jurisdiction belongs to GILLING.
Sn Ct.al
In GILLING, 4 carucates of land; in HARTFORTH, 3 carucates; in NEWTON (Morrell), 6 carucates.

Appendix III

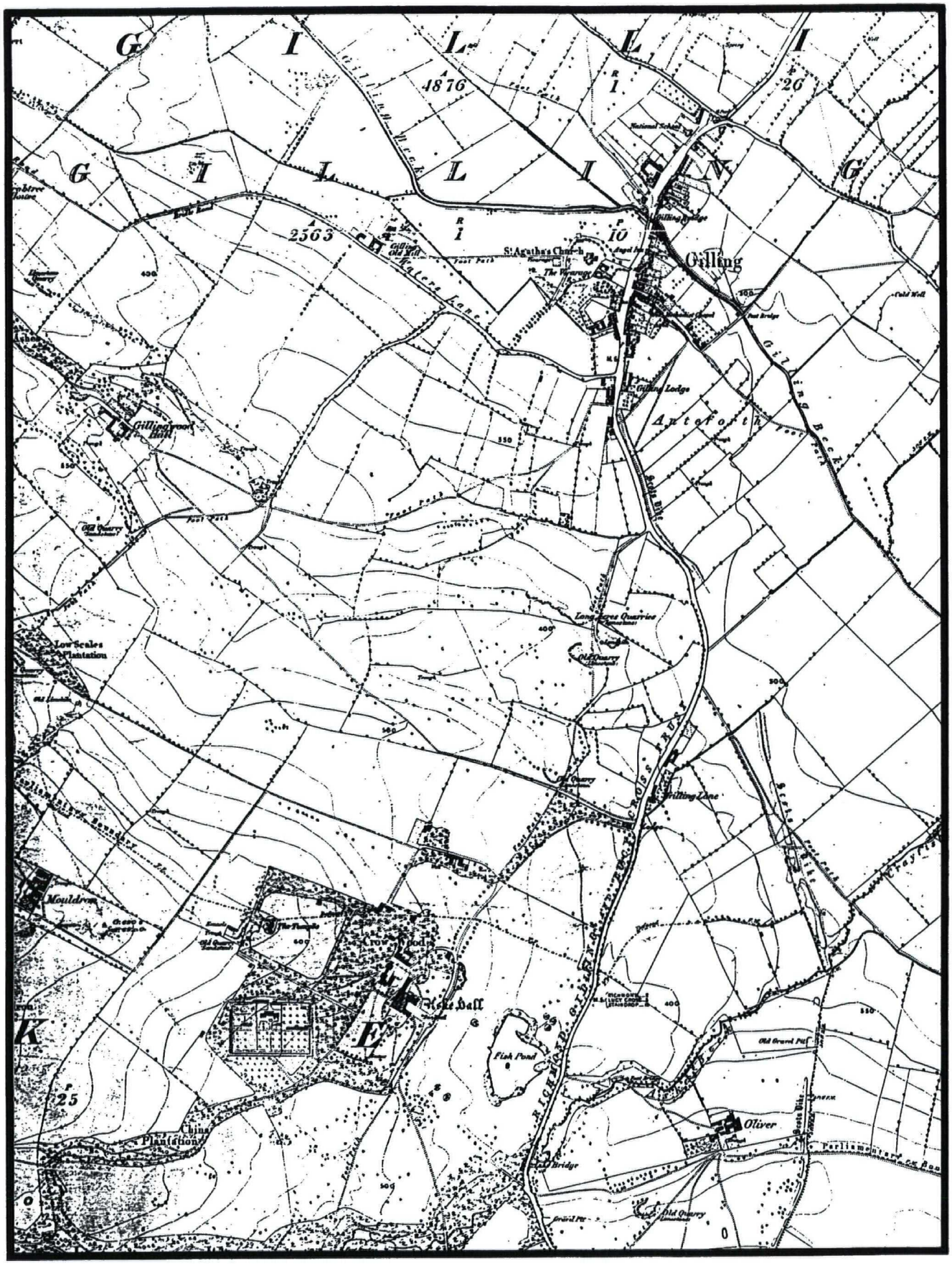
Map extracts



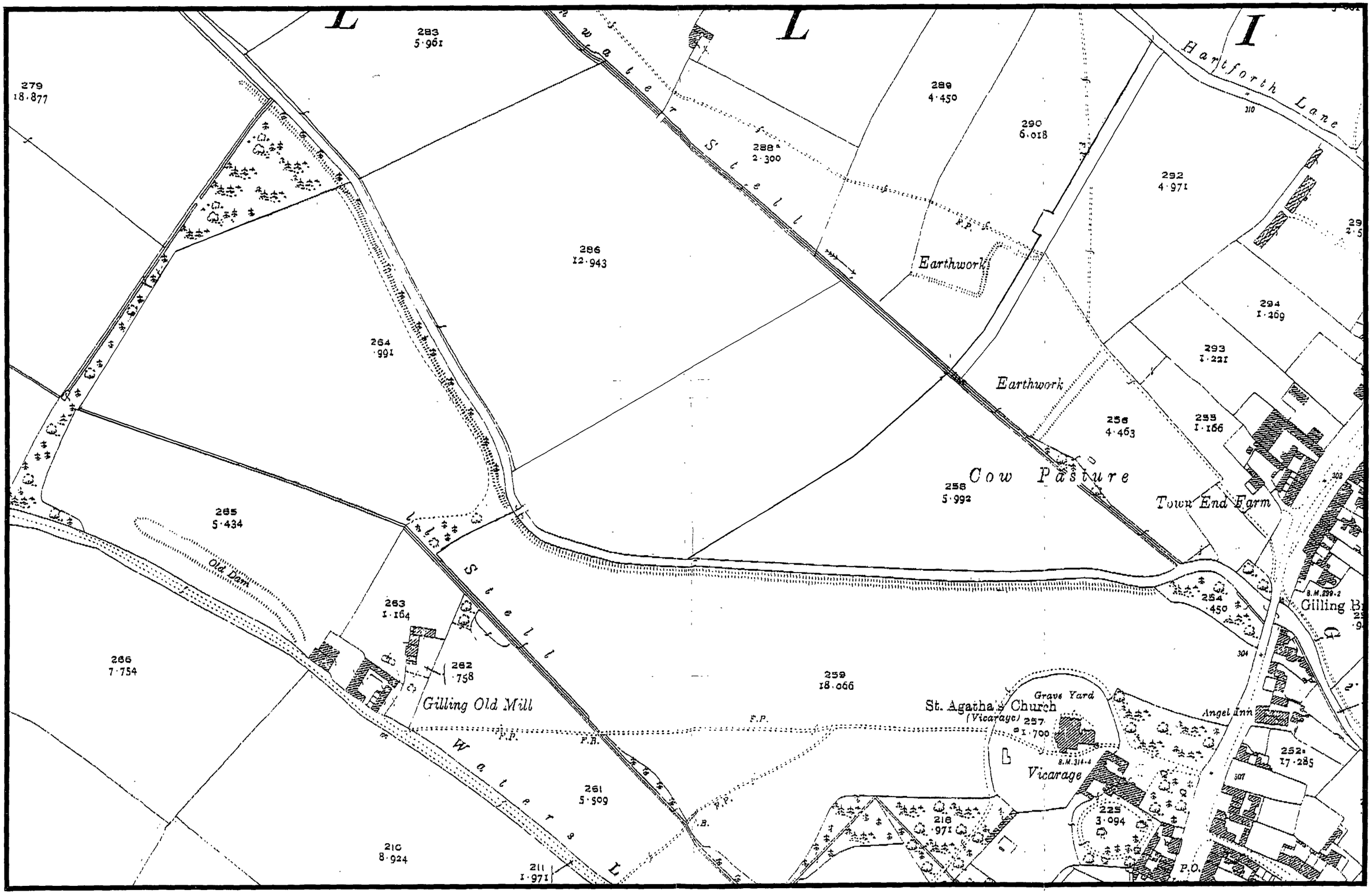
Excerpt from the Map of the Glebe Lands of 1780. (Scale: four chains to one inch)



Excerpt from the enclosure plan by Richmond (1815)



Excerpt from the 1st Edition 6'' Ordnance Survey map of 1857



Excerpt from the 3rd Edition 25'' Ordnance Survey map of 1924

Appendix IV

Aerial photographs

184/71/147

7th Dec 1971 N. Rodbury 268/7250.

184/71/148 7th Dec 1971 North Kidwy 268/1250.

17/72/074

21st March 1972 N. Riding.

Appendix V

Pollen count sheets

UNIVERSITY OF DURHAM

POLLEN COUNT RECORD SHEET

Site: MFGW 99 Level: 50cm Depth: 50cm Slide Nº: 1

Date: 13.10.99 Microscope: Leitz Diaplan Analyst: DNH

Traverse: O22 - R 33/2

%	Total			%	total		
		Pinus	III				
		Juniperus					
		Betula					
		Quercus					
		Tilia	I				
		Ulmus	I			INDET:	
		Acer				corroded	
		Fraxinus				degraded	III
		Carpinus				broken	IIII III
		Alnus				crumpled	III
		Picea				concealed	
		Abies					
		Taxus				Lycop.	IIII IIII IIII IIII II
		Corylus	I			marker	
		Salix					
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Ericales					
		Calluna	I				
		Gramineae	IIII IIII III				
		Cyperaceae	IIII IIII IIII II				
		Filicales	IIII IIII IIII IIII III				
		Pteridium aquil.	IIII II				
		Sphagnum	IIII				
		Rhacod. mlg.	III				
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae	I			Ranunculaceae	
		Chenopodiaceae	I				
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
		Rubus type	I				
						Rubiaceae	
		Comp. Ligulif.	III			Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	
		Plantago					

UNIVERSITY OF DURHAM

POLLEN COUNT RECORD SHEET

Site: MFGW 99 Level: Depth 82cm Slide Nº: 1

Date: 13.10.99 Microscope: Leitz Diaplan Analyst: DNH

Traverse: 026 - P26/3

%	Total			%	total		
		Pinus	I				
		Juniperus					
		Betula	I				
		Quercus					
		Tilia	II				
		Ulmus	I			INDET:	
		Acer				corroded	
		Fraxinus				degraded	
		Carpinus				broken	III
		Alnus				crumpled	
		Picea	I			concealed	
		Abies					
		Taxus				Lycop. markers	
		Corylus					
		Salix					
		Buxus					
		Hedera					
		Ilex	I				
		Populus					
		Ericales					
		Calluna					
		Gramineae					
		Cyperaceae					
		Filicales					
		Pteid. aquil.	II				
		Sphagnum					
		Polypod. vulg	IIII				
		Lycopodium					

%	Total			Total	%		
		Cereals	I (032/3)			Polygonaceae	
		Cyperaceae					
		Caryophyllaceae	II			Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae Liguliflorae	III			Rosaceae	
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae Saxifraga type	II
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	
		Plantago					

UNIVERSITY OF DURHAM

POLLEN COUNT RECORD SHEET

Site: MFGW 99 .... Level: .... Depth 114cm .... Slide Nº: 1

Date: 13-10-99 .... Microscope: Leitz Diaplan .... Analyst: DNH

Traverse: N 23 – U 23/4

%	Total			%	total		
		Pinus	|				
		Juniperus					
		Betula					
		Quercus					
		Tilia	卌 卌 |||				
		Ulmus	||			INDET:	
		Acer				corroded	
		Fraxinus				degraded	卌 卌 |||
		Carpinus				broken	
		Alnus				crumpled	|
		Picea				concealed	
		Abies					
		Taxus				Lycopod marker	卌卌 卌 卌 卌 卌 卌
		Corylus	卌 ||				卌 卌卌 卌 卌 卌 卌
		Salix					卌 卌 卌 卌 卌 卌 卌 |
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Ericales					
		Calluna					
		Gramineae	卌 卌 ||				
		Cyperaceae	卌 ||				
		Filicales	卌 卌 卌卌 卌卌 卌 卌卌				
		Polypod. vulg.	卌 ||				
		Sphagnum	||||				
		Pteridium aquil.	|				
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae				Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	|
		Plantago					

UNIVERSITY OF DURHAM

POLLEN COUNT RECORD SHEET

Site: MFGW99 Level: Depth 146 cm Slide Nº: 1

Date: 13.10.99 Microscope: Leitz Diaplan Analyst: DmH

Traverse: O 21 – P 26/2

%	Total			%	total		
		Pinus	𝍸 𝍸 𝍸 𝍸				
		Juniperus					
		Betula					
		Quercus	I				
		Tilia					
		Ulmus	𝍸 II			INDET:	
		Acer				corroded	
		Fraxinus				degraded	
		Carpinus				broken	
		Alnus				crumpled	
		Picea				concealed	
		Abies					
		Taxus					
		Corylus	𝍸			Lycop. marked	𝍸 𝍸 𝍸 𝍸 𝍸 III
		Salix					
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Ericales					
		Calluna	II				
		Gramineae	𝍸 𝍸				
		Cyperaceae	𝍸 𝍸 𝍸				
		Filicales	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸				
		Bkgrd. vulg.	𝍸 II				
		Sphagnum	III				
		Pteridium aqu.	III				
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae				Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
		Oxyria type	I				
		Lamium type	I				
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	
		Plantago					

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POLLEN COUNT RECORD SHEET

Site: MFGW 99 Level: Depth 178 cm Slide Nº: 1

Date: 13.10.99 Microscope: Leitz Diaplan Analyst: D.J.H

Traverse: N26 – R44/2

%	Total			%	total		
		Pinus	IIII IIII II				
		Juniperus					
		Betula	III				
		Quercus					
		Tilia					
		Ulmus				INDET:	
		Acer				corroded	
		Fraxinus				degraded	IIII
		Carpinus				broken	III
		Alnus				crumpled	IIII
		Picea				concealed	IIII
		Abies					IIII IIII IIII IIII
		Taxus					IIII IIII IIII IIII IIII IIII
		Corylus	IIII IIII IIII II			Lycop markers	
		Salix					
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Ericales					
		Calluna					
		Gramineae	IIII III				
			IIII IIII				
		Cyperaceae	IIII IIII IIII IIII IIII IIII				
		Filicales	IIII IIII IIII II				
		Sphagnum	II				
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae				Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	1
		Plantago					

E.1

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POLLEN COUNT RECORD SHEET

Site: MFGW99 Level: Depth: 210 cm Slide Nº: ii

Date: 12.10.99 Microscope: Leitz Diaplan Analyst: DMH

Traverse: 023 - 523

%	Total			%	total		
		Pinus	IIII				
		Juniperus					
		Betula	IIII IIII I				
		Quercus	IIII				
		Tilia	I P30 : P31				
		Ulmus				INDET:	
		Acer				corroded	
		Fraxinus				degraded	III
		Carpinus				broken	III
		Alnus	I			crumpled	IIII I
		Picea				concealed	II
		Abies					
		Taxus				Lycop.	IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII II
		Corylus	IIII IIII				
		Salix	I				
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Ericales					
		Calluna	IIII I				
		Gramineae	IIII IIII IIII III				
		Cyperaceae	IIII IIII IIII I				
		Filicales	IIII IIII IIII IIII II				
		Pteridium	I				
		Sphagnum					
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae				Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
		Thelypteris palust. II	IIII III Apiaceae				
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	II
		Plantago					

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POLLEN COUNT RECORD SHEET

Site: MFGW 99 Level: Depth 242cm Slide No: 1

Date: 12.10.99 Microscope: Leitz Diaplan Analyst: LNH

Traverse: O 23

%	Total			%	total		
		Pinus	IIII				
		Juniperus					
		Betula	IIII				
		Quercus	I				
		Tilia					
		Ulmus				INDET:	
		Acer				corroded	
		Fraxinus				degraded	I
		Carpinus				broken	II
		Alnus				crumpled	II
		Picea				concealed	III
		Abies					
		Taxus				'Markers'	IIII IIII IIII IIII IIII
		Corylus	IIII III			Lycop. clav.	IIII IIII IIII
		Salix	I				
		Buxus					
		Hedera					
		Ilex	II				
		Populus					
		Ericales	II				
		Calluna	II				
		Gramineae	IIII IIII IIII				
		Cyperaceae	IIII IIII IIII IIII IIII				
		Filicales	IIII IIII II				
		Pteridium	I				
		Sphagnum					
		Polypodium vulg.	I Asplenium type II				
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae	I			Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
		Thelypteris dryopt.	III				
		Thelypteris palustris	IIII				
		Oxyria type	I				
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	
		Plantago					

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POLLEN COUNT RECORD SHEET

Site: MFGW99 Level: Depth: 274 cm Slide Nº: 1

Date: 12.10.99 Microscope: Leitz Diaplan Analyst: DNH

Traverse: M22

%	Total			%	total		
		Pinus	LET IIII				
		Juniperus					
		Betula	IIII				
		Quercus	II				
		Tilia					
		Ulmus				INDET:	
		Acer				corroded	
		Fraxinus				degraded	
		Carpinus				broken	III
		Alnus	III			crumpled	IIII III
		Picea				concealed	IIII III
		Abies					
		Taxus					
		Corylus	II			Exotic marker	IIII IIII IIII IIII IIII IIII
		Salix	I			(Lycopodium clav.)	IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII
		Buxus					
		Hedera					
		Ilex					
		Populus					
		Prunus type	III				
		Ericales	II				
		Ulex type	II				
		Calluna	III				
		Gramineae	IIII IIII IIII IIII IIII IIII IIII IIII IIII IIII				
		Cyperaceae	IIII IIII II				
		Filicales	II				
		Polypodiaceae	I				
		Sphagnum					
		Lycopodium					

%	Total			Total	%		
		Cereals				Polygonaceae	
		Cyperaceae					
		Caryophyllaceae				Ranunculaceae	
		Chenopodiaceae					
		Campanulaceae				Thalictrum	
		Compositae				Rosaceae	
		Thelypteris dryopt.	V				
		Oxyria type	II				
						Rubiaceae	
		Comp. Ligulif.				Saxifragaceae	1 niv.
		Cruciferae				Scrophulariaceae	
		Helianthemum					
		Labiatae				Umbelliferae	
		Leguminosae					
						Urtica	
		Plantago					