

A revision of the Ancient Woodland Inventory for Tunbridge Wells Borough, Kent

Report and Inventory Maps

October 2007



**Project carried out by the
Weald and Downs Ancient Woodland Survey**

A revision of the Ancient Woodland Inventory for Tunbridge Wells Borough, Kent

Project carried out by the Weald and Downs
Ancient Woodland Survey for East Sussex and Kent
October 2006 to October 2007

Report by:
Sally Westaway, formerly of the High Weald AONB Unit
Matthew Grose, High Weald AONB Unit
Patrick McKernan, Forestry Commission

Field surveys by Kate Ryland,
Dolphin Ecological Surveys

Editing and design by Patrick McKernan,
Forestry Commission

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*Front cover photograph: Sunken trackway at Broadham Wood
near Kilndown, Kent (photograph: Patrick McKernan, Forestry Commission)*



WEALD AND DOWNS
ANCIENT WOODLAND SURVEY

Tunbridge Wells
BOROUGH COUNCIL
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Natural England foreword

Natural England works for people, places and nature, to enhance biodiversity, landscapes and wildlife in rural, urban, coastal and marine areas; promoting access, recreation and public well-being, and contributing to the way natural resources are managed so that they can be enjoyed now and in the future.

Natural England considers that ancient woodlands are irreplaceable, and should therefore be protected and managed so as to maintain and enhance their special character. Knowing where ancient woods are is therefore a key nature conservation need.

The Ancient Woodland Inventory was originally compiled by the Nature Conservancy Council (a predecessor to Natural England) between 1981 and 1992, with the Inventory for Kent being produced first in 1984. The Inventory was further updated in 1990 and 1994 and was digitized by the Forestry Commission in 2000 for use on Geographic Information Systems. Natural England has refined the digital boundaries to make them more compatible with other national datasets and OS MasterMap. This project follows the Weald Ancient Woodland Survey, a partnership of the High Weald AONB Unit, Natural England, the Forestry Commission, Sussex Biodiversity Records Centre, the Woodland Trust, and local authorities, which has already been incorporated into the national dataset.

This report outlines the work of the project in Tunbridge Wells Borough, taking in additional historical map evidence and site surveys to verify the status of sites, and including woodland sites under two hectares. The number of sites captured increased from 322 to 895, including an additional 672 hectares not previously mapped in Tunbridge Wells Borough. Natural England will add the information captured by this project to the national Inventory.

This inventory revision continues the work started in Wealden district, consolidating the work on the Ancient Woodland Inventory. The survey has grown to become the Weald and Downs Ancient Woodland Survey, and is now undertaking similar revisions to the Ancient Woodland Inventory across Sussex and Kent. Natural England welcomes the work of this survey, and the increased protection and understanding of ancient woodland that it brings.

Emma Goldberg
Forestry and Woodland Specialist
Natural England

Forestry Commission foreword

As the government department responsible for forestry, the Forestry Commission works to ensure the protection and sustainable management of our woodlands. Ancient woodlands in particular are exceptionally rich in wildlife, and often contain important archaeological and heritage features relating to their past management. The appropriate management and protection of these sites is a key concern for the Forestry Commission, particularly in the South East, England's most heavily-wooded region, which contains some 40% of England's ancient woodlands.

The focus on ancient woodland received a new emphasis in 2005, with the launch by Defra and the Forestry Commission of 'Keepers of Time: A Statement of Policy for England's Ancient & Native Woodland'. This set out the Government's vision that 'Ancient woodlands, veteran trees and other native woodlands are adequately protected, sustainably managed in a wider landscape context, and are providing a wide range of social, environmental and economic benefits to society.'

Ancient woodlands are widely recognised as being irreplaceable habitats, but many are not protected through designation. Local authorities have a key role to play in the protection of this unique resource through the planning process. This role has been strengthened by the publication of Planning Policy Statement 9, which requires local authorities to identify any areas of ancient woodland that do not have statutory protection. The Forestry Commission recognises that this is a complex and potentially time-consuming task and its support for this revision of the Ancient Woodland Inventory for Tunbridge Wells Borough is part of a wider initiative to help co-ordinate similar surveys in other densely-wooded districts.

This survey has resulted from a strong partnership between Tunbridge Wells Borough Council, Natural England, the High Weald AONB Unit, and the Forestry Commission. The Forestry Commission believes that such partnerships, working with local authorities, provide an important means for increasing the understanding, protection, and sustainable management of our historic ancient woodlands.

Alan Betts
Regional Director
South East England Conservancy
Forestry Commission

Tunbridge Wells Borough and the revision of the Ancient Woodland Inventory

Tunbridge Wells Borough

Tunbridge Wells Borough lies in the south west corner of Kent bordering East Sussex and is dominated by the wooded landscape of the High Weald Area of Outstanding Natural Beauty, which covers more than 70% of the borough. Largely a rural borough, its woodland cover, much of which is ancient, is a key element of the landscape that extends into the towns and villages. The borough covers an area of 331 square km and has a population of just over 100,000, with about half of the population living within the main urban areas of Royal Tunbridge Wells and Southborough.

As an attractive place to live and work there is constant pressure for new development, including houses, roads and leisure facilities. Other threats to the environment include fly tipping, pollution and climate change, which can be particularly harmful to biodiversity. There has also been a decline in traditional woodland management and an increase in leisure uses and unsympathetic development/ land use in the countryside resulting in a significant threat to ancient woodland and the landscape character of the borough.

Landscape and Nature Conservation

Woodland, and ancient woodland in particular, is a habitat of major importance to nature conservation. It plays host to a number of protected or notable species and is a key feature of the landscape character and historic fabric of the borough. The borough falls within the National Landscape Character Areas of the High Weald and Low Weald but has also been subject to a Borough Landscape Character Area Assessment that identified detractors and opportunities for enhancement, including one for woodland:

“Decline in woodland cover and woodland management, particularly coppice woodland management, resulting in a reduction in both the landscape and ecological value of woodlands. Any enhancements should promote woodland management opportunities in association with development or where grants are available. This could be allied with the woodland marketing and management measures developed through the Woodland Enterprise Centre and the High Weald Unit. Distinctive ghyll woodlands, many within valleys, and strips of shaw woodland around fields are important landscape features in many parts of the borough and should be protected, managed and, where necessary, reinforced.”

The borough contains more than 80 sites designated for their nature conservation value, 10 scheduled ancient monuments and more than 30 historic parks and gardens, many of which include areas of ancient woodland. The borough is also noted for its ghyll stream valleys, hedgerows and shaws, which form part of or link areas of ancient woodland and are important landscape and nature conservation features in their own right.

The Council's Aims and Priorities

“Caring for our Environment” is a corporate aim of the Council which, through its Community Plan, sets the aim:

“To conserve and enhance the environment of Tunbridge Wells Borough both for ourselves and for the benefit of future generations.”

The natural environment of the borough is recognised by residents as an important attribute and plays a key role in our thriving tourism industry, which benefits the economic vitality of the rural areas. The Council's objective for the rural area is to achieve a sustainable balance between conservation and essential development.

Planning Context

Planning Policy Statement 9: Biodiversity and Geological Diversity highlights the importance of Ancient Woodland, advising that *“once lost it cannot be recreated”*. In addition to requiring local planning authorities to identify ancient woodland, it states that planning permission should not be granted *“for any development that would result in its loss or deterioration unless the need for, and benefits of, the development in that location outweigh the loss of woodland habitat”*.

The Adopted Local Plan 2006 seeks to protect the borough's best environmental features and focus development in existing towns and villages. The overall aim of the plan is to promote sustainable development through protecting the unique high quality environmental character of the area and promoting enhancement by encouraging excellence in the quality of all development; conserving finite, non-renewable resources; and retaining and providing an appropriate level and distribution of development to meet identified needs.

Following adoption of the Local Plan the Borough Council is required to prepare a Core Strategy under the provisions of the Planning and Compulsory Purchase Act, 2004, which introduced a new system of Regional Spatial Strategies (RSS) and Local Development Frameworks (LDF). The Core Strategy will not, by itself, replace the Local Plan.

The Core Strategy is a directive plan, recognising the issues facing the borough. It drives development in the most appropriate direction to address them. The Core Strategy will recognise the importance of the natural environment, giving consideration to landscapes, and seeking to protect or enhance landscape character within the borough, including national landscape designations such as Areas of Outstanding Natural Beauty (AONB). It will seek to minimise impact on biodiversity and make enhancements where possible, and finally maintain, protect and where possible enhance the historic natural landscape and those features that contribute to the distinctive character of the borough's landscape such as ancient woodland.

Relationship with other studies

The revised Ancient Woodland Inventory adds to the knowledge and understanding that we have of our rural environment. It will enable information on ancient woodlands to be more accurate and for that information to be more accessible. Through the use of geographical information systems and the Kent and Medway Biological Records Centre, all data captured by the survey, including damaged sites and historical information, can be added to and built

on over time. The Inventory can be used to inform policy, guide development control decisions and act as a focus for the activities and initiatives of the Council and the community. The work will compliment biodiversity actions in adjoining authorities and across the region contributing to regional and national objectives. The Council is also encouraging proactive management of our woodlands through promoting biomass boilers and the wood chip fuel industry which provides the economic incentives for woodland management.

The Inventory complements a number of policies, plans and strategies produced or adopted by the Council, including:

Borough Landscape Character Area Assessment – Supplementary Planning Guidance August 2002

A description of the landscape types within the borough and the setting of landscape objectives.

Landscape and Nature Conservation – Guidance Note For Applicants August 2002

Guidance on the implementation of the Borough Landscape Character Area Assessment SPG and advice on how to deal with landscape and nature conservation matters in development control.

High Weald AONB Management Plan 2004

This is the statutory management plan, produced for the High Weald by the High Weald AONB Unit, which has been adopted by the Council and includes a section on woodland objectives.

Tunbridge Wells Borough Council Environment Strategy 2005

The Council's framework for tackling environmental issues which includes objectives for habitats and species in the borough.

Outcomes and future of the project

Tunbridge Wells Borough Council is proud to be the first local authority in Kent to take up the initiative to review the Ancient Woodland Inventory, first piloted by Wealden District Council in East Sussex, and hopes that other authorities in Kent will capitalise on the existing resources of the project to undertake their own review. The Inventory will be particularly helpful in informing future actions, plans and policies, including:

- The emerging Local Development Framework and future planning policies.
- Informing development control decisions.
- The emerging Local Biodiversity Action Plan which has commitments to UK priority habitats.
- Targeted planning and environmental enforcement action to halt decline and loss of ancient woodland through unlawful development, fly tipping, leisure activities encroachment and inappropriate grazing.
- Providing a baseline for future studies, such as woodland archaeology.
- Informing future plans and actions, such as woodland management schemes, landscape enhancement projects and response to climate change.

- Provide a framework and focus for habitat action plans and green corridors at a local and regional level.

The review of the Ancient Woodland Inventory is an excellent example of partnership working to achieve local and national landscape and ecological objectives. The work will assist the Council in meeting its duty to biodiversity under the Natural Environment and Rural Communities Act 2006 and will support the work of the Local Biological Records Centre. The output is also supportive of e-government initiatives. The Council would like to express its thanks to:

The High Weald AONB Unit
The Forestry Commission
Natural England
The Kent and Medway Biological Records Centre
Kate Ryland of Dolphin Ecological Surveys
The landowners who have allowed us to visit their sites and record them.

For further information please contact:

David Scully
Landscape Officer
Tunbridge Wells Borough Council
e-mail: david.scully@tunbridgewells.gov.uk

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1. Summary

Ancient woodland is a nationally important and threatened habitat. Its existence over hundreds of years has preserved irreplaceable ecological and historical features. The South East has approximately 40% of the ancient woodland in England, but this valuable resource is increasingly under threat from development pressures in this densely populated region. The Weald and Downs Ancient Woodland Survey was set up in recognition of the increasingly important role of ancient woodlands and the deficiencies of the existing ancient woodland Inventories.

This report summarises the methodologies and findings of a one year project (running from October 2006 to October 2007) to revise the Ancient Woodland Inventory for Tunbridge Wells Borough. The Weald and Downs Ancient Woodland Survey has worked with Tunbridge Wells Borough Council, the High Weald AONB Unit, the Forestry Commission, Natural England, and the Kent and Medway Biological Records Centre to provide a robust evidence base upon which to assign ancient woodland status.

The whole of the borough's ancient woodland resource has been re-examined. The area of ancient woodland since the original Inventory was produced has risen from 4,719 hectares to 5,391 hectares, a gain of 672 hectares. Overall, the total ancient woodland cover in Wealden has risen from 14.24% to 16.27% as a result of this revision.

The revised Inventory will assist Tunbridge Wells Borough Council's planners in making decisions about development within the district, thus ensuring that the effects of any development proposals on ancient woodlands can be properly assessed and considered. The revised inventory will also enable a better assessment of the extent and quality of Tunbridge Wells Borough's ancient woodland resource to be made, and will help identify threats to the resource, areas for improving habitat connectivity, and opportunities for the strategic management of key woodlands.

2. Introduction

2.1 Background

Ancient woodland over two hectares in size are recorded in Ancient Woodland Inventories which were compiled in the 1980s and 1990s by the Nature Conservancy Council¹. These Inventories have become an important tool for policy makers and planners whilst also assisting land managers to identify key areas for the restoration and planting of native woodlands and increasing awareness of the importance of ancient woodland.

The original Ancient Woodland Inventory (AWI) for Kent was first produced in 1984, and revised in 1990, by the Nature Conservancy Council (NCC)². The Inventory was only available on printed maps, until being digitally mapped (digitized) in the late 1990s by the Forestry Commission. This digital dataset was subsequently updated on a case-by-case basis by English Nature (now part of Natural England), the successor to the NCC. For the purposes of this report, a comparison has been made with the digitized 1990 Inventory, with amendments by English Nature up to the year 2000 (referred to hereafter in the text and maps as the 'original AWI'). This version is the nearest to the original Inventory available to this survey in electronic format.

¹ Spencer & Kirby (1992)

² Hutton (1990)

Whilst the compilation of the original Inventory was a valuable process at the time, new information and advances in technology mean that its inaccuracies and omissions can now be addressed. With the pressure on land increasing year on year, these errors can cause significant problems for a planning authority. The original Inventory also only recorded ancient woodlands greater than two hectares. In heavily-wooded areas such as Tunbridge Wells Borough, small woodlands make a significant contribution to the woodland resource, and their omission from the Inventory has the potential to undermine their protection through the planning process. This survey includes these small woodlands for the first time.

2.1.1 The Weald and Downs Ancient Woodland Survey

The Weald and Downs Ancient Woodland Survey is the name given to the partnership of organisations revising the Ancient Woodland Inventory in the Weald and Downs of Sussex and Kent. Key partners in the survey include the Forestry Commission, Natural England, the High Weald AONB Unit, Sussex Biodiversity Records Centre, the South Downs Joint Committee, and local authorities.

The aim of the survey is to revise and update the Ancient Woodland Inventory in these areas, and to include, for the first time, ancient woodlands less than two hectares. For East Sussex and Kent, the survey is based at the High Weald AONB Unit. For West Sussex, the survey is based at Sussex Biodiversity Records Centre.

2.1.2 Tunbridge Wells Ancient Woodland Inventory revision

Tunbridge Wells Borough is well wooded. Of the 67 local authorities in the South East region, it has the 17th greatest area of woodland, with over 70% of its woods identified as ancient. These ancient woodlands represent a significant resource, covering 14% of the borough (based on the original Inventory), the second greatest ancient woodland land cover percentage in the region ³.

A large part of the borough falls within the High Weald Area of Outstanding Natural Beauty (AONB) where fields, heaths and woodlands form an intimate mosaic of habitats. This landscape has remained largely unchanged over the centuries. Its undulating terrain and heavy clay soils have helped to protect what is probably among the greatest concentrations of ancient woodlands in the UK. Many of these woodlands are field shaws, belts of trees, or woodlands less than two hectares in area. These small ancient woods tend to surround ancient disused historic features such as marl pits and hammer ponds, or occupy narrow linear features such as gills.

The extent of woodland in the borough, and the absence of small woodlands in the original Ancient Woodland Inventory were important factors in deciding to undertake this revision of the Inventory.

2.1.3 Brief history of Weald woodlands

Major woodland clearance in the South East began in the Neolithic period ⁴ and during the Neolithic, Bronze and Iron Ages, with most of the woodland on the South Downs being

³ Based on analysis of the Forestry Commission's National Inventory of Woodland and Trees, and the Ancient Woodland Inventory by Patrick McKernan, Forestry Commission, and Matthew Grose, High Weald AONB Unit.

⁴ Drewett (1999)

cleared for agriculture and livestock⁵. Clearance on the heavier clay soils of the Weald took place at a much slower rate⁶.

From pre-Roman to late medieval times woodlands in the Weald were heavily exploited for iron ore⁷. This is revealed by the large number of primitive bloomeries, extraction pits and furnace sites recorded in the woods of the Weald⁸. The richest and most accessible ores were often found exposed in steep gills, and furnaces were frequently situated in these locations, where wood for fuel, ore and water for the smelting process were all available⁹. Large areas of woodland were needed to supply the underwood for fuel. Rackham suggests that in order to ensure a constant fuel supply, the Roman industry probably actively managed its fuel supply by a stable coppice system¹⁰. The majority of woodland in the Weald would probably have been managed as coppice or coppice-with-standards by the late middle ages, providing both underwood and timber.

Medieval woodlands are likely to have been well organised, with wooded commons, wood pasture for stock feeding and timber and enclosed woods for timber and fuel¹¹. Medieval forests and deer parks would also have been a common feature in parts of the Weald; used as deer hunting grounds, these would have been well-wooded with widespread pollarding¹². Many former deer parks contain prime examples of relic woodlands.

Concerns over depletion of the woods by the iron and glass industries led to King Charles II commissioning John Evelyn's book 'Sylva', published in 1664¹³. This work encouraged the planting of both deciduous and conifer plantations across the country. During the 18th and 19th centuries many landowners began formalising and landscaping their estates and it was then that the planting of large areas with trees became common together with the introduction of many exotic species¹⁴.

From the 17th century, woodland industries began to decline in the Weald, primarily as a consequence of the Industrial Revolution when coke from coal became the preferred fuel for iron production¹⁵. Industries using coppice products declined during the 19th century as they became increasingly uneconomic and timber production replaced coppice systems. The Forestry Commission was established in 1919 after the First World War. Its remit was to promote afforestation in order to rebuild and maintain a strategic timber reserve, and large conifer plantations were created¹⁶.

Traditional woodland management had ceased almost entirely by the end of World War II and the planting conifers became widespread in the 1960s and 1970s. However, the increasing recognition of the value of broadleaved trees for conservation, and declining timber markets, both led to the decline of conifer plantation management. Today many

⁵ Sussex Downs Conservation Board (2001)

⁶ Brandon (2003)

⁷ *ibid.*

⁸ Hodgkinson (2002)

⁹ Cleere & Crossley (1995)

¹⁰ Rackham (2003)

¹¹ Bannister (2007)

¹² Brandon (2003)

¹³ Evelyn (1664)

¹⁴ Bannister (2007)

¹⁵ Cleere & Crossley (1995)

¹⁶ Forestry Commission (2006)

woods in the Weald are dominated by a high forest of derelict broadleaved coppice or conifer plantations with woodlands now often seen primarily as a recreational resource.

Many of the woodlands in the area have a complex history and traces of past uses and management can still be seen today. Ancient coppice stools reveal previous management practices, and pits and hollows provide evidence of former industries such as timber conversion and iron ore extraction. Pales and pollards indicate a previous parkland use and trenches and pits provide evidence of more recent strategic uses.

In 1991, the paper mill at Sittingbourne in Kent closed its broadleaved roundwood intake. This, and the recent closure of the pulp mill at St Regis in South Wales have had a significant impact on the market for coppice underwood in South East England. Coppice is the most widespread traditional woodland structure still found in woods in the Weald, but the economic returns for managing traditional coppice are very low and the demand for woodland products is small, with few financial incentives. For coppice woodland to retain its cultural and ecological value these woods need to be managed by regular cycles of cutting, in a sustainable way. However, there are signs of growth in the fire wood market, and the considerable interest in wood fuel as a heat source has the potential to create a significant market for managed woodlands.

2.1.4 Project aims

The primary aim of the Weald and Downs Ancient Woodland Survey is to re-examine all available information and to present a revised Ancient Woodland Inventory for a local authority area. This enables local authority planning officers to identify areas of ancient woodland and hence provide these woodlands with the appropriate recognition in accordance with planning guidance and policy.

Additional aims of the survey are:

- To develop a better understanding of the key issues and threats affecting ancient woodland sites.
- To document the location of ancient woodland sites within the local authority areas which will help to identify areas of opportunity for environmental enhancement, increase the understanding of habitat connectivity, and highlight woodland areas for targeting woodland management programmes and grant funding.

2.1.5 Project funding

The revision of the Ancient Woodland Inventory for Tunbridge Wells Borough was jointly funded by Tunbridge Wells Borough Council, the High Weald Area of Outstanding Natural Beauty (AONB) Unit, and the INTEREG IIIB Programme “Lifescape your Landscape”. Additional support for the project was provided by the Forestry Commission, Natural England, and the Kent and Medway Biological Records Centre.

2.2 Ancient woodland definitions

Britain’s woodlands can be grouped into two categories: more recent woodlands and ancient woodlands, depending on their history.

2.2.1 Recent woodland

Secondary or recent woodland (less than 400 years old), is where a wood has either been planted on an area of land, or where trees have been allowed to grow naturally through regeneration, usually as the result of a cessation in land use management¹⁷. Recent woodland sites can show similarities to ancient woodland depending on their age, proximity to ancient sites and the diversity of microhabitats within the site. However, generally their biological diversity is not as great as that of ancient woodland. These woods are therefore excluded from the Inventory.

2.2.2 Ancient woodland

The definition of ancient woodland used for this survey is that given by English Nature (now part of Natural England), as included in an English Nature guidance document on ancient woodland for local authorities¹⁸. The relevant extract from this document is included below:

Ancient woodland in England is defined as an area that has been wooded continuously since at least 1600 AD. Ancient Woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stand are classed as ancient woods.

The trees and shrubs in ancient woodlands may have been felled or cut for coppice at various times since 1600, but as long as the area has remained as woodland, i.e. the coppice stools have regrown or the stand has been replanted soon after felling, then it still counts as ancient woodland. Because it may have been cut over many times in the past, ancient woodland does not necessarily contain old trees.

The date used to define ancient woodland for England, 1600 AD, was chosen by Peterken¹⁹, because it reflected the point at which good maps started to become more common and was prior to the impetus for new woodland planting from the publication of Evelyn's influential book 'Sylva'²⁰. Other dates could be argued for: 1650 was used by Peterken and Harding²¹ to distinguish post-medieval woods in Rockingham Forest, as a detailed map for that area was produced at that time, while Rackham uses 1700²². In practice 1600 has been adopted for policy and practical purposes in England.

Ancient woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Both types of stand are classed as ancient woods.

Ancient semi-natural woodland (ASNW)

Ancient semi-natural stands are those that are composed predominantly of trees and shrubs native to the site that do not obviously originate from planting. They include stands that may have been managed by coppicing or pollarding in the past, as well as those where the tree and shrub layer has grown up by natural regeneration.

¹⁷ Bannister (2007)

¹⁸ Kirby & Goldberg (2006)

¹⁹ Peterken (1977)

²⁰ Evelyn (1664)

²¹ Peterken & Harding (1974)

²² Rackham (2003)

Ancient replanted woodland

Ancient replanted woodland sites (also called Plantations on Ancient Woodland Sites, or PAWS) are areas of ancient woodland where the original native tree cover has been felled and replaced by planted stock most commonly of a species not native to the site, for example conifers such as Norway spruce (*Picea abies*) or Corsican pine (*Pinus nigra* var. *maritima*), but also broadleaves such as sycamore (*Acer pseudoplatanus*) or sweet chestnut (*Castanea sativa*) [but see 2.2.3, below].

The division between semi-natural stands and plantations is not always easy to define, because there are intermediates, for example small clearings within woods, old plantations of native species, semi-natural structured stands of introduced species, planted conifer stands that now contain a proportion of self-sown native broadleaves, or semi-natural tree layers with no native understories or improved ground floras. Therefore a judgement may be necessary as to the balance between the planted/introduced elements versus the native/naturally regenerating elements.

For the purposes of this survey, the following definitions have also been used to help define areas of ancient woodland:

- Areas with continuous woodland cover.
- Areas managed or periodically cleared for timber or underwood production.
- Areas regenerating following woodland management.
- Open grazed areas within the woodland site (at least 20% canopy woodland over 80% of the site).
- Temporary clearings that may have been created within the woodland complex but which have regenerated, or are regenerating, back to woodland.

2.2.3 Sweet chestnut

Sweet chestnut (*Castanea sativa*) is a non-native species, widely planted in woods in Kent, Sussex, and Surrey. As such, the significant presence of sweet chestnut in an ancient woodland should lead to its definition as ancient replanted woodland. However, Hutton, considering this issue in the 1990 report on the provisional Ancient Woodland Inventory for Kent, provided the following comments:²³

It is thought that sweet chestnut was introduced to Britain in Roman times (Rackham, 1980). Evidence that it persisted through the Dark Ages comes from the Anglo-Saxon's knowledge of the tree and from the nature and distribution of mediaeval records. By the 13th century many records specifically mention chestnut in woods which were well away from habitation. Records from the Forest of Dean and from Sittingbourne state that it was accompanied by oak and beech with which it can still be found in the same stand today, e.g. in Ellenden Wood near Canterbury. This association of chestnut with what were then the typical trees of very acid soils shows that it did not depend totally on where growers had put it.

On the basis of this historical 'naturalisation' of sweet chestnut in the woods of the county, and of the present character of known ancient woods in which sweet chestnut comprises a major component of the woodland community, some sweet chestnut coppices have been included in the semi-natural category of the inventory.

²³ Hutton (1990)

Many formerly mixed coppice stands have been interplanted with sweet chestnut, and the stumps of existing native trees and shrubs treated and killed. This type of management results in a dense monoculture of sweet chestnut coppice which, in many cases, has the effect of suppressing the semi-natural flora. Where the later planting of sweet chestnut in ancient woods is known to have resulted in a marked suppression of the semi-natural underwood and ground flora, such woods have been recorded as replanted.

Even in these apparently uniform plantations, however, many sweet chestnut coppices continue to provide very important habitats for nightingales, nightjars and tree pipits, as well as certain rare lepidoptera, such as the heath fritillary in the Blean Woods. In addition, many of the species of semi-natural woodland, although often drastically reduced, may still persist in these highly modified sweet chestnut plantations. Although replanted, these woods are often of considerable wildlife value and retain features characteristic of their ancient origin. At a county and regional level, they represent a significant and extensive wildlife resource.

The information so far gathered in this inventory is insufficient to identify all sweet chestnut coppices where the semi-natural vegetation has been suppressed and the extent of ancient woodland in the county which should be recorded as replanted may, consequently, have been considerably underestimated.

Hutton's comments in the last paragraph above remain true for this survey. Sweet chestnut was only identified in the woods included in the field survey, and these only represented a small proportion of all the ancient woodlands in Tunbridge Wells Borough. Within the surveyed woods, a judgement was made on whether the presence of sweet chestnut meant that the wood should be considered as ancient replanted.

For the remainder of the ancient woodlands greater than two hectares, the definition of ancient replanted, or PAWS, was based on an analysis of the Forestry Commission's National Inventory of Woodland and Trees (NIWT), which defines all woodlands greater than two hectares into categories such as broadleaved, coniferous, mixed, and coppice²⁴. However, the NIWT is likely to include sweet chestnut predominantly in the coppice or broadleaved categories, so this analysis will not help identify sweet chestnut plantations as ancient replanted areas. For ancient woodlands less than two hectares, a judgement on ASNW or ancient replanted status was based on an interpretation of aerial photographs. This methodology also did not enable specific identification of sweet chestnut plantations. As a result of these factors, the area of ancient replanted woodland in this revision of the Ancient Woodland Inventory is likely to be an underestimate, as it was in the original Inventory report in 1990.

2.2.4 Pasture Woodland

Wood pasture describes woods derived from ancient pasture woodland managed for both trees and livestock or deer²⁵. These woodlands are usually associated with ancient deer parks, Royal Forests or wooded common land. They frequently occur in a mosaic with other habitats and the boundaries are often poorly defined. Wood pasture was previously included on the original Inventories as ASNW where recognisable stands of trees evident on old maps remain unchanged. Parkland sites with wide-spaced trees were omitted²⁶. However, the map sources used for the original Inventories were often inconsistent with only a partial coverage.

²⁴ Smith (2000)

²⁵ Harding & Rose (1986)

²⁶ Spencer & Kirby (1992)

The revision of the Ancient Woodland Inventory in Wealden District highlighted the problems of classifying woodland sites in historically more open areas such as the Ashdown Forest and other former commons and hunting forests²⁷. Some of these woodlands had been classified on the original Inventory as ancient whilst others had been omitted. However, re-examination of the historic map and other evidence doesn't always appear to support these decisions.

Detailed examination of the historical extent of these sites can reveal a complex management history with a mixed pattern of woodland, grazing and shifting agricultural use²⁸. Within the revision of the Ancient Woodland Inventory for Tunbridge Wells Borough, these habitats were classed as a subcategory of ancient woodland, pasture woodland, whilst keeping the ASNW/ PAWS split.

The following criteria were used to define the subcategory:

- Wooded today (at least 20% tree cover over 80% of the site).
- Woodland shown on the Ordnance Survey First Edition County Series maps (produced for Kent 1858-73), with the cartography indicating at least 20% tree cover over 80% of the site.
- Former enclosed Forest or common land as identified on the Ordnance Survey Drawings (1795-1801).

(See section 3.2.1 for a fuller description of these map sources).

Pasture woodland was therefore defined as a semi-natural habitat that has retained a wooded nature throughout recent history as documented by the above map sources. The revised Inventory includes these areas and they can be readily extracted from the dataset.

²⁷ Westaway (2005)

²⁸ Greenaway, Roper, & Ryland (2004)

3. Methodology

The methods used for the Inventory revision are based on those used to compile the original Inventory, and utilise methods piloted in the Wealden Inventory revision ⁽¹⁷⁾ combining digital map sources, field surveys and archive research. By necessity, these methods are relatively simple and quick with detailed historical and field surveys confined to a priority set of sites. The Inventory is therefore inclusive, meaning that the default for borderline sites, or those for which data is lacking, is that they are retained on the Inventory, thus ensuring they can be considered in future surveys ²⁹.

3.1 Software

All mapping work was carried out using a Geographic Information System (GIS). The use of GIS was central to this project, enabling the comparison and combination of a variety of spatial data sources. The GIS software used for this work was ESRI ArcMap 8.3 ³⁰. This GIS database can then be linked to external databases which hold more detailed site survey and archive data.

Where possible Ordnance Survey MasterMap-derived polygons were used to map boundaries of woodland sites. The use of MasterMap provides accurate site boundaries and ensures consistency of mapping efforts.

Woodland survey data is held in a Recorder 2002 database from which a report for each site outlining the main survey findings can be generated ³¹. Recorder 2002 is specifically designed for biological recording. It allows species observations and habitat data to be captured in an electronic format that is compatible with the National Biodiversity Network. This enables the methods of data storage to be easily reproduced and also allows easy exchange of data.

3.2 Inventory Revision

Revision of the Inventory was carried out in three stages:

1. Desk-based mapping
2. Field survey work
3. Archive research

3.2.1 Desk-based mapping

In this initial mapping stage, areas of more recent and secondary woodland were eliminated by checking the presence of each wood against digital maps and aerial photographs. Any continuous blocks of woodland were regarded as discrete sites with historical or ownership boundaries disregarded; ponds or open areas within the wood less than one hectare in size were included. The historical datasets used for the base-mapping process were the Ordnance Survey Drawings (produced for Kent 1795-1801), and the Ordnance Survey First Edition County Series (produced for Kent 1858-73). These maps are described in more detail below.

The Ordnance Survey First Edition County Series maps were the main historic dataset used to eliminate more recent, secondary woodland. This was because these maps are highly

²⁹ Spencer & Kirby (1992)

³⁰ ESRI (2002)

³¹ JNCC (2002)

accurate, and the absence of a woodland on them was considered sufficient evidence to remove areas of woodland that appeared on later maps or aerial photographs. This filtering process was undertaken by identifying all areas of woodland on modern aerial photographs and MasterMap, and cross-checking these with the presence of woodland on the First Edition maps. The Ordnance Survey Drawings were also used to provide an additional layer of historic information at this stage. The drawings were also an important data source in the archive research phase.

Once the clearly identifiable secondary woodlands had been removed, the remaining woodlands formed the basis of an indicative ancient woodland dataset. The field surveys and archive research then enabled this dataset to be refined down to the final map of ancient woodland in the borough.

- Ordnance Survey Drawings, 2 to 6 inches to 1 mile (produced for Kent 1795-1801), prepared for the First Edition Ordnance Survey maps³²

Faced with the threat of invasion in the late eighteenth and early-nineteenth centuries, the English government commissioned a military survey of the south coast. The responsibility for this fell to the Board of Ordnance, from which the Ordnance Survey takes its name. A theodolite was used to measure the angles of a remote point from each end of a steel chain. The triangle formed by the known length of the chain and the two sight lines enabled the precise distance of the far point to be calculated by trigonometry.

Preliminary drawings were made at scales from six inches to the mile, for areas of particular military significance, down to two inches to the mile elsewhere. Being significantly larger in scale, the preliminary drawings show much more detail than the printed, first Edition maps, produced at a scale of one inch to the mile. The survey of Kent was the first to go ahead. Begun in 1795, the final map was published in 1801³³.

These maps are an important historic data source, as the accuracy of the mapping procedure enables the maps to be geo-referenced for use in GIS analysis. In other words, digital versions of the maps could be incorporated into the GIS program, to line up with modern Ordnance Survey maps. Sheets covering Kent and East Sussex (the latter map overlapping with Kent) were geo-referenced to fit the British National Grid. The original drawings are held by the British Library, and scans of this data were used for this coverage. Individual sheets were often produced by different surveyors and map styles and dates can vary accordingly. Features of military significance were mapped in great detail and these maps are considered to be reliable where woodland is recorded. However, absence from these maps cannot be taken as proof of woodland not existing at this time.

³² Dates sourced from the British Library website: www.collectbritain.co.uk/collections/osd

³³ Adapted from the British Library website: <http://www.collectbritain.co.uk/collections/osd/textintro.cfm>



Figure 1. Example of an Ordnance Survey Drawing (c.1800) showing Pembury Wood near Pembury in Tunbridge Wells Borough.

- The First Edition County Series Ordnance Survey 25 inch to 1 mile maps (produced for Kent 1858-73)³⁴

These are scanned geo-referenced raster images of the original Ordnance Survey 1: 2500 historic mapping. They are very accurate maps which record a great deal of detail. The main disadvantage of these maps is the relatively recent date, although more recent woods can often be identified as regularly shaped enclosures or having map symbols that indicate a previous non-woodland use. Because of the high level of accuracy of this source, absence of a wood from these maps is considered highly significant.

- Modern aerial photography

Aerial photographs were used to check for presence of woodland today, to document any changes, and to confirm or alter the existing AWI boundaries.

³⁴ Dates sourced from the British Library website: www.bl.uk/collections/map_county_editions.html

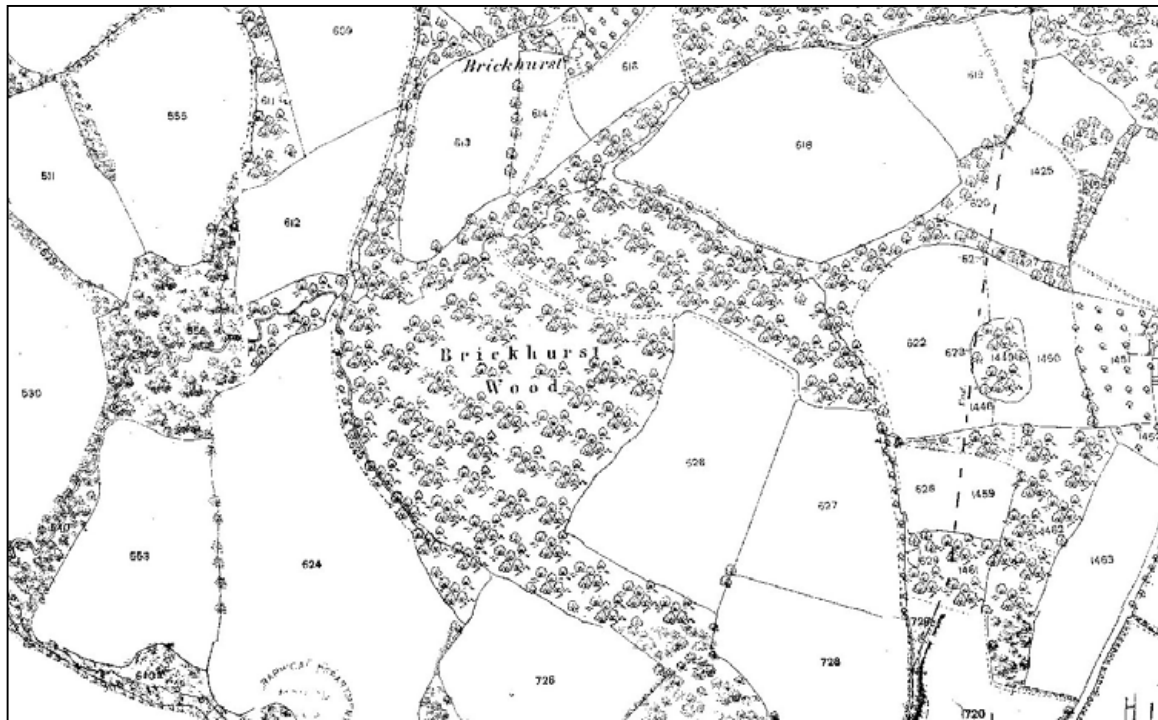


Figure 2. Example of the First Edition County Series map for Kent (c.1868), showing Brickhurst Wood, near Kipping's Cross in Tunbridge Wells Borough.

3.2.2 Field survey work

On completion of the primary stage of base mapping a priority set of woodlands was identified for woodland survey and archive work. These woodlands were identified in consultation with the Local Planning Authority and other project partners.

The field surveys were carried out in April and May 2007, the two best months in the year for identifying ancient woodland indicators. The survey aim was to make a quick assessment of each woodland, focusing on confirming site boundaries and recording key information to aid in the identification of ancient woodland. Emphasis was placed on collecting the following information:

- Any evidence relating to the management history of a wood, for example, coppice structure, veteran trees or pollards.
- The presence of archaeological features such as saw pits, charcoal hearths, drainage systems, old banks, or the remnants of iron workings.
- Features which indicate a previous agricultural land use, such as ridge and furrow plough markings and lynchets.
- Features, such as wood banks, stubbed trees or outgrown laid hedges, delineating the boundary of the wood.

- The main canopy, shrub and ground flora species, ancient woodland vascular plant indicator species and any other significant species.
- Any current uses or factors causing disturbance or damage to the wood.
- Dead wood, structural and habitat diversity and the presence of streams and ponds following natural courses and depressions.

These features can all provide evidence of past land use and so help determine ancient woodland status. For example:

Wood banks

Distinct wood banks are characteristic indicator features of lowland ancient woodlands. A wood bank consists of an earth bank, often though not always with an associated ditch, constructed at the boundary of a woodland or of compartments within it. These banks, which were constructed to keep out both grazing animals and human intruders, would in most cases have been topped by a hedge or fence³⁵.

Ancient woodland indicator species

The presence of these vascular plant indicator species can aid in the identification of ancient woodland, and ancient woodland sites tend to be richer in terms of their species composition³⁶. However, care is required as other factors affect the presence and abundance of these species. These factors include the area of the wood, the time of year of the survey, the diversity of habitats within the wood, soil type, and the position of the woodland relative to other wooded areas. Current uses, including disturbance, damage or invasive species may also affect species diversity and the time spent surveying will affect the number and abundance of species recorded as well as the likelihood of other features being recorded.

Lists of vascular plant species strongly associated with ancient woodland sites known as ‘indicators’ have been compiled for different geographical areas of the British Isles. These lists are based on the occurrence of species in known ancient woodland sites³⁷. The South East list used in this revision is appended.

3.2.3 Archive research

Further archive research was carried out on the priority set of woods at the county archive office. Woodland presence was verified against different historical map sources. These included:

- The tithe maps for Kent (produced from the 1830s to 1840s)³⁸

Tithe maps provide an important record of land use in the 19th century³⁹. They were drawn up in Kent between the 1830s and 1840s when tithes to the parish church were replaced by

³⁵ Rackham (2003)

³⁶ Rose (1999) and Rackham (2006)

³⁷ Kirby & Goldberg (2006)

³⁸ Dates sourced from the Kent Archaeological Society: www.kentarchaeology.org.uk/Research/Maps/Maps%20intro.htm

³⁹ Prince (1959)

payments in rental value. The maps are large-scale (between 12” and 25” to 1 mile) showing the fields, woodlands, and villages of the parish. An accompanying apportionment schedule details the owner or occupier, the field name and a land use description. Tithe descriptions such as “copse” and “shaw” relate to a definite woodland use, however descriptions such as “Firs” or “Plantation” may be indicative of secondary woodland.

As with the Ordnance Survey Drawings (see section 3.2,1), these maps could be geo-referenced for use in GIS analysis.



Figure 3. Example of a tithe map for Kent (c.1840), showing Parsonage Wood near Benenden in Tunbridge Wells Borough.

- Estate maps and records

Estate maps provide a major source of information for the post-medieval period. Records were drawn up for a specific purpose usually to show land boundaries, buildings, issues of ownership and land use. They can include correspondence, accounts, surveys and maps. Farms within the estate will usually have had a map drawn up showing the boundary, land use of individual fields and wooded areas within the holding. They vary significantly in their quality and accuracy and do not give a complete coverage of the borough.

- Hundreds maps

Hundreds and Wapentakes are historic sub-divisions of counties, introduced in the 10th century primarily as a unit of taxation but also having administrative, judicial and military functions. The two names relate to the division of the country into the Danelaw in the north, where the term Wapentake was used, and the Anglo-Saxon south which used the term

Hundred. The name Hundred relates to the original size of 100 hides of land (roughly 12,000 acres on average, but very variable)⁴⁰

There are several historic maps of the Hundreds in Kent. Of most use to this survey were the maps produced in the late eighteenth and early nineteenth centuries by Edward Hasted for his 12 volume 'The History and Topographical Survey of the County of Kent'⁴¹. These show woodland areas clearly, and are a useful additional information source for verifying ancient woodland status in combination with other historic information.

3.2.4 Other evidence sources

In addition to the wood being present on a wide suite of historical maps and any evidence from ground survey work, there are a range of other factors which may be indicative of ancient woodland, these include:

- Wood name

The value of historic place names is their survival long after the features they describe have disappeared. They can therefore be used as a guide to help reconstruct the landscape⁴². For example 'Leah' or 'ley' refers to a woodland glade or clearing, 'den' to a woodland swine pasture and 'Hyrst' or 'hurst' to a wood or a grove especially one on a hill⁴³.

Wood names can also be used to identify non-ancient woods. 'The plantation', for example, may indicate more recently planted woodland. However, a degree of caution should be exercised as names can change over time and 'The plantation' could also be an ancient site within which planting has taken place⁴⁴.

- Woodland shape and situation in the landscape

Ancient woodlands often survive on parish boundaries or follow steep inaccessible topography such as the slopes down to a gill or the land surrounding old iron extraction pits. The boundaries of older woodlands are rarely straight and often follow natural features such as streams.

3.2.5 Deciding on ancient semi-natural or replanted ancient woodland status

The Forestry Commission's National Inventory of Woodland and Trees (NIWT)⁴⁵ was used as the core dataset to redefine the boundaries of PAWS and ASNW. This dataset is based on interpretation of aerial photography; it classifies woodland into broad categories including broadleaved, coniferous and coppice woodlands. Boundaries were then further refined using aerial photography, the existing AWI boundaries, Ordnance Survey MasterMap boundaries and the results from survey work.

The reliance on aerial photography for identifying PAWS means that there are inevitably some inaccuracies in the classification, for example, in distinguishing between mature

⁴⁰ Text adapted from: <http://homepages.nildram.co.uk/~jimella/counties.htm#hundred>

⁴¹ Hasted [1797] (1972)

⁴² Brandon (2003)

⁴³ *ibid.*, and Rackham (2003)

⁴⁴ Isaac & Reid (1997)

⁴⁵ Smith (2000)

broadleaved plantations and stands of semi-natural woodland. Ancient Semi-Natural Woodland was used as the default classification where it was not possible to determine the woodland type.

3.2.6 Minimum size of a woodland to be included in the Inventory revision

0.25 hectares was generally the lowest size of woodland considered for inclusion in the revised Inventory, allowing the revised AWI to be compared with the Forestry Commission's NIWT. However, each wood is considered separately and factors such as the location and historical extent of the woodland mean that some woods under 0.25 ha may be included. This allows these woods to be considered when looking at the whole habitat matrix. Querying the GIS attribute table will allow a size restriction to be imposed if required.

3.2.7 Ancient woodland status

It is recognised that a desk based exercise will always be flawed and ideally ground survey work would be undertaken in every woodland. Due to time and financial constraints this is clearly impractical. Therefore the decisions are based on available data. Thus, whilst every effort has been made to make this revision as accurate as possible, the Inventory is still regarded as provisional.

4. Results

The results of the Ancient Woodland Inventory revision are primarily stored in a digital format and these files will be available to download from www.magic.com in due course. The revised map boundaries are shown at the end of this report.

4.1 The ancient woodland resource

The total amount of all woodland (ancient and secondary) within Tunbridge Wells Borough, as recorded in the Forestry Commission's National Inventory of Woodland and Trees, is 6,246 hectares. This accounts for nearly 19% of the borough's area, the 17th greatest amount in a local authority area in the South East region, and as such is well above the national average of 7.5%⁴⁶.

4.1.1 Extent of ancient woodland

The original AWI contained 4,719 hectares of ancient woodland, covering 14.24% of the borough's area. The revised Inventory contains 5,391 hectares of ancient woodland and now covers 16.27% of the borough's area, an increase of 2.03%. The woodland area lost from the original Inventory amounts to 451 hectares. This is offset by the overall gain of woodland area of 672 hectares.

The majority of the 451 hectare loss from the original Inventory was due to inaccuracies in the initial mapping process, removed following re-examination of the historic map evidence and re-alignment with modern OS mapping.

The revised ancient woodland area includes approximately 550 new woodland parcels not previously on the Inventory, with an average size of 1.1 hectares. The average size of woodland in the revised Inventory is 6.02 hectares.

Table 1: Summary of the woodland area and number of separate woodland parcels from the National Inventory of Woodland and Trees (NIWT, Forestry Commission, 2000), the original AWI (digitized version, 2000), and the revised AWI (2007). All areas in hectares.

	Area	% of the borough	Number of woodland parcels	Average area of woodland parcel
Tunbridge Wells Borough	33,133			
All woodlands (NIWT) >2ha	6,246	18.85	386	16.18
Original AWI (woods >2ha)	4,719	14.24	322	14.65
Revised AWI (including woods <2ha)	5,391	16.27	895	6.02
Overall ancient woodland gain	672	2.03		

⁴⁶ Based on analysis of the Forestry Commission's National Inventory of Woodland and Trees by Patrick McKernan, Forestry Commission, and Matthew Grose, High Weald AONB Unit.



Figure 4. Histogram of the size class distribution for the original and the revised AWI Inventories.

4.1.2 Plantations on Ancient Woodland Sites

In the revised Inventory, 66% of the ancient woodlands are recorded as ancient semi-natural, with an area of 3,536 hectares (see Table 2, below). However, as discussed in section 2.2.3, the area of replanted ancient woodland, or PAWS, is likely to be an underestimate, given the difficulties in identifying areas of sweet chestnut plantation from map and aerial photograph analysis.

Table 2: Ancient woodland types. Areas in hectares.

Ancient woodland type	Number of sites	Area	% of ancient woodlands
Revised AWI - ASNW	912	3,536	66
Revised AWI - PAWS	78	1,855	34
Totals:	990	5,391	100

4.1.3 Accuracy of the Inventory

Within the limitations outlined in section 6.1, the revised Inventory is considered to be as accurate as possible. More ground survey work and in-depth archive searches will add to the data already collected and allow the Inventory to be further refined.

4.2 Results from the woodland survey

A proportion of Tunbridge Wells Borough's woodlands were surveyed, with the focus on small woodlands. The historic map evidence for small woodlands can be more ambiguous than for larger sites, so field survey provides a stronger basis on which to judge ancient woodland status.

The survey took place between 11th April and the 23rd May 2007 when the spring woodland ground flora was at its height. A total of 98 sites were visited, with a combined area of 123 hectares. The survey sites were identified through consultation with David Scully, the Landscape Officer at Tunbridge Wells Borough and his team, together with sites that had been identified for survey in the desk-based analysis.

The survey methodology sought to establish a woodland plant list for each site, along with a series of features that helped decide on the status of a site. These included Site damage, Woodland management, Habitat features, and Archaeological and boundary features. The summary statistics for these features are in Appendix 2.

4.2.1 Site damage

Site damage was taken to mean both direct physical damage, such as fly tipping or loss of woodland through garden extension, to biological factors including invasive species and stock grazing. Over 80% of the surveyed woodlands showed some sign of damage, with invasive species and rubbish dumping being the most common. The main types of site damage are discussed below.

Invasive species

One of the major threat to ancient woodlands is the prevalence of invasive species. The fashion for 'scenic' and 'picturesque' landscapes in the eighteenth and nineteenth centuries saw the widespread planting of exotic species, with species such as rhododendron and cherry laurel also used for game cover or shelter. Non-native invasive species in woodland also include sycamore (*Acer pseudoplatanus*), which is managed as a timber species in some plantations, but which has become widespread through self-seeding. Invasive species may also come from domestic garden escapes. The invasive species regarded as problematic and recorded for this survey were sycamore, rhododendron (*Rhododendron ponticum*), Himalayan balsam (*Impatiens glandulifera*), Japanese knotweed (*Fallopia japonica*), bamboo (*Sasa spp.*), and cherry laurel (*Prunus laurocerasus*).

In the survey, 51% of sites had at least one invasive species present in the flora, with invasives regarded as a problem in 32% of sites. The most prevalent invasive species were rhododendron (19% of sites), and cherry laurel (15% of sites). These species are considered to be particularly problematic for a number of reasons. Their dense shade, and ability to acidify the soil means they can dominate woodlands to the exclusion of other species, creating areas of almost no wildlife value. Both species will rapidly colonise extensive areas of woodland if left unchecked, and once established, are difficult and expensive to eradicate.

Rubbish dumping

Woodlands (particularly those with a lay-by) are often utilised as fly tipping points. In the survey, 19% of the sites showed some form of rubbish dumping, including fridges, builders' waste, and household rubbish.



Photograph 1. Damage to an ancient woodland in Tunbridge Wells borough through tipping of builders' waste.

Garden encroachment

One of the main threats to ancient woodland sites is the threat from neighbouring property. Without enforcement of property boundaries, much valuable woodland may be lost to 'gardenisation', with effects such as the removal of ancient woodland flora, fertilisation to promote grass growth and the planting of exotic species.

Of the sites surveyed, 15% were at risk from this type of damage, with the most extreme sites being inaccessible due to strong fencing having been erected. A number of these 'at risk' sites were classified as such due to the open nature of the boundary. There was no definition of where the property stopped and the garden began. It is recognised, however, that although detrimental to a woodland, such activities may be legitimate where the owner of the garden also owns the adjacent woodland. Other forms of damage from gardens, representing 3% of the sites surveyed, included garden waste being dumped or garden species being present.

Boundary neglect

A number of woodlands were damaged through neglect of the boundaries. Fences had often been left to disintegrate, allowing cattle and other stock into the woodland. Overuse by stock can lead to significant damage to woodland flora, grazing of any regeneration, and damage to trees. 13% of the surveyed woodlands showed these features, with 50% of these sites showing signs of intended grazing.

Recreational activities

Some of the greatest damage to woodland can be from recreational activities – specifically where off road tracks and jumps are created within the woodland. 5% of the surveyed woodlands had such features.

4.2.2 Woodland management

Sweet chestnut (*Castanea sativa*) coppice was the most widespread woodland structure in the surveyed sites. Other coppice species found included hazel (*Corylus avellana*) and hornbeam (*Carpinus betulus*). Most coppice was often found to be left unmanaged, and overall, 90% of the surveyed woodlands had little or no active management taking place. This is in part a reflection of the state of the woodland industry as a whole, but is also likely to result from the small size of the surveyed sites. Owners of small woodlands may not have the skills to manage their woods, but even if they do they are likely to find it difficult to market their timber in small packages – often in woods without good tracks. Following years without management, the woodland produce will be of poor quality and hard to sell, and thus woodland can become more and more neglected.

However, the survey included only a small sample of woodlands within the borough, and may not be indicative of a wider lack of woodland management, particularly in larger sites.



Photograph 2. Bluebells under chestnut coppice managed by the National Trust at Kilndown Wood, Kilndown, in Tunbridge Wells borough.

4.2.3 Habitat features

Wet woodland was a striking component of the sites surveyed, both in gills and in floodplain/impered drainage sites. Many of the sites surveyed were associated with aquatic habitats or features such as ponds, streams, ditches and riversides. It is probable that the presence of watercourses or water bodies has helped to conserve some of the small woodlands

in the more intensively managed, agricultural parts of the High Weald landscape, because of the difficulties of cultivating wet areas.

Overall, 50% of the surveyed sites had some notable habitat feature within them. These included gill woodlands (5%), wet flush areas (13%), and open areas (4%).

4.2.4 Ancient woodland indicator species data

Of the surveyed sites, 45% had at least 10 ancient woodland indicator plants, with 4% of sites having more than 20 indicators. 25% of sites had five or less indicator species, with the average number of indicators overall being 9.5.

Field maple (*Acer campestre*), pendulous sedge (*Carex pendula*), holly (*Ilex aquifolium*), primrose (*Primula vulgaris*), and wood speedwell (*Veronica montana*) were the most abundant indicators, with all being present in more than 50% of the sites. Wood anemone (*Anemone nemorosa*) was recorded in 34% of sites. Wood anemone is known to be an ancient woodland specialist⁴⁷. It is very slow to colonise new areas, making it a good indicator of the antiquity of a wood, especially where it occurs in abundance. In total, 57 out of the 100 vascular plant indicator species thought to be indicative of ancient woodland in South East England were recorded at least once. The South East ancient woodland indicator species list is appended along with an indication of the proportion of woods surveyed in which species were recorded.

4.2.5 Archaeological and boundary features

High Weald woodlands are rich in archaeological features, reflecting the long and varied use of woodland, not least in the intensive management for industries such as iron production. Over 80% of the surveyed woodlands showed evidence of some sort of boundary feature on at least part of the wood edge, although the extent and quality of boundary features varied. These included banks and ditches, outgrown hedges, and pollard and stub trees (trees cut at about 3 feet to mark boundaries or coppice areas).

Wood banks were often dug to mark woodland ownership boundaries, with the associated ditch usually on the non-woodland side of the bank. Both boundary and internal wood banks were often used to mark parish and other administrative boundaries. Internal wood banks were also used to delineate woodland ownership, as well as mark management areas, and nearly half of the sites in the survey had these features.

Many of the woods surveyed were formed around or contained old mineral extraction pits, ponds and water-filled pits and depressions, with these features found in 32% of woods. This former use was sometimes reflected in a site's name, such as Claypit Wood. Other hollows and pits were found in 8% of woodlands. Other archaeological features recorded included evidence of sunken and/or embanked tracks, found in 2% of woodlands.

As discussed in section 3.2, ancient woodland status is determined through a variety of factors, and archaeological features, combined with biological survey are an important element of this. This is particularly demonstrated in Broadham Wood, where historic map evidence suggested there may have been agricultural activity in the wood in the past.

⁴⁷ Rackham (2003)

Case study: Determining ancient woodland status through field survey at Broadham Wood

Broadham Wood near Kilndown (managed by the National Trust as part of the Scotney Castle estate) is a seven hectare woodland particularly noteworthy site for its historic features. These included a double ditch and bank, possibly marking an old estate boundary, ancient boundary stubs, numerous pits and hollows, a sunken trackway along the southern boundary (see front cover photograph) and the remains of hop pickers' huts, communal cook houses and latrines. These simple buildings have now been restored by the National Trust. In some of the huts, the remains of wallpaper can still be found over the rough corrugated iron walls.



Photograph 3. Hop pickers' huts at Broadham Wood.

However, historic map evidence from the late eighteenth century suggested that the northern half of the wood was open, either because it had never been woodland, or else because it was former woodland cleared for agricultural use. The area, however, is shown as fully wooded by the mid-nineteenth century.

The site was surveyed in mid-April 2007 to determine whether the formerly open area of the wood should be included as ancient woodland. As well as the historic features described above, the survey recorded that the southern half of the woodland was dominated by dense carpets of bluebell (*Hyacinthoides non-scripta*) under hazel coppice with oak standards, with a wide range of other ancient woodland indicator species also noted, including yellow archangel (*Lamium galeobdolon*), wood anemone (*Anemone nemorosa*), and Midland hawthorn (*Crataegus laevigata*). The woodland boundary on either side of the entirety of the wood, including the formerly open area, was found to be clearly of considerable age, with ancient stubbed hazel trees on the wood bank, and a rich diversity of woodland species. Within the northern part of the wood, however, the ground flora showed some signs of disturbance, with occasional patches of bare ground. The flora, however, was still diverse and contained many of the species found elsewhere in the wood.

The southern end of the formerly open area was marked by a low wood bank, and nearby, bluebell and dog's mercury (*Mercurialis perennis*) could be seen growing side-by side in a straight line (see photograph 4, below). Broadham Wood has brown earth soils (neutral to moderately acidic) over the underlying Hastings Beds geology, conditions generally unsuited to carpets of dog's mercury, a plant associated with lime-rich soils. The plant is found scattered through the wood, indicating the presence of lime-bearing clay, known as marl. Marl pits are found across the Weald, dug as a means of obtaining material for improving poor quality soils. However, the presence of dog's mercury in both a dense carpet and a straight line seemed to indicate liming of the soil for agricultural use, and provided possible evidence of a former internal 'field' boundary.



Photograph 4. Dog's mercury growing in a straight line adjacent to bluebells at Broadham Wood.

Overall, the strong archaeological evidence suggested a woodland of great antiquity. Within the formerly open area, the ground flora and similarities with the rest of the woodland suggested that the wood had been temporarily disturbed by short-lived and low-intensity agricultural activity.

It was decided therefore to include the entirety of the wood in the revised Ancient Woodland Inventory. This was because, although the woodland ground flora showed signs of disturbance in the formerly open area, it was still diverse and well distributed. In particular, ancient woodland indicator species with poor dispersal ability such as wood anemone were scattered throughout this area. Such species take a long time to recolonise completely destroyed ancient woodland, such as occurs through deep ploughing. The more likely scenario is that a form of subsistence-level agriculture was practiced for a time in part of the wood, but that its impact on the woodland ground flora was minimal, given the diversity of ancient woodland indicator species that can still be found.

5. Outputs

Maps 3 to 5 at the end of this report show the revised Ancient Woodland Inventory on an OS 1:50,000 base map. Due to the map scale and the volume of small woods added to the Inventory this map should be used as indicative only. The paper maps also only represent a snapshot in time and will not show any subsequent revisions. Digital boundaries will be available to download on line (www.magic.com) or alternatively printed copies can be obtained on request from Tunbridge Wells Borough Council or from Natural England.

By its nature, the revised Inventory is still provisional, but represents an important advance in establishing ancient woodland status using a wide range of evidence and making full use of advances in modern technology. There may however be facts that come to light in the future that could alter or reinforce the decisions taken in this survey. The database is set up in such a way as to incorporate any future modifications or additional information.

The revised Inventory is an important information base on which to inform planning policy, and will enable planning decisions relating to wooded areas in Tunbridge Wells Borough to be made in the light of an improved evidence base.

Planning Policy Statement 9⁴⁸ strengthens the protection granted to areas of ancient woodland. The guidance requires local authorities to identify all areas of ancient woodland within their administrative area. The identification of 550 new ancient woodland parcels in Tunbridge Wells borough not only affords these woodlands a higher degree of protection, but also emphasises the need for a review of the Inventory in other heavily wooded areas.

The revised Inventory provides a more complete picture of the location of the Borough's ancient woods within a habitat network and will help to identify areas of opportunity for environmental enhancement, and inform more strategic distribution of funding for woodland management programmes, such as the English Woodland Grant Scheme (EWGS). The survey data and revised Inventory will also be useful to inform the Kent woodland Habitat Action Plan (HAP) and Biodiversity Action Plans.

6. Discussion

Based upon an analysis of the original Inventory for comparison purposes, Tunbridge Wells Borough has the second greatest percentage of ancient woodland land cover, and the seventh greatest area of ancient woodland of the 67 local authorities in the South East.

As a result of this survey, ancient woodland has risen from 14% to 16% of the borough, with an additional 672 hectares now added to the Inventory. Together, these statistics demonstrate that ancient woodland is an important ecological resource and landscape characteristic of the borough.

The project completed a survey of 98 woods falling within potential development sites within Tunbridge Wells Borough. This provided an opportunity to study the ecology, history, management practices and uses of these woods. The timescale the project was carried out over meant that although a smaller number of woodlands were, the survey work targeted, focusing on priority areas around potential development sites.

⁴⁸ Office of the Deputy Prime Minister (2005)

The survey found that the most common management type was unmanaged coppice. There are few economic advantages to owning small woodlands today and management can be an expensive or time-consuming undertaking. Many farmland woods remain only as game bird-rearing sites, as shelters for livestock or simply because the woodland is a landscape feature and has always been there. Unless fenced and managed, these small farm woods will continue to fall into a state of decline.

Ancient replanted woodlands, or Plantations on Ancient Woodland Sites (PAWS) make up 34% of the total area of Tunbridge Wells Borough's ancient woodland resource. There has been an increasing focus in the forestry and conservation sector on the restoration of PAWS, particularly with the publishing in July 2005 of the joint Defra/ Forestry Commission 'Keepers of Time' policy⁴⁹. Though reduced in their species diversity, many replanted ancient woods still retain a high conservation value, particularly in rides and clearings. The revised Inventory has remapped PAWS in Tunbridge Wells Borough, and this will help to identify key sites for restoration.

The importance of semi-natural ancient woodland is widely acknowledged⁵⁰. This resource is increasingly threatened by development pressures and lack of appropriate management. It is hoped that the work outlined here will make a useful contribution towards the long-term protection and appropriate management of this irreplaceable resource.

6.1 Limitations of the survey

The Tunbridge Wells project built on the methods trialled in Wealden and Mid Sussex districts, and was able to use the lessons learnt in these surveys. This mainly involved a tightening up of the methodology. The main project constraints were again the time available to carry out both site surveys and full archive searches.

There are, however, always going to be limitations with the types of evidence used in assessing ancient woodland status which need to be considered:

- Field survey evidence varies in its value as a guide to site origin.
- Ground survey work is less revealing in heavily disturbed woods and PAWS sites which often have impoverished vascular plant floras and may also have damaged archaeological remains. Woodland archaeology features are also less easy to recognise in the summer months as the vegetation is more dense.
- Individual plant species cannot be used as evidence that a particular wood is ancient - several 'indicators' used collectively will be far more reliable.

Other limitations include the inaccuracies often associated with early map sources, especially where small woodlands are concerned, and the fact that wood names and shapes can change throughout history.

6.2 The future of the Inventory

It is hoped that this project will encourage a wider take-up of the survey with other local authorities. The Weald and Downs Ancient Woodland Survey is currently working in

⁴⁹ Defra and the Forestry Commission (2005)

⁵⁰ English Nature (2002), Defra and the Forestry Commission (2005), Ellis (2004)

partnership with other local authorities in Kent and Sussex to revise the Inventory, and aims to extend the survey to a wider part of the South East.

7. Acknowledgements

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Photograph credits:

All photographs by Patrick McKernan, Forestry Commission, except Photograph 1 by Kate Ryland, Dolphin Ecological Surveys.

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Appendix 1a: Ancient woodland vascular plant ‘indicator species’ in the South East

The 100 species which in the South East Region are most strongly associated with ancient woodland and are typical components of botanically rich ancient woodland communities.

Grasses, Sedges, Rushes and Ferns	Black bryony	Stinking iris
Bearded couch	Bluebell	Three-nerved sandwort
Common polypody	Broad-leaved helleborine	Toothwort
Creeping soft-grass	Bush vetch	Tutsan
Giant fescue	Chaffweed	Violet helleborine
Great wood-rush	Columbine*	Wild daffodil*
Hairy brome	Common Solomon’s-seal	Wood vetch
Hairy wood-rush	Common cow-wheat	Wood spurge
Hard shield fern	Early dog-violet	Wood speedwell
Hard fern	Early-purple orchid	Wood anemone
Hart’s-tongue fern*	Goldenrod	Wood-sorrel
Hay-scented buckler fern	Goldilocks buttercup	Woodruff
Lemon-scented fern	Greater butterfly orchid	Yellow archangel
Narrow buckler fern	Greater burnet-saxifrage	Yellow pimpernel
Pale sedge	Green hellebore	Trees and Shrubs
Pendulous sedge*	Herb-paris	Alder buckthorn
Remote sedge	Ivy-leaved bellflower	Aspen
Scaly male fern	Lady orchid	Bilberry
Smooth-stalked sedge	Large bitter-cress	Black currant*
Soft shield fern	Lesser skullcap	Butcher’s-broom
Southern wood-rush	Lily-of-the-valley*	Crab apple*
Thin-spiked wood sedge	Marsh violet	Field maple*
Wood melick	Moschatel	Field rose
Wood meadow-grass	Narrow-leaved everlasting-pea	Guelder-rose
Wood small-reed	Nettle-leaved bellflower	Holly
Wood sedge	Opposite-leaved golden saxifrage	Hornbeam*
Wood millet	Orpine	Midland hawthorn
Wood club-rush	Pignut	Red currant*
Wood horsetail	Primrose*	Sessile oak*
Wild flowers	Ramsons	Small-leaved lime*
Allseed	Sanicle	Wild cherry
Barren strawberry	Saw-wort	Wild service tree
Betony	Slender St John’s-wort	Wych elm
Bird’s-nest orchid	Small teasel	
Bitter vetch	Spurge-laurel	

* Only where these species occur well within a wood and do not appear to have been planted.

Appendix 1b: % occurrence in sites surveyed of ancient woodland vascular plant 'indicator species' in the South East

Common Name	Latin Name	No. sites	% of sites
Field maple	<i>Acer campestre</i>	51	52
Moschatel	<i>Adoxa moschatellina</i>	5	5
Ramsons	<i>Allium ursinum</i>	22	22
Wood anemone	<i>Anemone nemorosa</i>	33	34
Hard Fern	<i>Blechnum spicant</i>	8	8
Large bitter-cress	<i>Cardamine amara</i>	1	1
Pendulous sedge	<i>Carex pendula</i>	60	61
Remote sedge	<i>Carex remota</i>	15	15
Wood-sedge	<i>Carex sylvatica</i>	38	39
Hornbeam	<i>Carpinus betulus</i>	21	21
Opposite-leaved golden-saxifrage	<i>Chrysosplenium oppositifolium</i>	31	32
Pignut	<i>Conopodium majus</i>	17	17
Midland hawthorn	<i>Crataegus laevigata</i>	21	21
Spurge-laurel	<i>Daphne laureola</i>	1	1
Wood spurge	<i>Euphorbia amygdaloides</i>	4	4
Giant fescue	<i>Festuca gigantea</i>	1	1
Creeping soft-grass	<i>Holcus mollis</i>	1	1
Tutsan	<i>Hypericum androsaemum</i>	5	5
Bluebell	<i>Hyacinthoides non-scripta</i>	90	92
Holly	<i>Ilex aquifolium</i>	91	93
Yellow archangel	<i>Lamiastrum galeobdolon</i>	27	28
Bitter-vetch	<i>Lathyrus linifolius</i>	2	2
Southern wood-rush	<i>Luzula forsteri</i>	1	1
Hairy wood-rush	<i>Luzula pilosa</i>	5	5
Great wood-rush	<i>Luzula sylvatica</i>	1	1
Apple	<i>Malus sylvestris</i>	26	27
Common cow-wheat	<i>Melampyrum pratense</i>	1	1
Wood melick	<i>Melica uniflora</i>	23	23
Three-nerved sandwort	<i>Moehringia trinervia</i>	28	29
Daffodil	<i>Narcissus pseudonarcissus</i>	2	2
Early-purple orchid	<i>Orchis mascula</i>	16	16
Wood-sorrel	<i>Oxalis acetosella</i>	20	20
Hart's-tongue fern	<i>Phyllitis scolopendrium</i>	2	2
Wood meadow-grass	<i>Poa nemoralis</i>	1	1
Solomon's-seal	<i>Polygonatum multiflorum</i>	1	1

Common Name	Latin Name	No. sites	% of sites
Polypody	<i>Polypodium vulgare agg.</i>	1	1
Hard shield-fern	<i>Polystichum aculeatum</i>	1	1
Soft shield-fern	<i>Polystichum setiferum</i>	10	10
Aspen	<i>Populus tremula</i>	12	12
Barren strawberry	<i>Potentilla sterilis</i>	10	10
Primrose	<i>Primula vulgaris</i>	59	60
Wild cherry	<i>Prunus avium</i>	44	45
Sessile oak	<i>Quercus petraea</i>	6	6
Goldilocks buttercup	<i>Ranunculus auricomus</i>	7	7
Black currant	<i>Ribes nigrum</i>	4	4
Red currant	<i>Ribes rubrum</i>	29	30
Field rose	<i>Rosa arvensis</i>	13	13
Sanicle	<i>Sanicula europaea</i>	7	7
Wood club-rush	<i>Scirpus sylvaticus</i>	1	1
Goldenrod	<i>Solidago virgaurea</i>	4	4
Wild service tree	<i>Sorbus torminalis</i>	6	6
Betony	<i>Stachys officinalis</i>	3	3
Black bryony	<i>Tamus communis</i>	34	35
Small-leaved lime	<i>Tilia cordata</i>	2	2
Wych elm	<i>Ulmus glabra</i>	4	4
Wood speedwell	<i>Veronica montana</i>	56	57
Guelder-rose	<i>Viburnum opulus</i>	26	27
Bush vetch	<i>Vicia sepium</i>	10	10

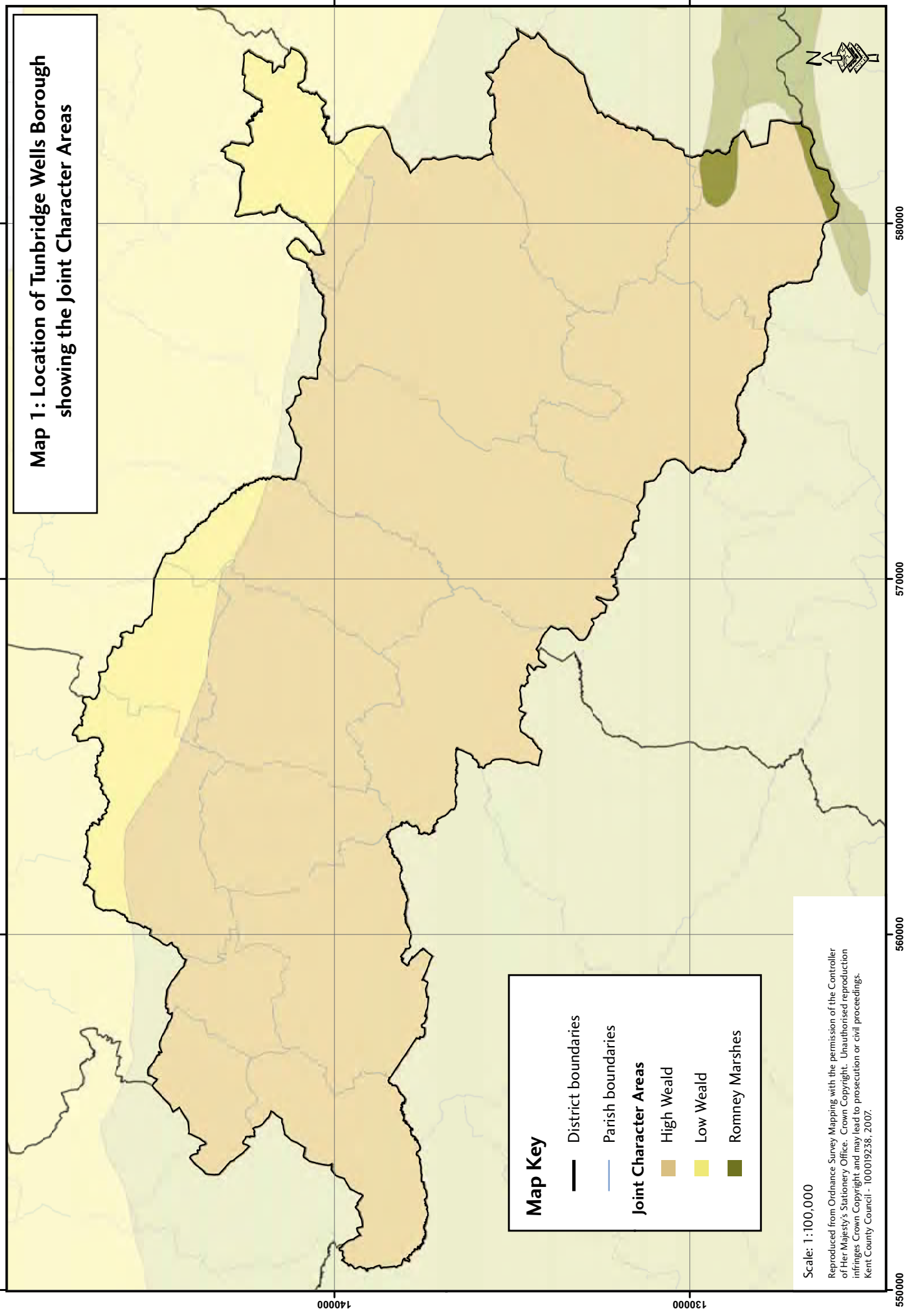
Appendix 2: Summary of findings from the woodland survey work

Feature type	% Sites	
Damage	81	
Invasive species	32	
Garden waste/ planting	5	
Gardenisation (encroachment)	15	
Stock damage	13	
Recreation damage	5	
Rubbish/ rubble/ garden waste	19	
Damage - invasive species	32	
Cherry laurel (<i>Prunus laurocerasus</i>)	15	
Rhododendron (<i>Rhododendron ponticum</i>)	19	
Bamboo (<i>Sasa spp.</i>)	5	
Japanese knotweed (<i>Fallopia japonica</i>)	5	
Himalayan balsam (<i>Impatiens glandulifera</i>)	2	
Habitat features	50	
Gill woodlands	5	
Glades/ open areas	4	
Streams	28	
Wet areas/ flushes	13	
Wet woodland	2	
Management	56	
Coppice or coppice-with-standards	15	
Recent management, planting or felling	2	
Part or whole coniferous/ broadleaf plantation	6	
High forest	1	
Pollarded trees	6	
Boundary features	81	
Remnants of bank and ditch	33	
Remnants of bank	33	
Remnants of bank & ditch with an outgrown hedge	4	
Remnants of bank with an outgrown hedge	5	
Pollards, stubs or standard trees	34	
Stream or ditch	4	
Internal archaeological features		
Pits	Ponds and water-filled pits	32
	Hollows/ pits	8
Bank /Ditch	Internal banks/ bank & ditch	49
	Drainage ditches	2
Other	Built structure	3
	Sunken/ embanked trackways	2

Maps

- Map 1: Location of Tunbridge Wells Borough showing the Joint Character Areas
- Map 2: Comparison of the Ancient Woodland Inventories for Tunbridge Wells Borough
- Map 3: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (West)
- Map 4: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (Central)
- Map 5: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (East)

Map 1: Location of Tunbridge Wells Borough showing the Joint Character Areas



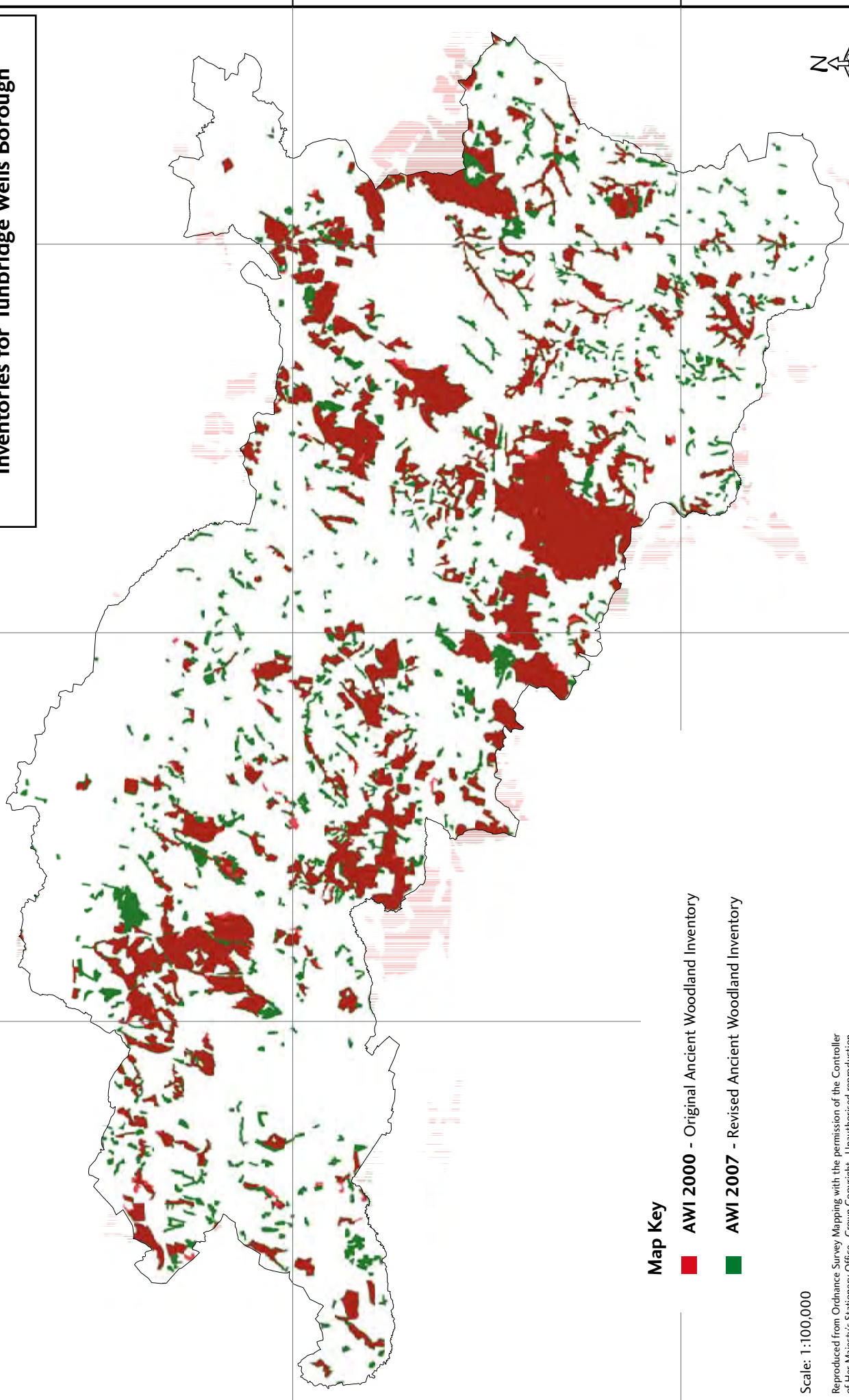
Map Key

- District boundaries
- Parish boundaries
- Joint Character Areas**
- High Weald
- Low Weald
- Romney Marshes

Scale: 1:100,000

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Map 2: Comparison of the Ancient Woodland Inventories for Tunbridge Wells Borough



Map Key

- AWI 2000 - Original Ancient Woodland Inventory
- AWI 2007 - Revised Ancient Woodland Inventory

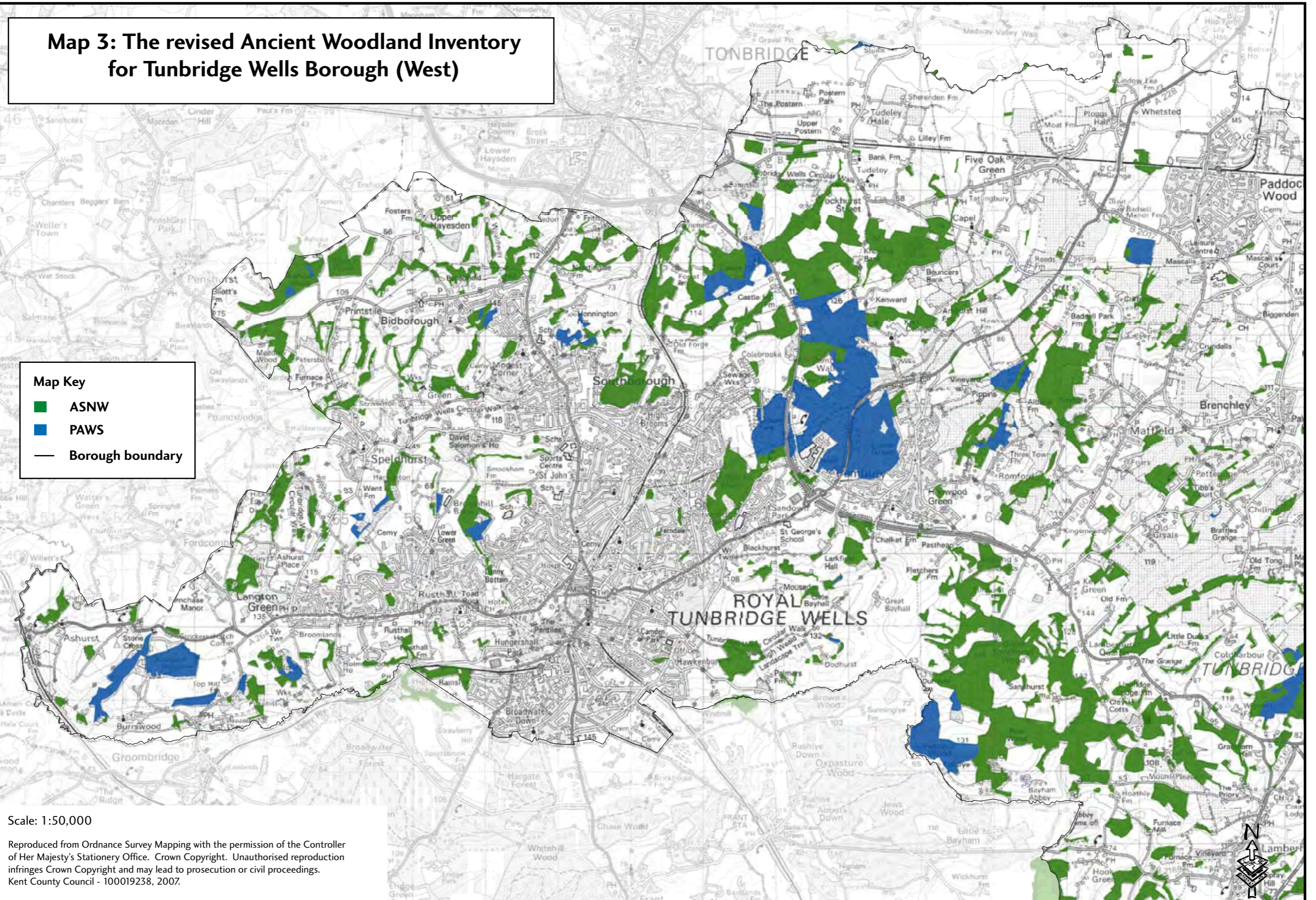
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Map 3: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (West)

Map Key

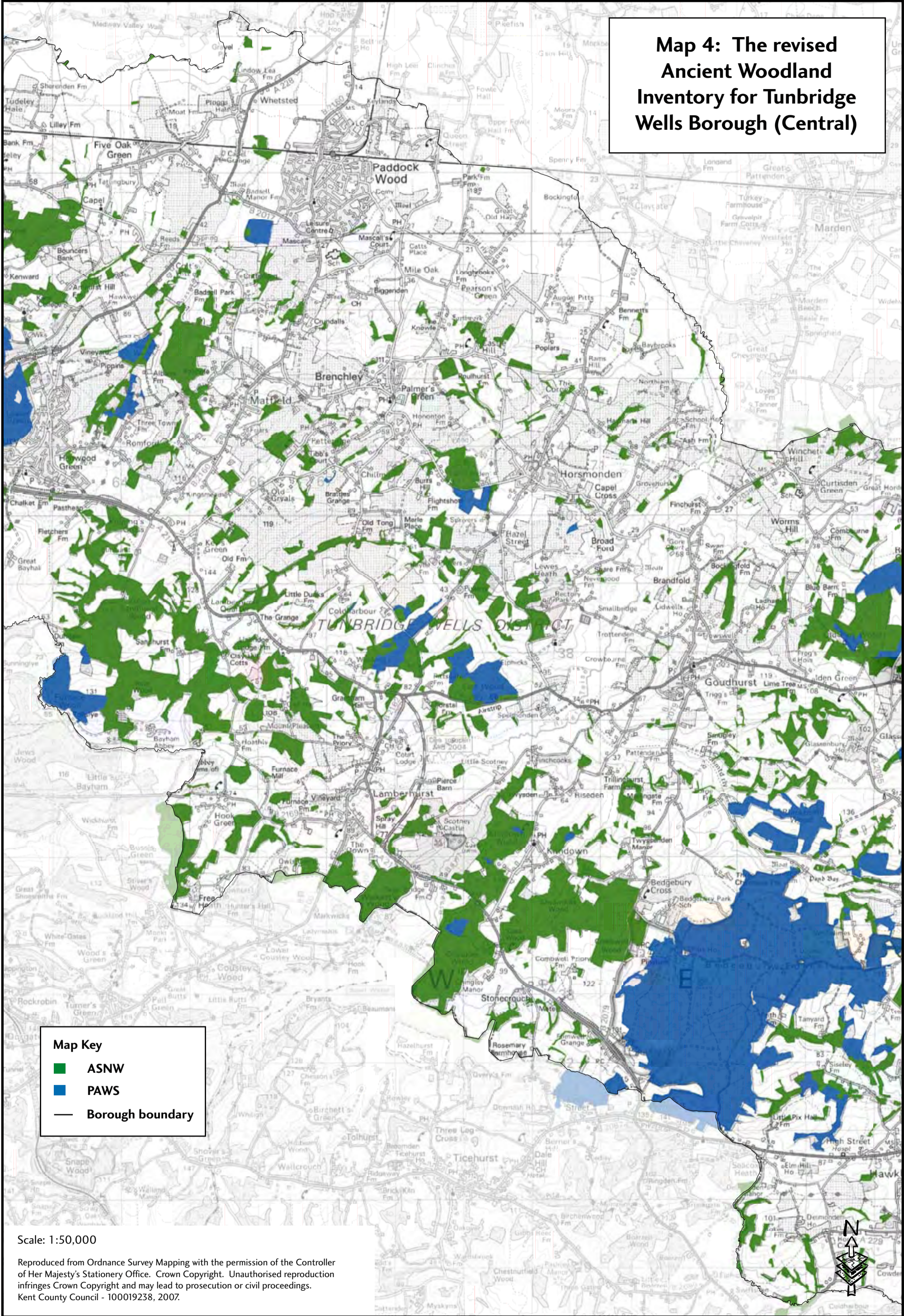
- ASNW
- PAWS
- Borough boundary



Scale: 1:50,000

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Map 4: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (Central)



Map Key

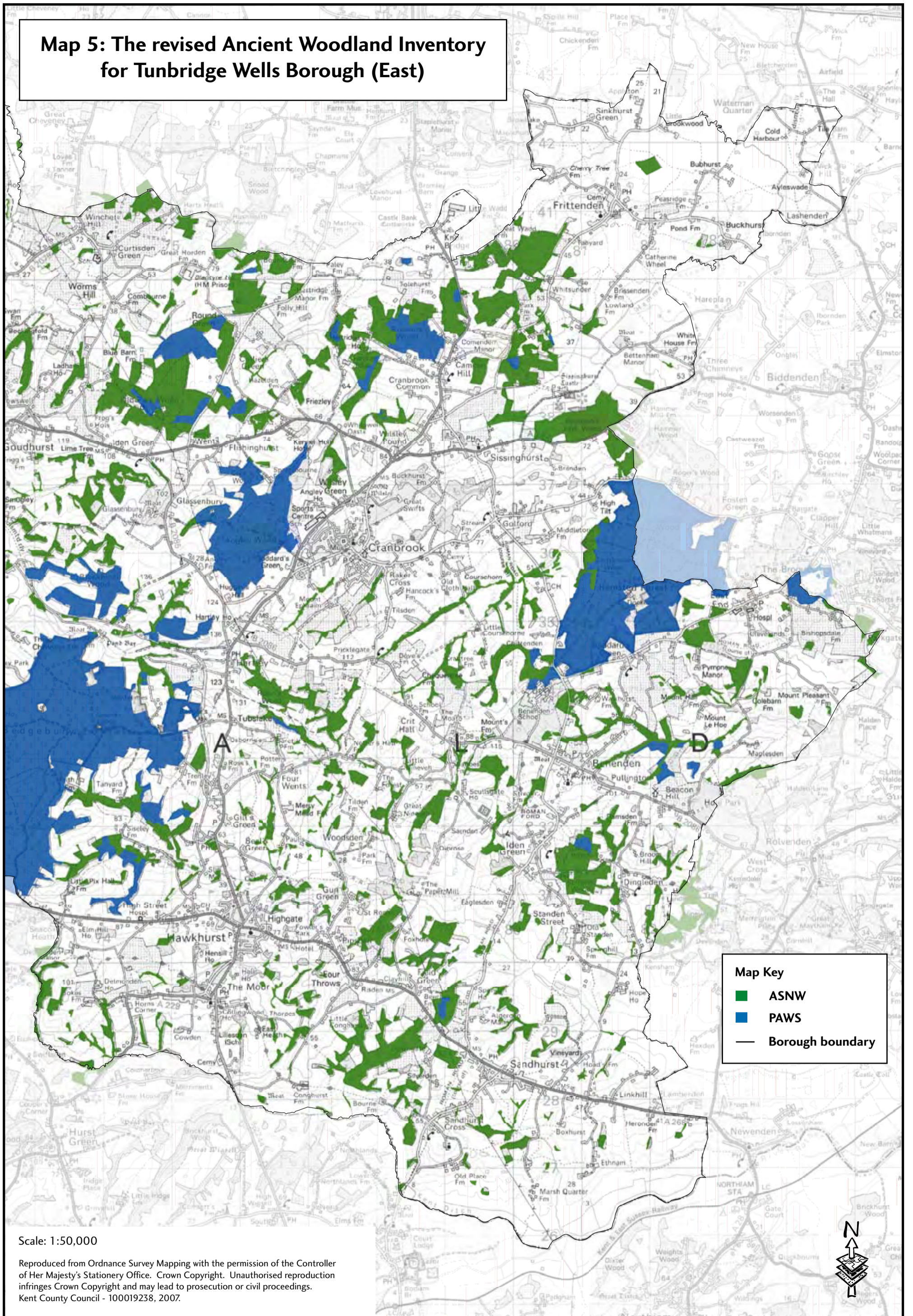
- ASNW
- PAWS
- Borough boundary

Scale: 1:50,000

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Map 5: The revised Ancient Woodland Inventory for Tunbridge Wells Borough (East)



Map Key

- ASNW
- PAWS
- Borough boundary

Scale: 1:50,000

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WEALD AND DOWNS
ANCIENT WOODLAND SURVEY

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Text by Sally Westaway (formerly with the High Weald
AONB Unit), Matthew Grose, High Weald AONB Unit,
and Patrick McKernan, Forestry Commission

Editing and design by Patrick McKernan
Contact: patrick.mckernan@forestry.gsi.gov.uk

Contact: The Weald and Downs
Ancient Woodland Survey
High Weald AONB Unit
Woodland Enterprise Centre
Hastings Road
Flimwell
East Sussex
TN5 7PR
Tel: 01 580 879500
www.highweald.org

