

A photograph of a forest path. The path is covered in brown, fallen leaves and leads into a dense forest of tall, thin trees with green foliage. The lighting is bright, suggesting a sunny day. The text is overlaid on the top half of the image.

# **Naphill Common, Buckinghamshire**

**Geology and soil survey with feature evaluation**

**Dr J. Evers with Friends of Naphill Common**

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### **Acknowledgments**

Cover photograph of Naphill Common provided by Peter Davis.

# **Naphill Common, Buckinghamshire**

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### **1. Summary**

Commons play a valuable role in the natural and cultural heritage of the Chilterns. Naphill is one of 187 registered Commons in the Chilterns AONB. It shares some features of its ancient history, social history and past land use with many of these, but has notable differences. The differences include the very important biological features of the site (protected under SSSI status), and significant geological features, amongst others. Both the SSSI interests and the geological features make this site of regional importance, not just locally important.

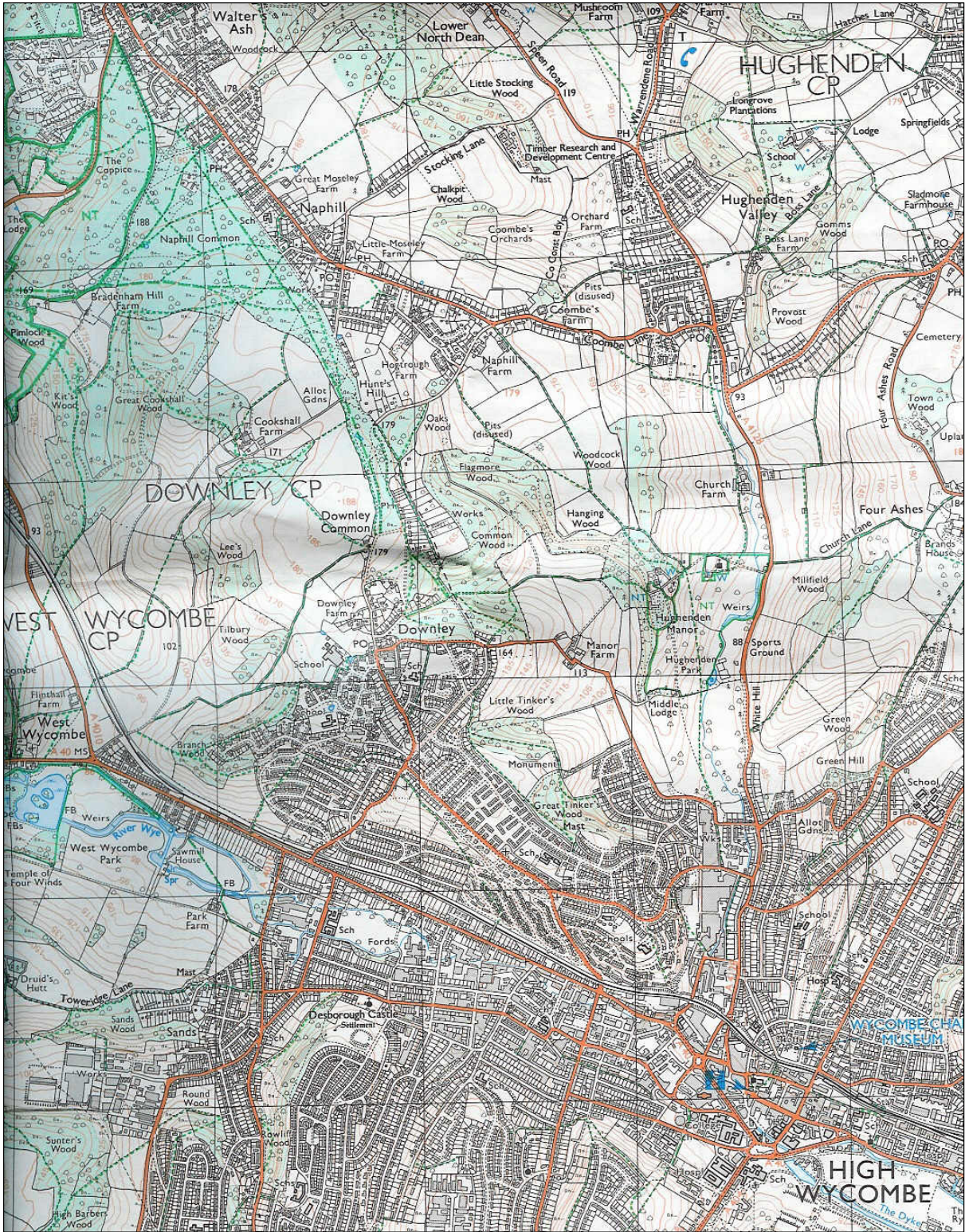
### **2. Introduction and context of the project**

The survey forms part of a wider investigation by the Friends of Naphill Common into all aspects of the Common's past - archaeology, history, social history and ecology. Many features are visible on the Common including a variety of pits, ponds, tracks and earthworks. An understanding of the geology and soils of this area may help to inform of past land use and the nature of the archaeological features.

### **3. Background**

#### **3.1 Site location**

Naphill Common lies northwest of High Wycombe in Buckinghamshire in the Hughenden Parish (Figures 1 and 2). It is roughly triangular in shape and defined within grid references SU 846 964 (the southern edge at Hunts Hill and the boundary with Downley Common) to SU 838 977 (the northern boundary at the Walters Ash end). To the south lies Downley Common and Parish; to the west Bradenham Manor and Parish, and to the east Hughenden Manor and the remainder of the Parish.



**Figure 1** Map of Naphill Common in relation to surrounding Hughenden, Downley and Bradenham Parishes. © Crown Copyright all rights reserved. License No. 100051837

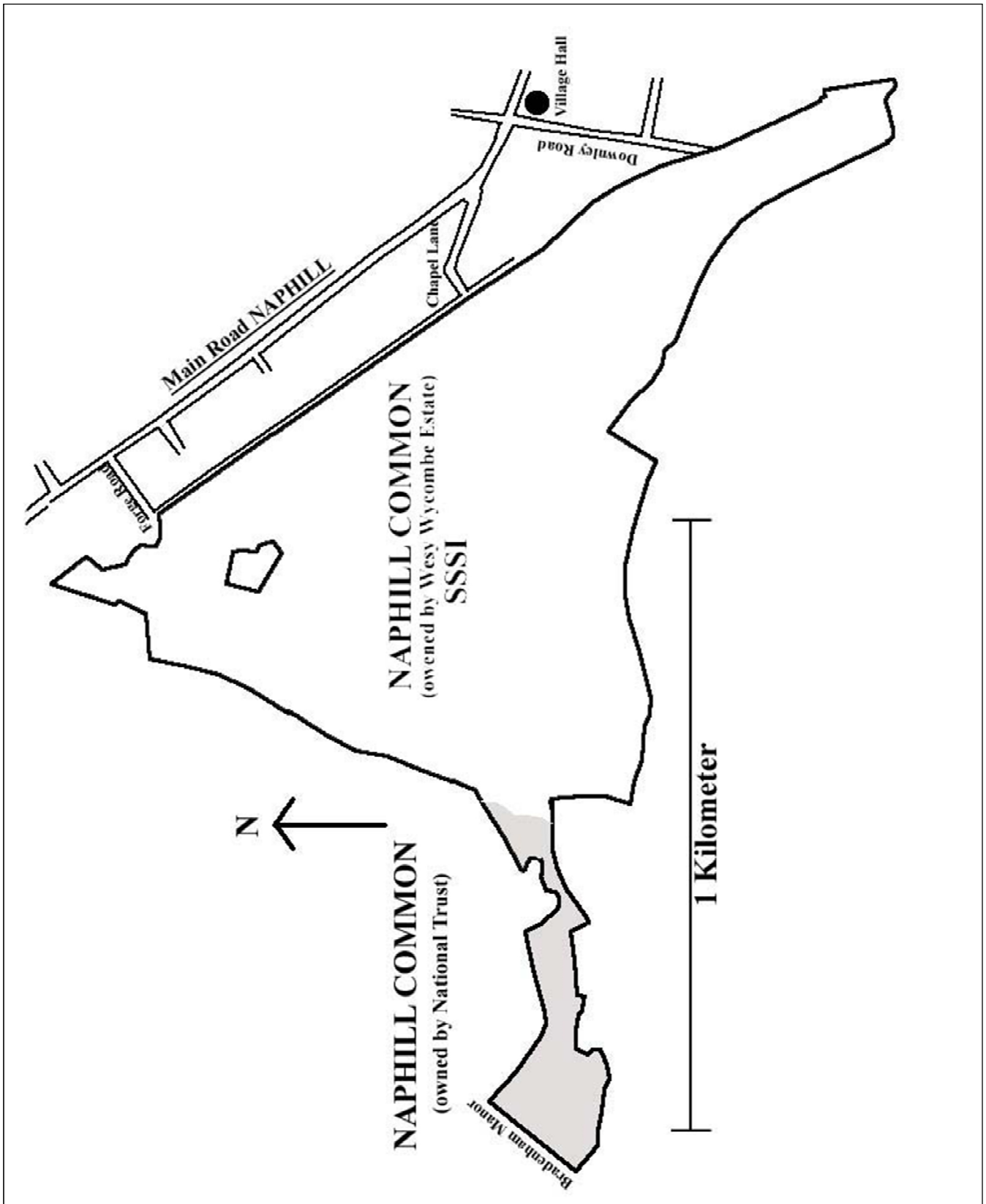


Figure 2 Naphill Common and SSSI boundary. Source: [www.naphillcommon.org.uk](http://www.naphillcommon.org.uk)

### **3.2 Geology, topography and present land use**

The British Geological Survey map (sheet 255) shows the area of the Common to be Clay-with-flints overlying Chalk. The Chalk underlying most of the Common is the Seaford and Newhaven Formation division of the White Chalk Subgroup or 'Upper Chalk' in older terminology. However at the very far northwestern extremity this horizon has been eroded leaving the lower Lewis Nodular Formation as the uppermost Chalk still surviving. However, during the survey important additional geology was discovered. Some of these further geological units were of a mappable size and thickness, but others were present in small, sporadic pockets which, although not at a suitable scale to map for BGS purposes, proved of considerable importance for local resources (see Section 6).

Naphill Common lies within the Chilterns AONB and within an area of the Chilterns dip slope – a plateau area which is lightly dissected by small dry valleys. The Common lies at a topographic height of between 180 mOD (in the south) to 190 mOD (in the north).

### **3.3 Archaeological background**

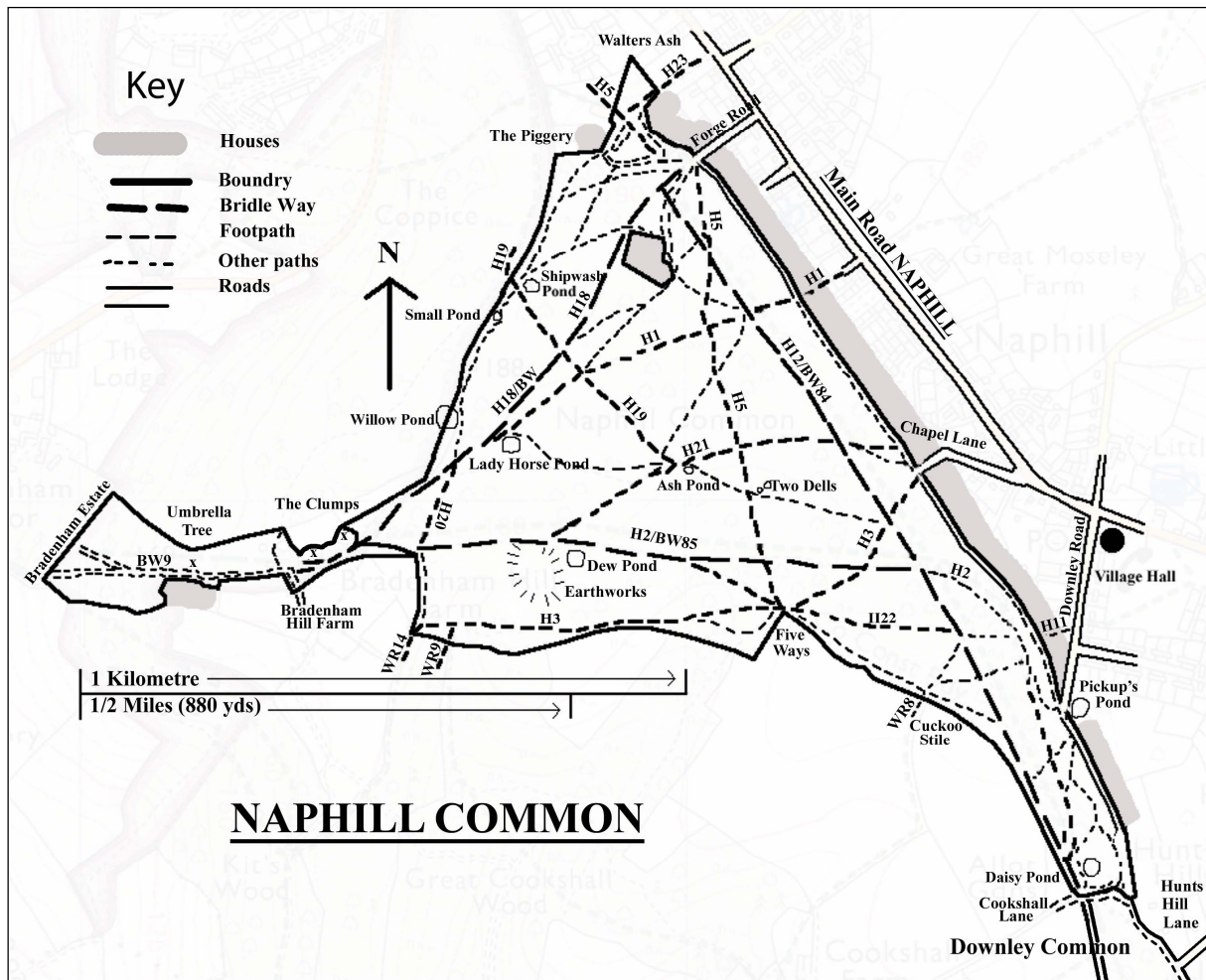
A number of features have been recorded as present in the past, and some of these are currently under survey and are being researched by a local group – the Princes Risborough Volunteers. A geophysics survey of some areas such as the earthworks at SU 8375 9686 has already been completed, but not reported formerly to date. The earthwork recently surveyed by this group is on the HER record as CASS 01790 and suggested as being a medieval enclosure. However, other opinions suggest it may be related to a Romano-British villa as pottery of this date has been found during dredging of Dew Pond next to the enclosure. This pottery includes a piece of a Romano-British mortarium, grog tempered storage jar and colour coated ware. The sherds were handed to the Buckinghamshire County Museum. The enclosure is also associated with some iron working slag including likely hearth slag, and this may be Roman to medieval in date. The variety of extraction pits, saw pits, tracks and ditches undoubtedly belong to much later eras and are certain to be post-Medieval. All these features would benefit from fuller research and survey.

## **4. Objectives**

- To determine the geology across the Common
- To assess soil type
- To deduce the potential land use due to geology and soil type
- To assess the past function of a variety of features on the Common

## **5. Survey procedures**

The map produced by the Friends of Naphill Common was used as a base map as this shows most tracks and most features of note (Figure 3). Other tracks appear from time to time, but are ephemeral features. The survey took each pathway in turn visually assessing the character of the vegetation and nature of the soil and pebbles appearing in worn sections of path. This was used to determine where soil and hence geological changes occurred. Sections were thus selected to be cut with a small width spade to allow an assessment of firstly, the soil type (using the systematic description and test of Appendix 1) and secondly, the geology where this was encountered in the shallow section (usually only up to 0.5 m or less). It was not possible to use an auger as much of the Common has a pebbly or flinty soil. Records of geology, soil and feature descriptions were made by volunteers on separate sheets for collating later on.



**Figure 3 Base map for the records made during the Naphill Common soil, geology and features survey. Source: [www.naphillcommon.org.uk](http://www.naphillcommon.org.uk)**

## 6. Results and interpretation

### 6.1 Geology and stratigraphy

The results of the geological survey showed that the area is more complex than simply Clay-with-flints over Chalk (Figure 4). In addition to Clay-with-Flints there was also:

- Reading Formation clays (Lambeth Group)
- Sarsen, *in situ* associated with Reading Formation clays
- Loess (wind blown dust of Quaternary age)
- Glaciofluvial gravels (Quaternary)

Reading Formation clays outcrop in the northern part of the Common while Clay-with-flint outcrops in the south. In the central area there is some overlap as there appears to be residual pockets of Reading Formation clays within depressions of the Clay-with-flints. This has led to their historical exploitation forming pits such as the Two Dells and the other 'dells' just to the southwest of these. Also in this central area is a deposit of loess sometimes with and

sometimes without a bed of rounded glaciofluvial pebbles. This may overlie Clay-with Flints or Reading Formation clays, as the exploration cut was not deep enough to locate lower geological layers.

Of particular interest were several blocks of sarsen associated with Willow Pond. Willow Pond was an extraction pit for Reading Formation clay. A few smaller sarsens have been removed during the clay extraction and these have been placed on the edge of the excavation. However, one much larger sarsen is still in place within the pit. When this was examined closely it was proved to be still sitting on Reading Formation clay, which could be sampled using a trowel. This is important dating information which has so far been lacking in the geological literature. The age of sarsen and puddingstone (which is simply a pebbly sarsen) has never been proved. However, the sarsen remaining in Willow Pond would date this as post-Reading Formation clays. Whether this is pre- or post or contemporaneous with the Reading Formation sands has now to be proved at other sites. This project is in hand with the Bucks Earth Heritage Group. The importance is that Naphill Common and specifically Willow Pond, may indicate a date of 50 million years old for the formation of the sarsens in southern England.



**Figure 5 One of the sarsens associated with Willow Pond. This site will be the focus of new research into the formation and ancient environments that formed this unusual rock type. Photograph: Peter Davis.**



Figure 4 Geology

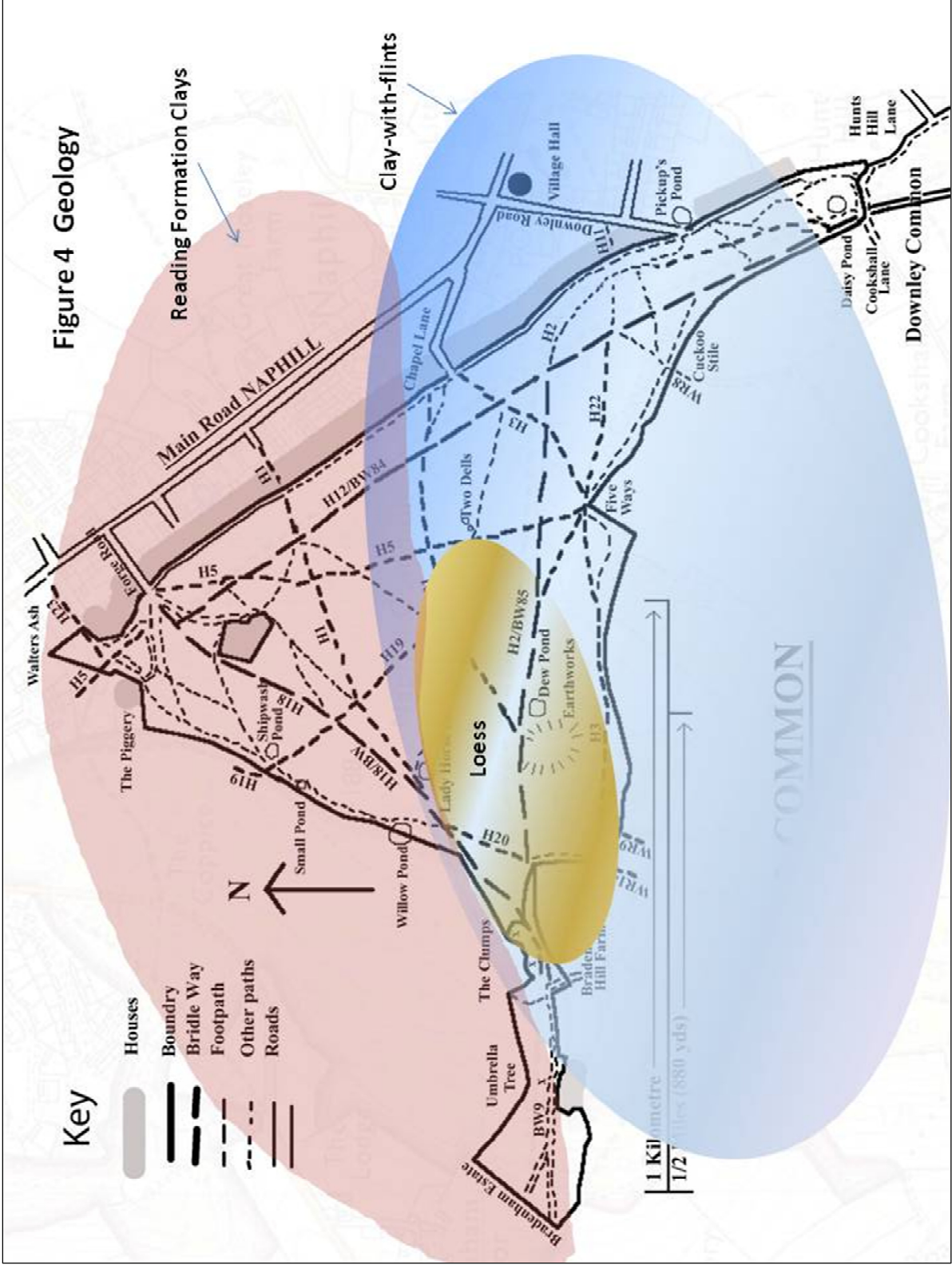
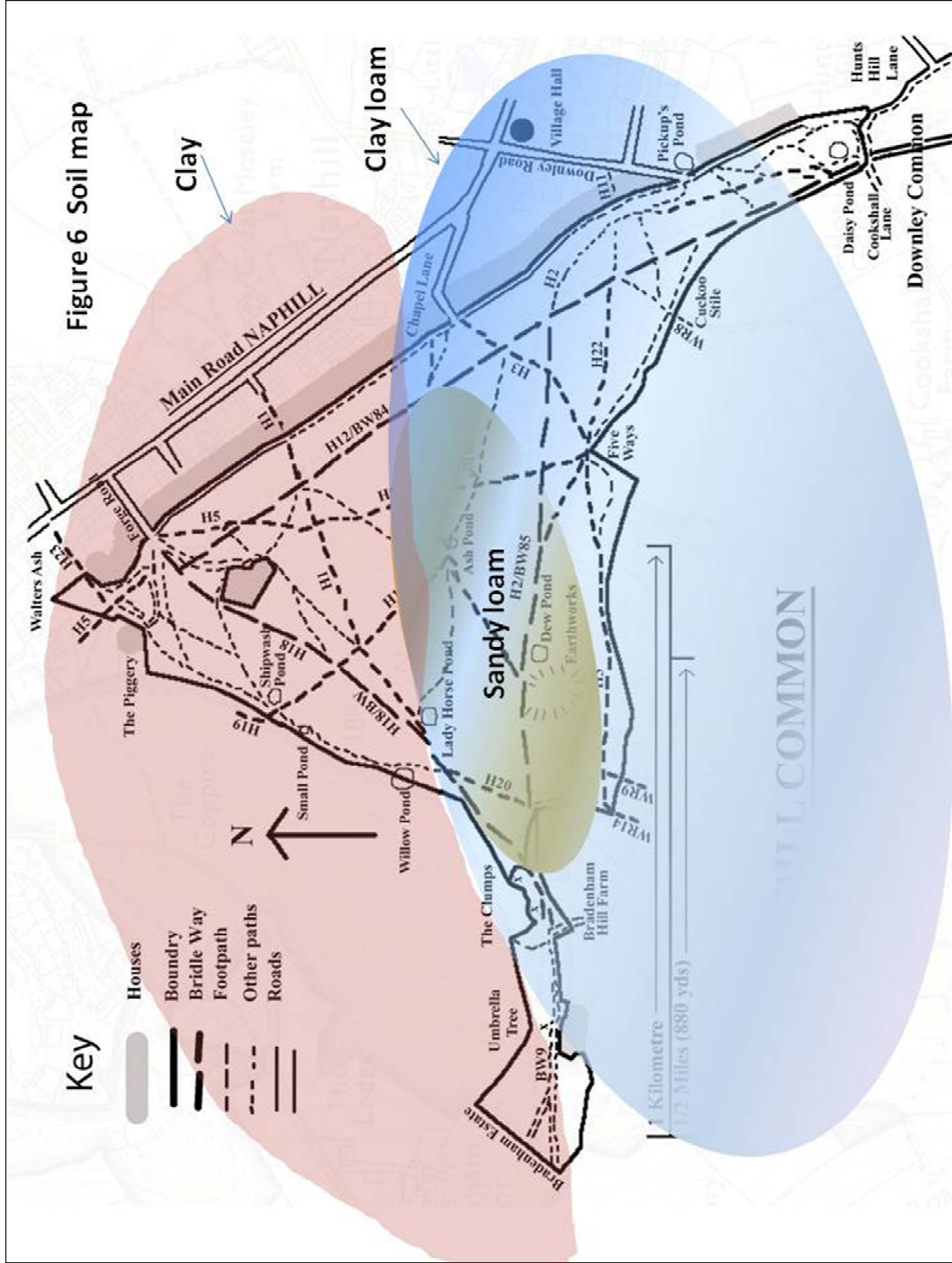
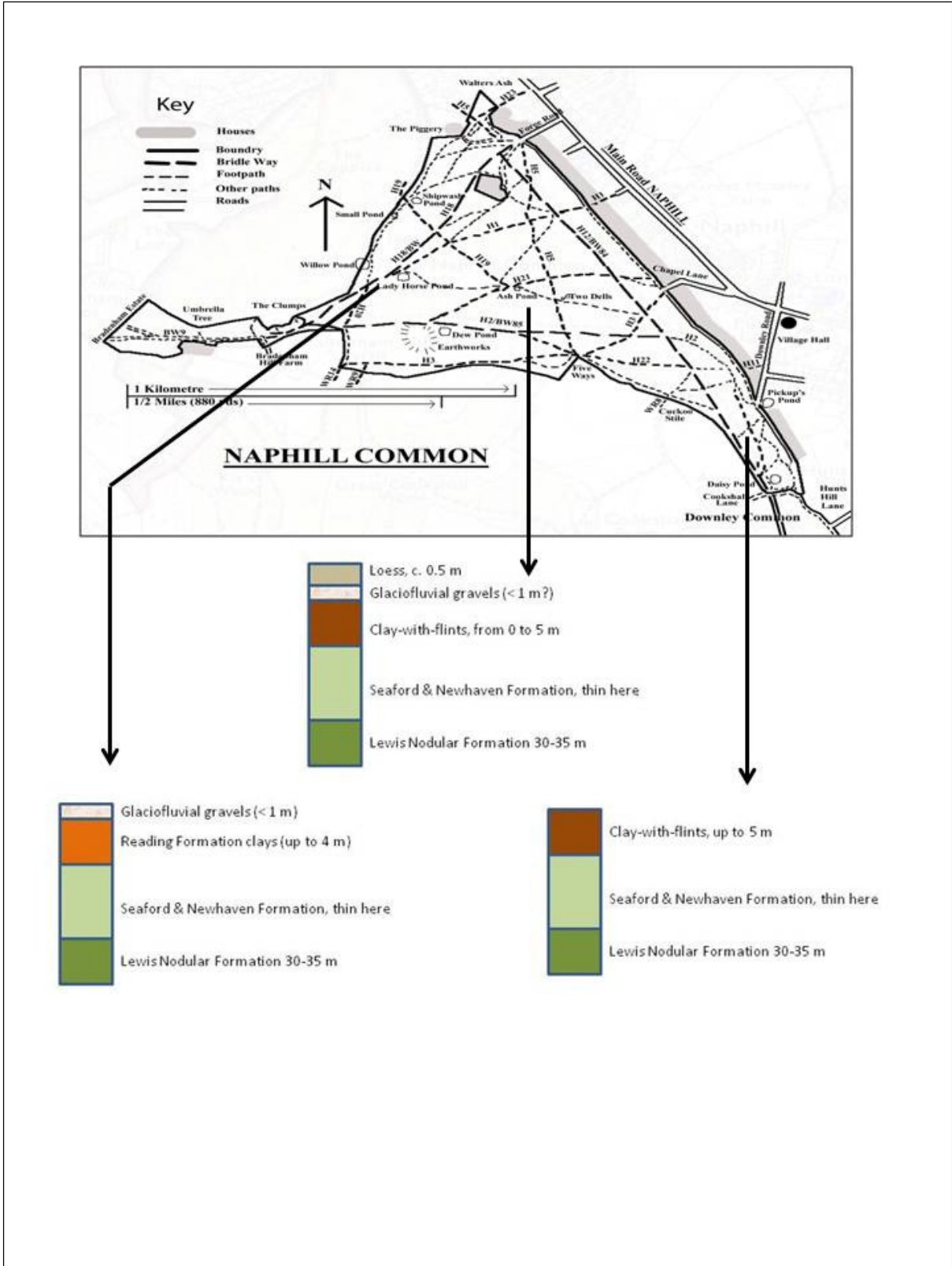


Figure 6 Soil map





**Figure 7 Geological sections for three areas of Naphill Common from left to right: Western side of the Common (e.g. Willow Pond); Central region (e.g. Ash pond and Lady Horse Pond); and the South and SE side (e.g. from WR14 to Dew Pond, Five Ways to Hunts Hill and up to Two Dells and Chapel Lane).**

## **6.2 Soils**

Soil type is directly related to underlying geology and hence as a direct result of a more complex variety of geology, soil varied over the site as shown in Figure 6. The soil is a clay type when overlying Reading Formation clays; a clay loam over Clay-with-flints and a sandy loam over the loess deposit in the central Common area.

All three soils make poor arable land and hence the hilltop characteristically was put to use as Common land as it is highly suitable for grazing livestock and woodland management such as coppice or pollard. This is undoubtedly the reason for the closely associated Downley Common, with a very similar geology (Eyers, 2007).

## **6.3 Features**

Given the geology of the Common (Figure 4) it is clear that all the extraction pits are in the north of the site and are related to clay removal for the brick industry. Reading Formation clays are a notable quality source for bricks and tiles and the nearest kiln were those at Walters Ash Courns Wood and Downley Common. It is not clear if extraction was by an organised workforce from the kiln itself, or if this were casual seasonal work by Naphill locals and commoners. It is clear that this might be a source of extra income for locals, but as clay for the kilns at the Walters Ash end of the Common continued extracting clay from the immediately surrounding area of those kilns, then it is most likely these pits produced clay destined for the Downley Common kiln (Eyers, 2007).

Some of these extraction pits appear to have been converted to being a suitable profile for livestock. All other livestock ponds are on the Clay-with-flints deposit or over loess (which given its porous nature must be underlain by either of the clay horizons).

## Interpretation of features on Naphill Common

Feature name	Description	Interpretation (geology)
Ash Pond SU 8400 9706	Oval, small, now often dry	Water source for animals ( <b>L/GG</b> )
Charcoal platform SU 8406 9687	Blackened, flat area with charcoal	Charcoal platform?
Clumps SU 834 969	Oval, bank & outer ditch, tree ring	Estate feature/shelter/resource? ( <b>Cf</b> )
Daisy Pond SU 8466 9643	Circular, low profile entry edge	Water for livestock? ( <b>Cf</b> )
Dew Pond SU 8383 9700	Circular, low profile entry edge Near earthworks (R-B?)	Water for livestock ( <b>Cf</b> )
Earthworks SU 836 969	Bank & ditch, rectangular	Romano-British? ( <b>Cf</b> )
Lady Horse Pond SU 8371 9710	Oval, low profile entry edge	Water for livestock ( <b>L/GG</b> )
Linear depressions between Cuckoo Stile & Five Ways SU 837 968 to SU 842 968		Tank tracks WWII ( <b>Cf</b> )
Pickup's Pond SU 846 966	Oval	Water source (people?)( <b>Cf</b> )
Saw pit 1 SU 8407 9684	Rectangular pit, nr charcoal platform	Saw pit probably 19 <sup>th</sup> C
Saw Pit 2 SU 8388 9752	Rectangular depression	Saw pit
Shipwash Pond SU 8375 9735	Kidney-shaped, low profile edge	Sheep wash ( <b>R</b> )
Small Pond SU 8367 9726	Circular, small, low profile edges	Extraction pit, then livestock?( <b>R</b> )
Trenches SU 830 969	1.5 m deep (Bradenham boundary)	Modern drainage ditches ( <b>R</b> )
Two Dells (+ SW dells) SU 8411 9704 & (SU 8407 9701)	Irregular to oval steep sides pits. Deep dell is 9 m diameter, 1.9 m deep Shallow dell is 10.6 m diameter, 1.1 m deep. Very shallow, irregular shapes.	Extraction pits ( <b>R</b> pockets in <b>Cf</b> )

Umbrella Tree	Pruned tree in 'umbrella' shape	Fun tradition, near tree clumps
Valley (near Five Ways) SU 841 968	Valley, steep asymmetric	Dry valley, formed under tundra ( <b>Cf</b> with <b>GG</b> in valley bottom)
Willow Pond SU 8362 9717	Oval, steep sides	Extraction pit ( <b>R</b> with sarsens)

**Key for geology:**

L/GG = Loess overlying glacial gravel (Quaternary)

Cf = Clay-with-Flint

R = Reading Formation clay

## 7. Conclusions

The geology of Naphill Common is more complex than the published geological maps would suggest. Rather than simply being Clay-with-flints overlying Chalk, there are three main lithological areas: Reading Formation (north and west), Clay-with-flints (south and east) and loess (central and overlying both of these older clay units).

Geomorphologically there is a good example of a small dry valley cutting the H3 footpath near Five Ways. The valley bottom proved water worn pebbles. The loess and glaciofluvial deposits are probably not of a geologically mappable thickness or extent. However, the Reading Formation clays should be mapped and this information will be lodged with the British Geological Survey to assist future map preparation. The sarsen location in Willow Pond is highly significant and may prove to be invaluable in proving the age of this deposit. For this reason Willow Pond and the sarsens are to be put forward as a Local Geological Site which will be further researched by the Bucks Earth Heritage Group.

The geological information crucially links to the soil characteristics. In this respect it is flinty (sharp and angular) and clay loam in the south (linked to Clay-with-flints). In the north and west it is wetter and heavier – being a clay soil over the Reading Formation. No flints occur in the soil here, but there can be rounded pebbles from the glaciofluvial sources. In the central area the sandy loam associated with the loess deposit may be of importance to the colonisation potential and thriving or not of certain species.

## **8. Documentary sources and bibliography**

### **Bibliography:**

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Smith, C. J. 1995. Preliminary field survey and proposals for continuing management of Naphill Common and part of Downley Common for the period 1997-2007. Unpublished report.

### **Maps and web sources**

British Geological Survey Geological Sheet 255 *Beaconsfield*. Solid & Drift. 1:50 000 series 2004.

Bucks Earth Heritage Group website: [www.bucksgeology.org](http://www.bucksgeology.org)

Naphill Common website: [www.naphillcommon.org.uk](http://www.naphillcommon.org.uk)

Ordnance Survey map Sheet 159. The Chilterns. National Grid one-inch to one mile 1959.

Ordnance Survey map 172 Chiltern Hills East (2008). Explorer map 1:25 000 scale

### **Acknowledgments**

This was a team effort with the Friends of Naphill Common and part of the Chilterns Conservation Board project *Chilterns Commons*. Field work was undertaken during May and June by Peter Davis, Kate Davis, Trevor Hussey, Philip Hussey, Kevin Bennett, Stephanie Morgan, John Morgan and Stafford Dobson under the direction of Jill Eyers. We are grateful to the West Wycombe Estate for allowing us to undertake the surveys.

## Appendix 1

### Key used to determine soil type with a simple hand test in the field

#### SOIL HAND TEXTURING KEY

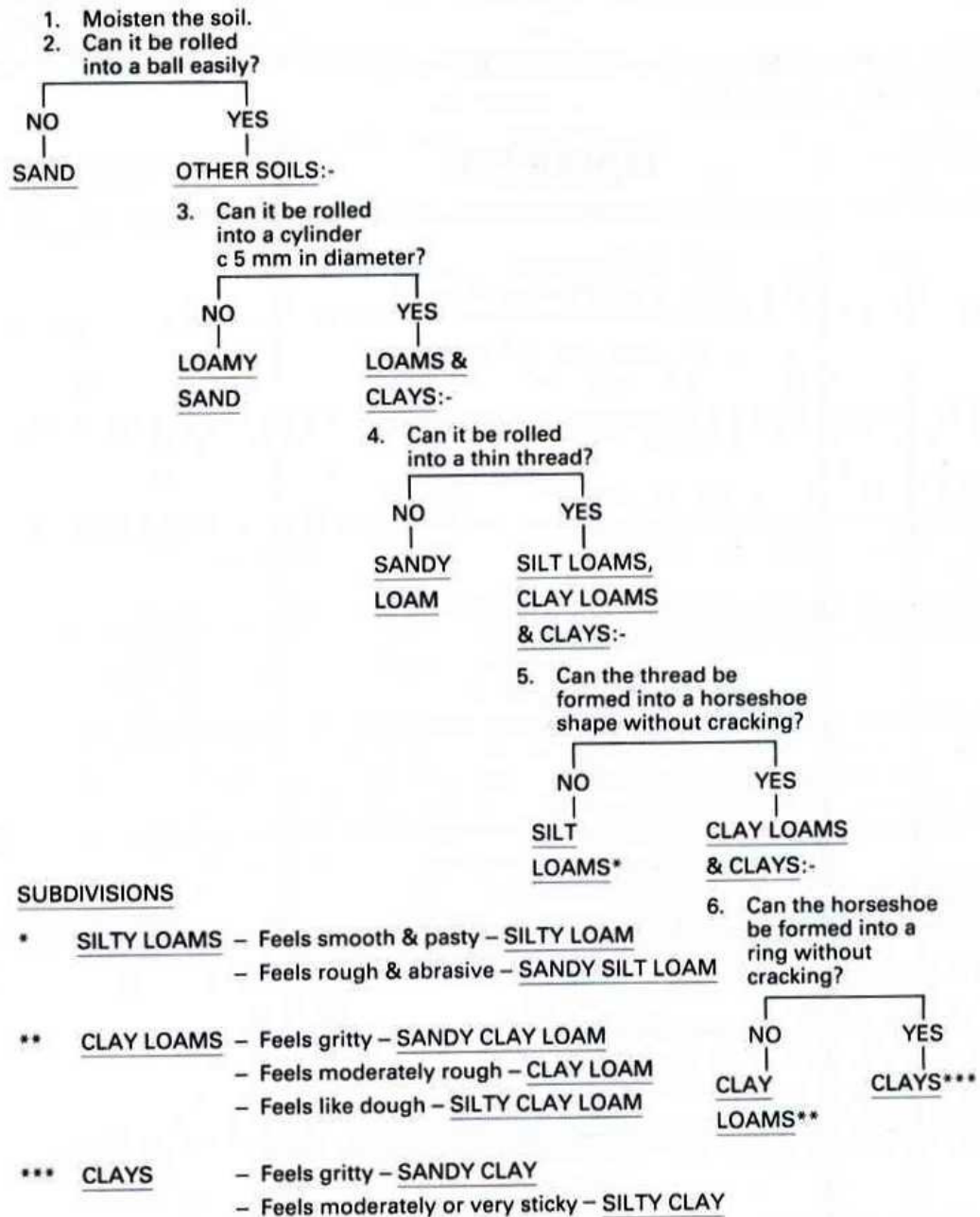


FIG. 7.  
Soil texture key