

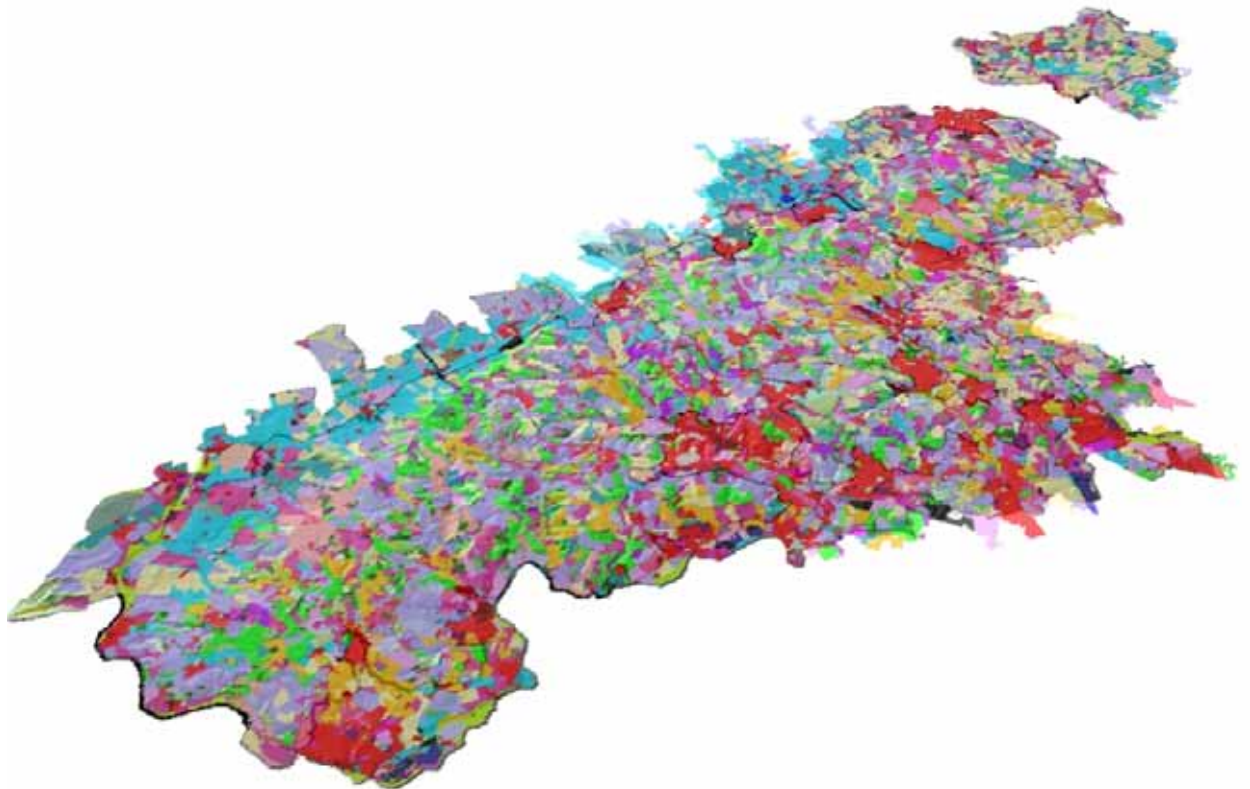


The Changing Landscape of the Chilterns

Chilterns Historic Landscape Characterisation Project

Final Report 2009

David Green



The Changing Landscape of the Chilterns

Chilterns Historic Landscape Characterisation Project

Contents

Acknowledgements	9
Executive Summary:	10
1. Introduction	11
1.1. The Purpose of the Project	11
1.2. Project Aims	11
1.3. Outline description of the project area	12
1.4. Topography, Geology and Soils	13
1.5. Relationship of Chilterns HLC to previous landscape and characterisation work ...	14
1.6. Project Methodology	15
2. HLC Mapping Results	19
2.1. Broad Landscape Analysis	19
2.2. Landscape by Period	21
3. Period Based Discussion	22
3.2. Chilterns Historic Landscape:	26
18 th & 19 th Centuries	26
3.3. Chilterns Historic Landscape: Pre 18 th Century	29
4. An assessment of HLC types and	33
HER information	33
4.1 HLC Types and Scheduled Ancient Monuments	34
4.1.2. HER Distribution Map	36
4.2. Historic Environment Records	38
5. Chiltern Landscape Types	41
5.1. Introduction	41
5.2. Open Land (Commons, Heaths and Downland)	41
5.2.1. Commons and Heaths	41
5.2.2. Downland	47
5.3. Enclosed land	49
5.3.1. Enclosure Patterns	50
5.3.2. Enclosure Size	52
5.3.3. Enclosure Origins	54
5.3.4. Analysis of Change: Enclosure: Degree of Change in Chilterns	55
5.3.5 Coaxial Enclosures	57
5.3.6. Assarts	59
5.3.7. Parliamentary Enclosures	61
5.4. Chiltern Woodland	64
5.4.1. Chilterns Woodland Maps	65
5.4.2. Ancient Semi Natural Woodland	66
5.4.3. Secondary and Coniferous Woodland	68
5.5. Designed Landscapes and Recreational	71
Areas in the Chilterns	71
5.5.1. Designed Landscapes	72
5.6. Chilterns Settlement	74
5.6.1. Growth of Settlement in the Chilterns	75
5.6.2. Chilterns Historic Settlement	76
5.6.3. Chilterns Historic Settlement Morphology	77
5.7. Settlement Analysis	79
5.7.1. Loss of Common Edge Settlements	79
5.7.2. Loss of Interrupted Rows	81
5.7.3. Nucleated Rows and Clusters	83
5.7.4. Protection of Historic Settlement: Conservation Areas (Buckinghamshire)	85
5.8. Settlement Character Zones	87

5.8.1. Isolated Farmsteads	88
5.8.2. Nucleated Rows and Clusters	88
5.8.3. Interrupted Rows	89
5.8.4. Chiltern Common Edge Settlements:	89
5.8.5. Thames-side Towns and Nucleated Settlements.....	90
5.8.6. Nucleated and Isolated Farmsteads.....	90
5.8.7. Nucleated and Common Edge Settlements	90
5.8.8. River Valley Nucleated Settlements	91
6. Woodland Resource Assessment.....	92
7. Buildings characterisation	93
8. Roads and Trackways	94
9. Conclusions & Recommendations: Understanding and Managing Heritage Significance.....	95
9.1. Introduction	95
9.2. Assessing Heritage Values and Significance	95
9.3. Heritage value scores and significance	97
9.4. Mapping Heritage Values.....	99
10. Statement of Heritage Significance	101
10.1. Towards Strategies for Sustainable Management.....	102
10.2. Chilterns Historic Landscape Character: Table of Heritage Significance and Change.....	104
11. Bibliography	110

12. Appendices

Appendix 1 - Chiltern Historic Landscape Type Definitions
Appendix 2 – Project Methodology
Appendix 3 – Woodland Resource Assessment: Pilot Study Report
Appendix 4 – Historic Built environment of the Chilterns: Pilot Study Report
Appendix 5 – Roads and Trackways: Pilot Study Report
Appendix 6 – Data Tables

13. Index to the Archive:

Documents

Chilterns Historic Landscape Characterisation Project Design
Buildings Methodology and Report - CgMs Consulting
Woodland Resource Assessment Proposal
Roads and Trackways Proposal

Statistical data

Chilterns HLC report statistics
Heritage value data

Spatial data

Chilterns HLC data
Settlement Character Areas
Chilterns Routeways pilot data
Chilterns Routeways pilot area
Chilterns Building pilot data

14. List of Figures

Figure 1: Extent of the Chilterns HLC study Area	12
Figure 2: Topography and geology of the Chilterns HLC study area	13
Figure 3: Composition of Board Landscape Types and Historic Landscape Types	16

Figures 4: Illustrations showing the degree of landscape change to South Heath in Great Missenden, Buckinghamshire.....	17
Figure 5: Irregular fields at Studham, (Beds) (left) 19 th century enclosed fields at Watlington, South Oxon (right).	18
Figure 6: Broad landscape types, statistics for the AONB (above right) and the wider study area (below right).....	20
Figure 7: Map showing the broad landscape periods for the Chilterns	21
Figure 9: Pie Charts (AONB statistics) and maps showing	26
the distribution of the 19 th century landscape of the Chilterns AONB	26
Figure 10: Pie Charts (AONB statistics) and maps showing the distribution of the	29
Pre 18 th century landscape within the Chilterns AONB and wider study area.	29
Figure 11: Distribution of Scheduled Ancient	33
Monuments in the Chilterns AONB and wider study area.	33
Figure 12: Number of SAMs within HLC Types.....	34
Figure 13: Average Hectares per SAM by Chiltern Historic Landscape Type	35
Figure 14: Map and pie graphs showing the distribution of Historic Environment Records by period within the Chilterns AONB.	36
Figure 15: Graphs showing the distribution of Historic Environment Records by period within the Chilterns AONB.	38
Figure 16: Graphs showing the number of Historic Environment Records by period against Historic Landscape Types in the Chilterns AONB.....	39
Figure 17: Graphs showing the number of Historic Environment Records by period against Historic Landscape Types in the Chilterns AONB.....	40
Figure 18: Commons in the central Chilterns in relation to Geology.....	42
Figure 19: Map depicting the extent of Commons, Heaths and Downland in the early 19 th century against the current extent.	43
Figure 20: Naphill Common, Hughenden depicted in the HLC map, showing the changes occurring over a two hundred year period. The 2 nd map (left image), shows the full extent of 'Napple' common c. 1810 as it extends and incorporates Downley common. By the 20 th century dense secondary woodland (right), has colonised much of the common while a process of enclosure followed by settlement has taken over the remaining common.	44
Figure 21: Graph depicting the fate of common and heathland lwithin the Chilterns AONB lost since the 1800s.....	45
Figure 22: (left) showing the interconnection with Shiplake Bottom, Kingswood Sonning Commons with Peppard Green (right) shows the development of the present day landscape which has largely severed these connections.....	45
Figure 23: Graph depicting the composition of former common and heathland within the Chilterns AONB.	46
Figure 24: Map depicting the fate of Downland in the Chilterns AONB since the 19 th century.	48
Figure 25: HLC maps depicting the loss of downland at Kensworth to a golf course. The left image shows downland (brown) adjacent to sinuous enclosure (salmon pink), compared to the landscape of the 20 th century (above right), downland has been lost to golf course (deep pink) and the siting of chalk extraction (black), which is another activity responsible for downland loss.....	48
Figure 26: HLC maps depicting the loss of downland at Watlington. The left image shows the extent of downland (brown) in the late 19 th century where it is found on the scarp areas surrounded by ancient enclosure (bright green), and irregular and assarted fields (purple), with parliamentary enclosure on the vale (blue). By the 20 th century (right image), much of the downland has been lost to secondary woodland (fern green).....	48
Figure 27: Pie charts showing distribution of Enclosures by period within the AONB (above) and the ratio of enclosures in the wider area (below).....	49
Figure 28: Enclosure patterns and pie chart.	50
Figure 29: Distribution of Enclosure size in the Chiltern AONB	52
Figure 30: Mean Average Enclosure size by Historic Landscape Type in the Chiltern AONB.....	53
Figure 31: Distribution of Enclosure origins in the Chiltern AONB and wider study areas.....	54
Figure 32: Pie Chart of Enclosure origins in the Chilterns AONB	55
The changes to the field boundaries in the Chilterns AONB show that the majority survive to a great degree, although surprisingly the 18 th 19 th century landscapes have had greater	

alteration perhaps due in part to the location of the enclosures on former common land and woodland and proximity to settlement.	55
Figure 33: Graph showing the degree of change to enclosures boundary loss/gain in the Chiltern AONB according broad period.	55
Figure 34: Graph showing the degree of change to existing enclosures in the Chiltern AONB by detailed type.....	56
Figure 35: Aerial photograph of coaxial enclosures at Cholesbury and Chartridge, Buckinghamshire	57
(© Stereoscope Ltd).	57
Figure 36: The loss of coaxial enclosures at Gaddesden, Hertfordshire image on the right shows the current extent of coaxial enclosures surrounded by 20th century prairie fields; the image on the left the extent of coaxial enclosures in the 19th century.....	58
Figure 37: Table showing the historic landscape types that have replaced coaxial enclosures.	58
Figure 38: Assarts (purple) at Lower North Dean, (Bucks) with the presence of 'stocking' place name.	59
Figure 39: Graph depicting the loss of assarts since the early 19 th century to other historic landscape types.	60
Figure 40: Map showing the extent of parliamentary enclosure awards in the Chilterns study area (after Tate 1947).....	61
Figures 41: The loss of parliamentary enclosure since the late 19 th century within the AONB and without in hectares ² ,	62
Figure 42: (below) shows the breakdown of the loss of parliamentary enclosure within the AONB.....	62
Figure 43: The origins of 20 th century enclosures in the Chilterns	63
Figures 44: Map and pie graphs showing the proportion and distribution of woodland	65
Figure 45: Average woodland size (hectares 2) of Ancient Semi Natural woodland in the Chilterns AONB	66
Figure 46: Pie chart showing the causes of the 9% of ancient woodland lost to other historic landscape types since the late 19th century.	67
Figure 47: Average woodland size of secondary woodland in the Chilterns AONB and below the origins of secondary woodland in the AONB taken from the 1 st edition Ordnance Survey Maps.....	68
Figure 48: Average woodland size of coniferous woodland in the Chilterns AONB and below the origins of coniferous woodland in the AONB taken from the 1 st edition Ordnance Survey Maps (c 1880).....	69
Figure 49: Increase in Secondary and Coniferous Woodland from the 19 th century (left) to the 20 th (right).....	70
Figure 50: Map and pie charts showing the extent of Parks and Gardens in the Chilterns in the 19 th century and their relative loss in the 20 th century to other landscape types.....	71
Figure 51: Pie chart showing the fate of parks and gardens in the Chilterns AONB.	72
Figure 52: Pie chart showing the fate of 'lost' parks and gardens in hectares for the wider study area.	73
Figure 53: Designed Landscape of Newnham Murren, in the 19 th century (left) and in 2003 (right).	73
Figure 54: Incremental growth of settlement in the Chilterns AONB and the wider study area	74
Figure 55: Map and pie graphs showing the proportion and distribution of historic and.....	75
modern settlement in the Chilterns (Historic Settlement has been ' buffered 'or increased in size to highlight its presence).	75
Figures 56: Map and pie graphs showing the proportion and distribution of historic settlement in the Chilterns	77
Figure 57: Correlation of Historic Settlement patterns against heights in the Oxfordshire Chilterns.....	78
Figure 58: The transformation of Prestwood Common. The left image shows Prestwood in the late 19 th century when it was a common edge settlement set around a former common which had been enclosed in 1840. The right image shows its current form, with modern development filling the centre forming a large nucleated village, the surviving older elements clustered round its perimeter.	79

Figure 59: Table showing the composition of common edge settlement, historic cores versus subsequent 20 th century development. Conservation areas are indicated by an asterisk.	80
Figure 60 (top) shows the 'Interrupted Row' of Kensworth, Bedfordshire. By the 20 th century Figure (below) the settlement has evolved into a nucleated row by settlement infilling..	81
Figure 61: The ratio of historic to modern development for Interrupted Row settlements in the Chilterns AONB. Conservation areas are highlighted by an asterisk.	82
Figure 62: Above: The settlement of Aldbury in the late 19 th to 20 th centuries. Below: Growth by the twentieth century.	83
Figure 63: Town End, Radnage Bucks.	85
Figure 64: Coleshill, Buckinghamshire Present day extent and extract from Ordnance Survey 2" Surveyor's map 1810.	86
Figure 65: Chiltern Historic Settlement Character Zones	87
Figure 66: Map showing the extent of woodland in the Chilterns AONB and the location of pilot surveys.	92
Figure 67: Map showing the location of pilot surveys for the buildings characterisation survey.	93
Figure 68: Map showing the extent of pilot survey for the Roads and Trackways Project.	94
Figure 69: Evidential value map (left). Historic value map (right).	99
Figure 70: Aesthetic value map (left). Communal value map (right).	99
Figure 71: Heritage significance map.	100

Credits

The report was researched and written by David Green AIFA under the management of Sandy Kidd MIFA, County Archaeologist for Buckinghamshire. The Built Heritage Characterisation specialist report was provided by Nick Doggett of CgMs Consulting.

Acknowledgements

The author wishes to acknowledge his appreciation to all the organisations and individuals who have assisted with this project. Particular thanks to Dave Went at English Heritage, Steve Rodrick and Colin White representing the Chiltern Conservation Board who sponsored the project and provided support throughout. John Morris provided invaluable advice drawing on his intimate knowledge of Chiltern woodlands whilst Barbara Wallis and her team of volunteers from the Chiltern Society took on the challenge of characterising the built environment led by Nick Doggett of CgMs Consulting Ltd. Information was supplied by Stephen Coleman and Martin Oake of Bedfordshire County Council's Archaeology Service; Stewart Bryant, Isobel Thompson and Alison Tinniswood of Hertfordshire County Council and Susan Lisk of Oxfordshire County Council. Special mention should also be made of Buckinghamshire County Council's GIS team: Brian Grainger, Caroline McIntosh, David Bennett and Paul Storey, who have given constant support throughout the project. Many other people with an interest in Chilterns heritage and landscape have commented and given assistance through the project.

Unless stated all text and illustrations © Chilterns Conservation Board 2009

Copyright

The maps within this report have been reproduced from Ordnance Survey material with permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office GIS images and figures © Crown Copyright. All rights reserved
Buckinghamshire County Council. Licence No. 100021529 2008 © Crown copyright.
Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.

Aerial Photographs © UK Perspectives 2003 unless stated
Ordnance Survey 1st edition 6" map © Sitescope Limited
Ordnance Survey 2" Drawings © British Library
Geology Map – © British Geological Survey

How the Chiltern HLC project can be consulted

The Chilterns HLC GIS digital map was created using ESRI ArcGIS 8.3, whilst the statistical information derived from the map are saved as Microsoft Excel files. The project report is available as a pdf file. The data and archive for the Chilterns HLC project is held by the Chiltern Conservation Board and Buckinghamshire County Council, to access this and any information on the project please contact:

Chilterns Conservation Board,
The Lodge,
Station Road,
Chinnor,
Oxon OX39 4HA

Tel: 01844 355500
Fax: 01844 355501
Email: office@chilternsaonb.org

County Archaeological Service,
Buckinghamshire County Council,
County Hall,
Aylesbury,
Bucks HP20 1UY

Tel: 01296 382927
Fax: 01296 382823
Email: smr@buckscc.gov.uk

Executive Summary:

The Chilterns Hills are renowned as one of Britain's finest landscapes, famous for their rolling chalk hills, steep-sided valleys, cathedral like beech woods, rich chalk grassland, winding lanes and unspoilt, picturesque villages with brick and flint cottages. All of these components combine to create the varied landscapes that are highly valued by both Chiltern residents and its visitors.

Although protected and designated as an Area of Outstanding Natural Beauty (AONB) much of what we can see in the Chilterns is the result of centuries of human endeavour. In order to better understand and appreciate the historic value of this special landscape, The Chilterns Conservation Board, English Heritage and Buckinghamshire County Council have completed a Chilterns Historic Landscape Characterisation project, (Chilterns HLC) covering the designated AONB and an area immediately around it. The culmination of the work is a strategic-scale system that can produce a wide range of maps to characterise the distinctive, historic dimension of the rural environment with the aim of improving understanding and management. This report provides a summary of the study explaining its methodology, what it tells us about the Chilterns landscape and how it can be used. Chilterns HLC will be an essential information source informing revisions of the Chiltern AONB Management Plan and practical actions for the conservation and promotion of the area's heritage and landscape.

1. Introduction

1.1. The Purpose of the Project

The Chilterns Historic Landscape Characterisation, (Chilterns HLC) Project was undertaken by Buckinghamshire County Council Archaeological Service for the Chilterns Conservation Board and English Heritage between August 2004 and September 2008. The project addresses a policy aim in the Chilterns AONB Management Plan to improve understanding of the area's historic landscape character and patterns. The intended uses for this resource are to inform future planning decisions affecting the AONB, help identify areas that might benefit from landscape conservation or restoration initiatives and to act as a spur to and resource for community based projects.

1.2. Project Aims

The overall aim of the Chilterns HLC project was to produce a detailed historic landscape characterisation that would combine existing HLC data from neighbouring county studies of Bedfordshire and Hertfordshire as well as creating HLC mapping for the Oxfordshire Chilterns in order to provide a complete dataset and analytical report for the whole AONB.

The project team reported to a steering group that included representatives of English Heritage the Chilterns Conservation Board, local authorities covered by the Chilterns AONB, the Chiltern Society and National Trust. The study comprised six stages as set out below. This report covers stages 1-3 and 5, that is the Chiltern-wide HLC study. Separate reports have been prepared on the "deepening studies" undertaken as stage 4.

The project was divided into several stages, each with specific aims.

Stage 1

- To map the historic parish boundaries covering the Chilterns AONB and the project area.

Stage 2

- To map the Oxfordshire extent of the project area using the Buckinghamshire HLC methodology.

Stage 3

- To merge and analyse the mapping data to identify patterns and trends in the Chilterns landscape with a view to understanding and managing the landscape.
- To compare the Chilterns HLC with other Landscape Characterisations and landscape studies within the project area.

Stage 4

- To develop deepening projects focusing on the distinctive Chiltern themes of rural settlement and buildings; woodlands and routeways.
- For each deepening theme, develop a methodology and undertake a pilot characterisation study
- For each deepening theme, work with local specialists, such as the Chiltern Woodland Project and Historic Buildings Group of the Chiltern Society.

Stage 5

- To deliver a technical report describing and analysing the Chilterns HLC

Stage 6

- Prepare information for the website and attend public events.

1.3. Outline description of the project area

The designated area of the Chilterns Area of Outstanding Natural Beauty (AONB) lies to the northwest of London covering an area of 833 km². It extends over 74 km from southwest to northeast and c.18 km by southeast to northwest, stretching in a band from western Oxfordshire, across Buckinghamshire into the fringes of Hertfordshire and Bedfordshire. To set the Chilterns AONB into a wider landscape context, the project area extended to incorporate all of each modern civil parish that lay partly or wholly within the designated AONB boundary, giving a total area of 1378 km² (figure 1). Although principally rural in character, the Chilterns lie within the hinterland of Greater London and are fringed by substantial settlements, including Reading, High Wycombe, Marlow, Chesham, Amersham, Aylesbury, Hemel Hempstead, Luton, Dunstable and Hitchin. This surrounding area has been, and continues to be, subject to considerable development pressure.

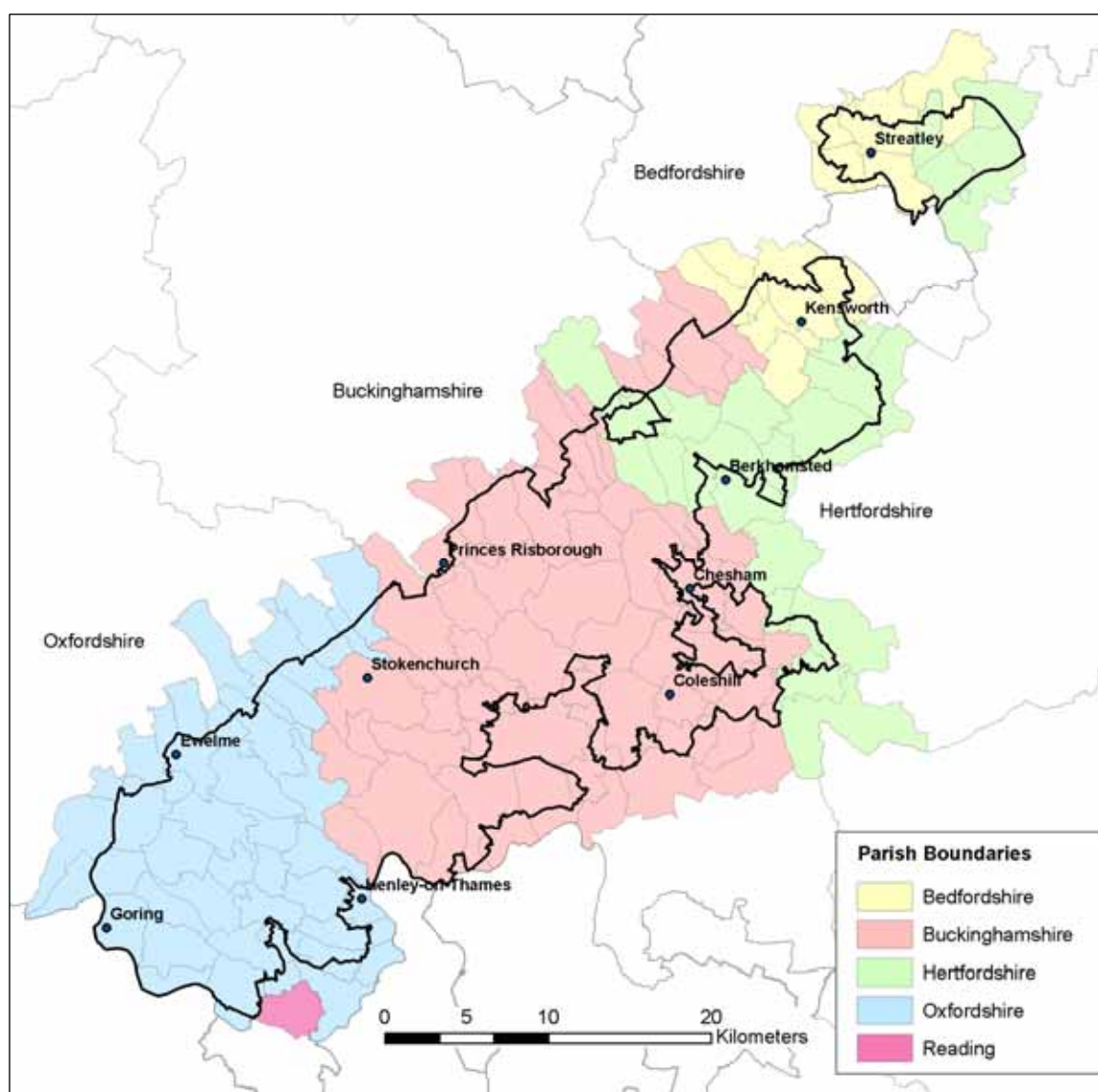
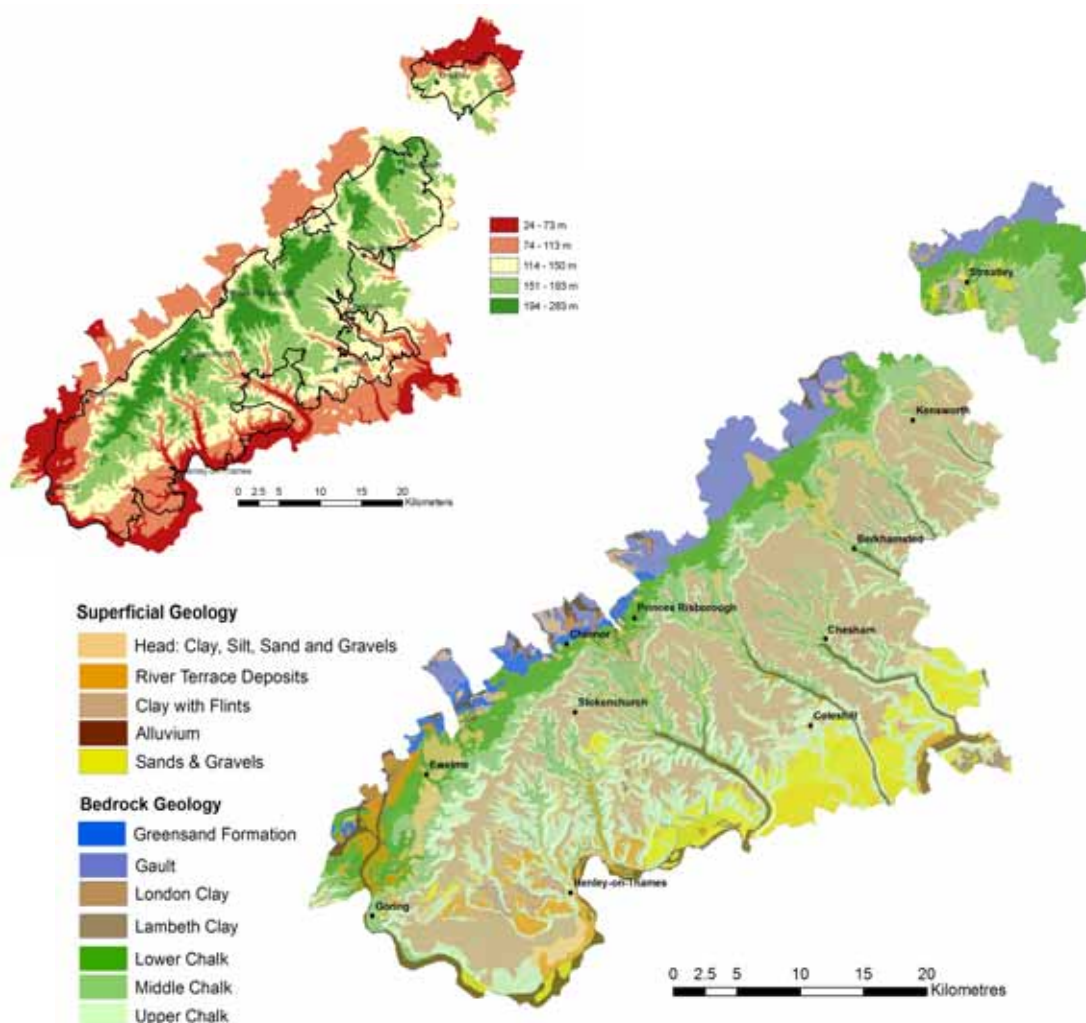


Figure 1: Extent of the Chilterns HLC study Area

1.4. Topography, Geology and Soils

The Chiltern Hills are formed by a southwest to northeast aligned outcrop of cretaceous chalk (65 to 95 million years old), on the northwestern side of the London basin. The AONB follows this upland scarp from Goring on the Thames to Hitchin in Hertfordshire. There is a hiatus where the AONB is interrupted by the town of Luton in the Lea Valley, but the AONB and the chalk uplands resumes at Streatley, Bedfordshire (Figure 2). The overall topographical character of the Chilterns has been classified into four broad areas; Scarp and Foothills, Plateau and Dipslope, the Arterial Valleys and the Thames Fringes (Chilterns Conservation Board 2001). The scarp is located on the north western side where it rises in parts to 400m (Coombe Hill, Buckinghamshire) although it becomes less prominent at the northeastern end, at Kensworth where it only reaches a height of 200m. These calcareous uplands have light, free draining soils, which are easy to cultivate, but are often thin. 'Behind' the scarp is the Chilterns dipslope and plateau where the chalk is overlain with extensive deposits of glacial "clay with flints" and other "drift" deposits of sands and gravels laid down during the Anglian glaciation around 400,000 years ago. These form heavy acidic, stony brown earths difficult to cultivate and lacking fertility. Interspersed along the scarp and dip slope the Chilterns landscape is dissected by a network of dry valleys that dip gently southeast towards the River Thames. These river valleys were excavated under periglacial conditions and are generally floored by thick layers of chalk and clay derived from valley sides, which have thin, well-drained rendzina soils. The fourth area is the Thames Valley, the lowest point of the AONB defined by a mixture of sands and gravels and fertile alluvial beds. Cumulatively these complex physical and geological characteristics give the Chilterns a unique landscape, rather different to the archetypal chalk downlands of Wessex and the South Downs.

Figure 2: Topography and geology of the Chilterns HLC study area



1.5. Relationship of Chilterns HLC to previous landscape and characterisation work

Local Studies: The Chilterns have long been recognised as a distinctive landscape, which has attracted, and continues to attract, significant levels of research interest. In terms of its overall history the most notable work is the popular synthesis *The Chilterns* by Leslie Hepple and Alison Doggett (1994) while current research interests have been published in papers from a series of conferences (Holgate, 1995; Solik, 2003; Chilterns Conservation Board, forthcoming). In general, historical terms the Chilterns can be characterised as “ancient countryside” in contrast to the “planned” or “champion” landscapes found to the north-west in the Midlands – the Chiltern scarp forming the boundary between these two broad landscapes types (Rackham 1986). Although the Chilterns have not been the subject of a single major landscape archaeology survey there is a growing body of more localised studies of National Trust Properties, (e.g. Ashridge, Ivinghoe Beacon, West Wycombe) and by individuals or voluntary groups (e.g. Chiltern Woodland Project Surveys, Penn Common Wood, Chiltern Barn Survey). Attempts have been made to incorporate data from these studies into the Chilterns HLC deepening themes, most notably the woodland study but the patchy and detailed nature of the data has limited our ability to take it into consideration in the main project. Nevertheless, these local studies demonstrate the considerable complexity and subtle nuances which underlie the necessarily generalised HLC character descriptions.

Landscape Characterisation: Prior to the Chilterns HLC, the majority of the studies on the historic environment had been localised and small scale. By contrast work undertaken on landscape for nature conservation and aesthetic purposes had adopted a more holistic approach. The former Countryside Commission devised a methodology for assessing character of places according to their topography, nature conservation and aesthetic appearance. At a national scale a “Character of England” map was produced which acknowledged the Chilterns as a distinctive “Joint Character Area”. A subsequent study of the Chilterns identified the broad characteristics of the Chilterns JCA (Countryside Commission 1992). The methodology for characterising landscape was further refined to examine landscape in great detail with the creation of Landscape Character Assessments (LCAs) (Countryside Agency 2000), LCA is now acknowledged as a crucial tool for understanding and managing landscapes and applying the results for regional/local planning. The acceptance of landscape characterisation as a received methodology has led to a number of LCAs being carried out by local authorities. Within the Chilterns AONB, LCAs have been undertaken for the counties of Hertfordshire, (Hertfordshire County Council 2001), and Bedfordshire (Land Use Consultants 2004), while a landscape character assessment was carried out at a district level for South Oxfordshire (Atlantic Consultants 1998). Buckinghamshire has completed a high-level landscape character assessment, dividing the county into broad zones (Hyder Consulting 1998); and a district-wide assessment has been carried out for Aylesbury Vale (Jacobs 2008).

The areas defined by Joint Character Areas and LCAs have also provided a framework for further research on the Chilterns landscape. English Nature and Oxford Brookes University produced a comprehensive GIS character based study of land use in the Chilterns character area defined by the Countryside Agency, (English Nature 2002). English Nature has also collaborated with Oxfordshire County Council to produce the Oxfordshire Wildlife and Landscape (OWLS) Project, (Blackwell 2004) a GIS-based study, using the Joint Character areas as a basis for defining habitat (Blackwell, 2004). *It has only been possible in this project to undertake a preliminary comparison with these projects and further work to compare historic landscape character with biodiversity and habitat information would be desirable.*

Although the results of LCA are important for defining landscape there were perceived shortcomings in the methodology, as there was only a cursory treatment of its historic dimension, leading to insufficient acknowledgement of when and how the countryside had been shaped by man. As a consequence, English Heritage in the mid 1990s embarked upon a national programme of Historic Landscape Character projects. HLC adopted an “archaeological” approach to landscape, using historic and modern maps to elucidate historic landscape character by the recognition of historic landscape types and phases. Thus HLC provides a much deeper appreciation of processes of landscape change and creation than

does LCA. The HLC projects were commissioned on a county by county basis, or covered distinctive landscapes such as the Cotswolds. When the decision was made to undertake an HLC of the Chilterns AONB, three of the counties within the Chilterns were in the process of completion as separate projects; Hertfordshire, Bedfordshire was completed in 2004 (Dyson Bruce forthcoming) and Buckinghamshire in 2005 (Green and Kidd 2006). Oxfordshire had yet to embark upon a county-wide HLC but in order to achieve the aims of this project, the Oxfordshire area of the AONB was mapped as part of the Chilterns project.

Complementing the rural HLC a programme, an urban equivalent, “Extensive Urban Survey” (EUS), was introduced; this mapped and reported upon small English towns on a county basis. EUS has been undertaken in Bedfordshire (Bedfordshire County Council 2006) and Hertfordshire, (Thompson 2001), a project is underway in Oxfordshire and started in Buckinghamshire in 2007. There has in practice been little overlap between the rural built environment component of Chiltern HLC and urban survey, as the major urban areas lie outside the AONB boundary. However, careful consideration has been given to the methodological relationship between the two approaches in the built heritage deepening study.

In addition to the HLC studies, English Heritage had also independently commissioned a national character study based on historic settlement, (Roberts and Wrathmell 2000). This produced a map showing broad ‘provinces’ and sub-Province of settlement character in England and identified more refined categories, which included the Chilterns as a distinctive local region. This study provides an opportunity to refine this high-level classification.

1.6. Project Methodology

The Chilterns HLC project was undertaken in two distinct stages. The first stage produced a comprehensive map for the Chilterns AONB and surrounding study area, while the second stage featured a series of deepening projects on aspects of Chilterns landscape: woodland, the built environment and roads and trackways. The methodology for these deepening themes is discussed separately in chapters 4, 5 and 6, while this section summarises the methodology used in the mapping phase. A more detailed explanation of the characterisation methodology can be found in Appendix 2 of the report.

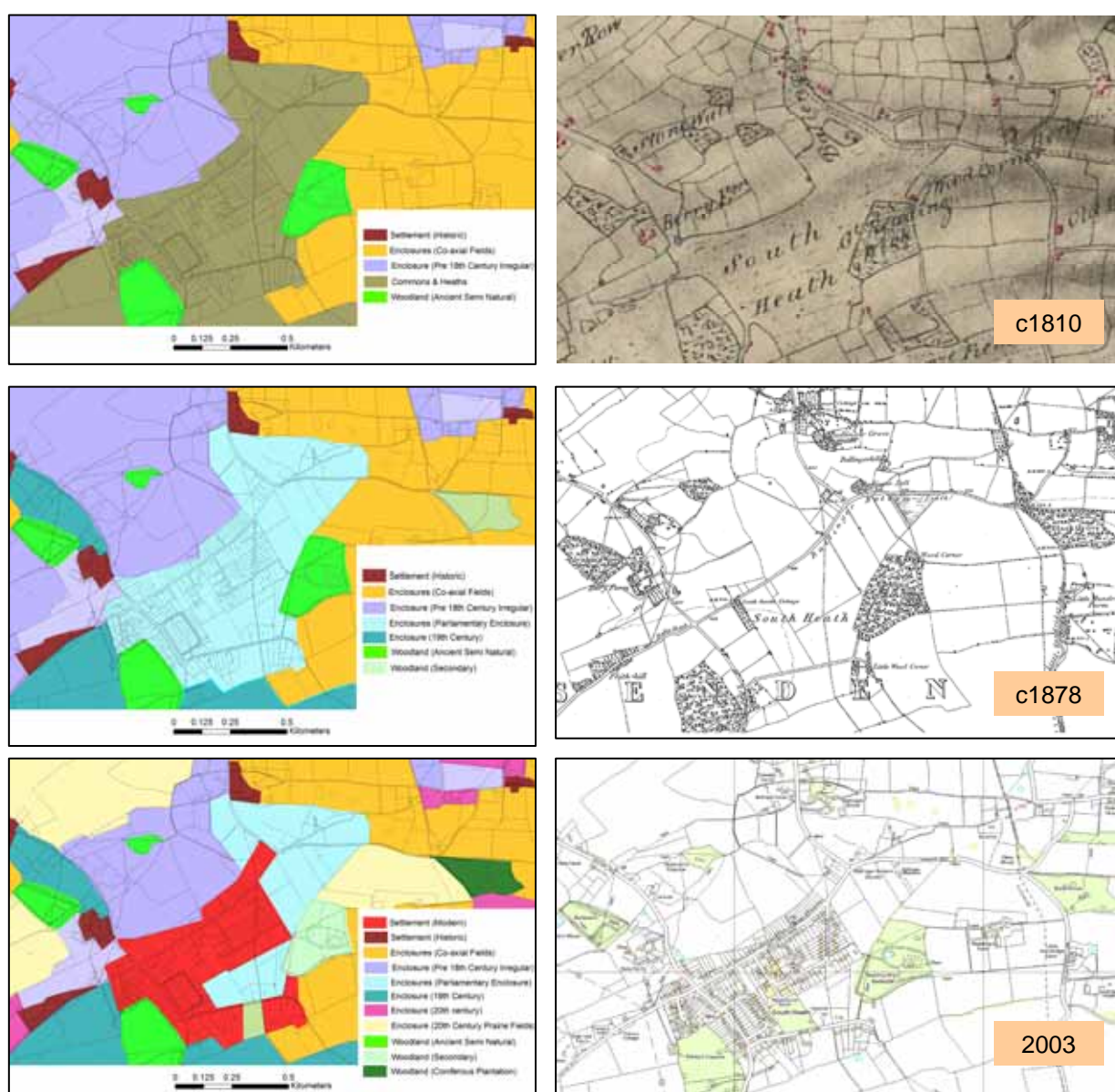
The mapping for the Chilterns HLC project followed an existing methodology used for the Buckinghamshire & Milton Keynes HLC project, (Green & Kidd 2006), and added a few variations to accommodate the idiosyncrasies of the Chilterns landscape. The project started with the analysis of the landscape as observed on modern maps and aerial photographs. It assigned each piece of land first to a broad “Landscape Group” and then into a more detailed “Historic Landscape Types”; some 47 historic character types have been defined and were refined as the project progressed. The types included varieties of woodland, settlement and more complex patterns of enclosures and field systems, (Table 1). The Chilterns methodology also had to reconcile the historic landscape types used for the earlier projects of Bedfordshire and Hertfordshire (Dyson-Bruce forthcoming) details of this reconciliation can be found in the methodology appendix.

Landscape Groups	Historic Landscape Types
Civic	<ul style="list-style-type: none"> - Hospitals, Schools Universities - Government, Civic Centres - Utilities
Communications	<ul style="list-style-type: none"> - Airfields (Commercial Leisure) - Canals - Motorways
Enclosures	<ul style="list-style-type: none"> - 'Co-axial' Fields - Assarts - Pre 18th Century Irregular - Pre 18th Century Regular - Pre 18th Century Sinuous - Meadows - Furlongs and Strips - Crofts - Parliamentary Enclosures – (original allotments) - Parliamentary Enclosures – (divided allotments) - 19th Century Fields - 20th Century Prairie Fields - 20th Century Enclosures - Pony Paddocks
Industrial	<ul style="list-style-type: none"> - Industrial (post 1885) - Industrial (disused) - Mineral Extraction - Disused Mineral Extraction
Landuse	<ul style="list-style-type: none"> - Allotments - Nursery/Market Gardening - Unimproved Rough Ground - Watercress Beds - Water Meadow
Military	<ul style="list-style-type: none"> - Barracks/Training Grounds - Military Airfields
Miscellaneous	<ul style="list-style-type: none"> - Open Fields - Mixed Origin
Open Land	<ul style="list-style-type: none"> - Commons, Heaths & Greens - Downland - Open Fields
Parkland	<ul style="list-style-type: none"> - Historic Parks and Gardens
Recreation	<ul style="list-style-type: none"> - Sports Grounds - Golf Courses
Settlement	<ul style="list-style-type: none"> - Historic Settlement (Pre 1885) - Modern Settlement (Post 1885) - Caravan Parks
Water	<ul style="list-style-type: none"> - Water Reservoir - Flooded Restored Mineral Extraction - Riverine Landscape
Woodland	<ul style="list-style-type: none"> - Woodland (Ancient Semi Natural) - Woodland (Secondary 19th 20th Centuries) - Woodland (Coniferous Plantation) - Woodland (Wood Pasture) - Woodland (Ancient Replanted) - Orchards

Figure 3: Composition of Board Landscape Types and Historic Landscape Types

After defining landscapes types, historic maps covering the Chilterns were consulted going back to the early 19th century, in some cases earlier. Special attention was given to Chiltern enclosures created by acts of parliament in the 18th and 19th centuries, particularly in Buckinghamshire and also Oxfordshire as this process is well documented in the maps of the county record offices.

The next stage was to map the Chilterns landscape using a Geographical Information System (GIS), this is a flexible, digital mapping software that produces colourful maps according to the types defined. In order to map the different landscape types, modern maps, aerial photographs earlier maps were referred to discern changes or continuity. The Chilterns HLC uses a 'stratigraphic' method of analysing landscape starting with the most recent source and regressing back to earliest Ordnance Survey maps of 1800-23 and where relevant, parliamentary enclosure maps and the early county surveys (e.g. those undertaken by Bryant and Jeffreys in Buckinghamshire). At each stage an assessment was made as to whether the landscape had fundamentally changed or remained essentially the same with only minor "evolutionary" changes. The data was entered into the GIS database that allows codes to record changing landscape types, it has a high degree of flexibility allowing different attributes of landscape to be displayed.



Figures 4: Illustrations showing the degree of landscape change to South Heath in Great Missenden, Buckinghamshire

An example of the 'stratigraphic' or time depth aspect of the Chiltern HLC can be seen in Figure 4 above that illustrates the process by which the historic maps are used to understand landscape change. At South Heath near Great Missenden, change can be charted in some detail from 1811 where the 2" surveyors map shows an area of landscape consisting of a common (mustard yellow) a number of irregular fields to the north (purple & orange) and small areas of woodland (green). By the 1st edition 6" map of 1878 the landscape has changed with the advent of parliamentary enclosure in 1850, dividing the common into regular fields (the pale blue area). The latest episode of landscape change can be seen with the eventual encroachment of housing by the 20th century (red area), although other areas of the landscape have remained relatively unchanged such as the irregular fields (purple) and the woodland (green).

Another element of the project was the analysis and recording of 'morphology'. This is an archaeologist's way of looking at the shape and pattern of the fields and other places; and trying to interpret their origins and development. The shape of a settlement or the size and pattern of fields can indicate their history, often by analogy with other better-studied areas. Of all the broad landscape types it is the field systems generically grouped as 'enclosures' that required the most detailed consideration. To this end, patterns were recorded using simple terms such as 'regular' 'irregular' or 'co-axial'. Each type has a distinct form that can be related to its origins and development. Thus regular shaped fields are indicative of surveyed or 'planned countryside' like parliamentary enclosure, whereas fields more irregular in character can be an indicators of much older landscapes. The long roughly parallel lines of "co-axial" field boundaries are probably the oldest of them all.



Figure 5: Irregular fields at Studham, (Beds) (left) 19th century enclosed fields at Watlington, South Oxon (right).

In addition to landscape types and morphology, other attributes of landscape were also recorded such as field boundary shape; boundary loss; place and field names (where found) and the likely origins of the landscape type (e.g. enclosed fields created by clearance of woodland). A confidence level was also recorded. Each of these attribute categories can be interrogated within GIS to create bespoke maps.

Once digitised, the final result is a seamless map of the historic dimension of the Chilterns landscape, emphasising the human processes that have led to and remain evident in its current appearance. After the mapping was complete, a summary description of each of the HLTs was prepared, accompanied by information on its origins, survival and rarity, distribution and contribution to landscape character and current management issues and trends. (See **Appendix 1**)

2. HLC Mapping Results

2.1. Broad Landscape Analysis

Chilterns HLC's broad landscape groups provide an overview of land use across the Chilterns that acts as a starting point for more detailed analysis, (Figures 6). While the main emphasis is upon understanding the statistical distribution of landscapes within the Chilterns AONB, the figures in brackets provides the statistics for the entire project area giving a context for the AONB by comparing and contrasting it with its immediate surroundings.

Enclosed Land in the form of fields is the dominant historic landscape type, accounting for nearly 66% of the AONB area, reflecting the Chilterns' essentially rural character (the wider study area is slightly less at 64%). The other main landscape component is **Woodland**, which makes up 21% of the AONB (14% of the entire study area), making it one of the most heavily wooded areas in England comparable in extent to the Weald, New Forest or Wye Valley. **Parks and Gardens**, are also a significant element in the Chilterns accounting for nearly 4% of the AONB landscape (3.5% for the wider study area). Built-up areas (**Settlement, Civic and Industry**) account for just over 5% of the AONB landscape in contrast to 13% of the wider study area. This is a reflection of how much built up the landscape there is adjacent to the AONB and how the AONB designation boundary has excluded neighbouring towns. The remainder of the AONB (< 2%) is taken up by minor land uses: communications, military, open land, recreation, utilities and water.

2.1. Chilterns HLC: Broad Landscape Analysis

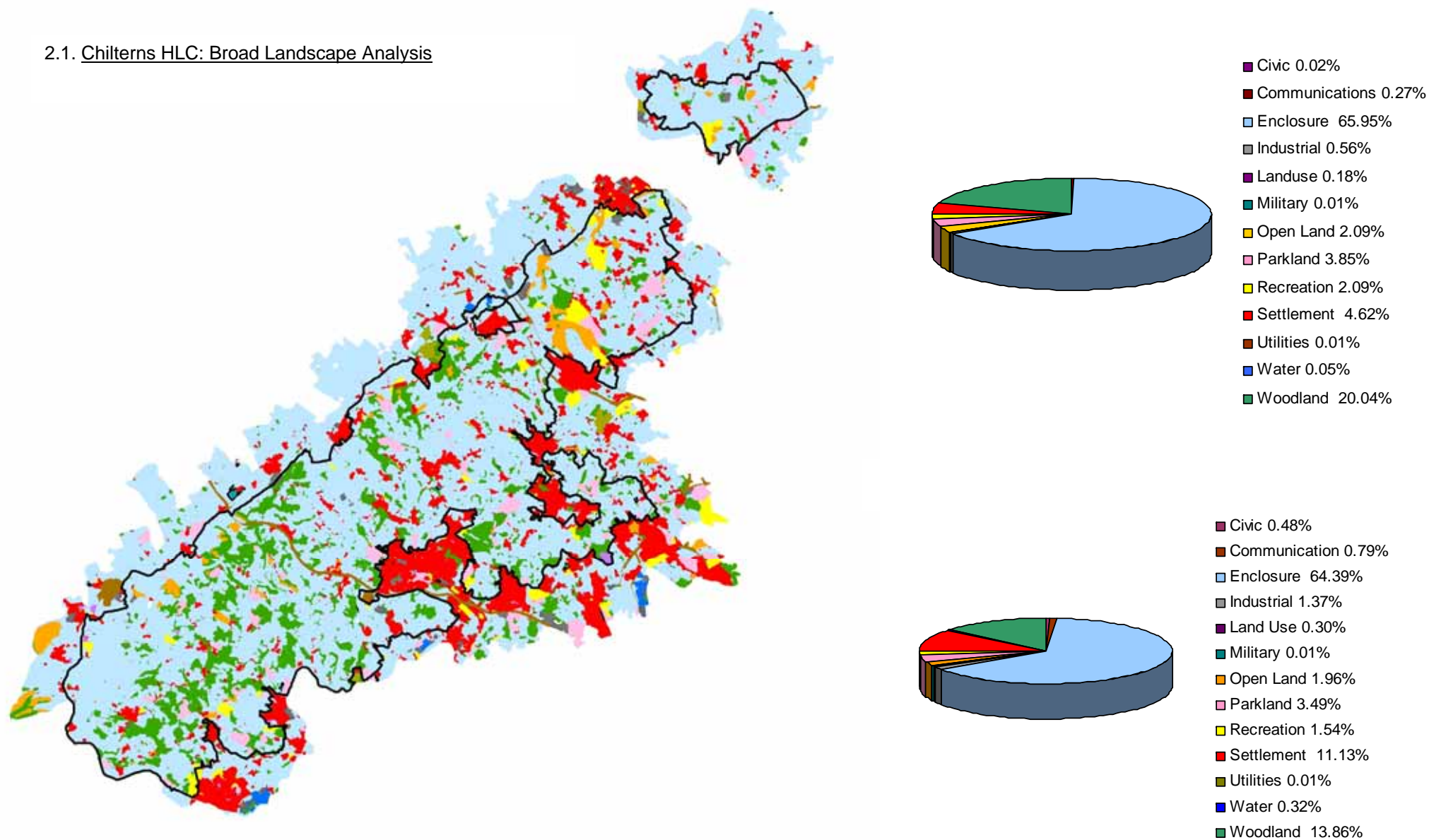
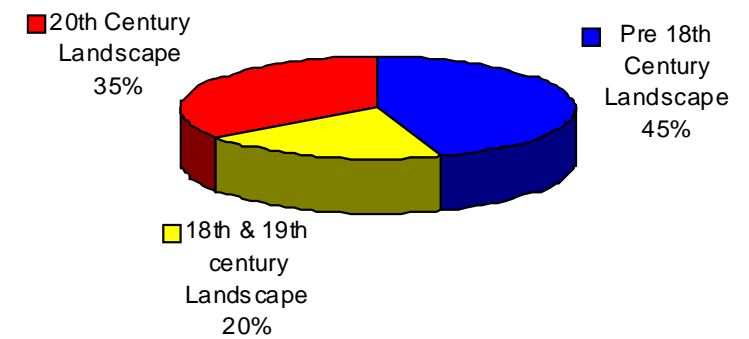
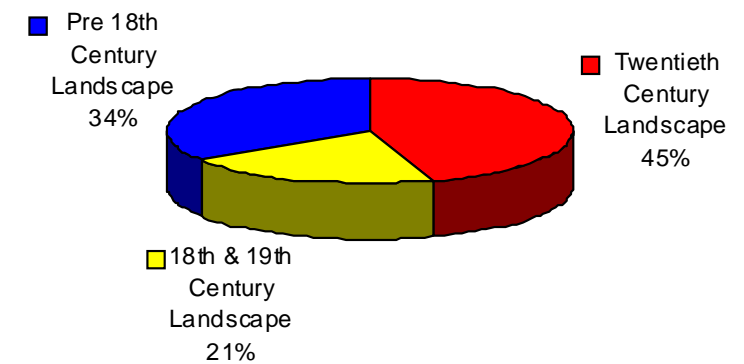
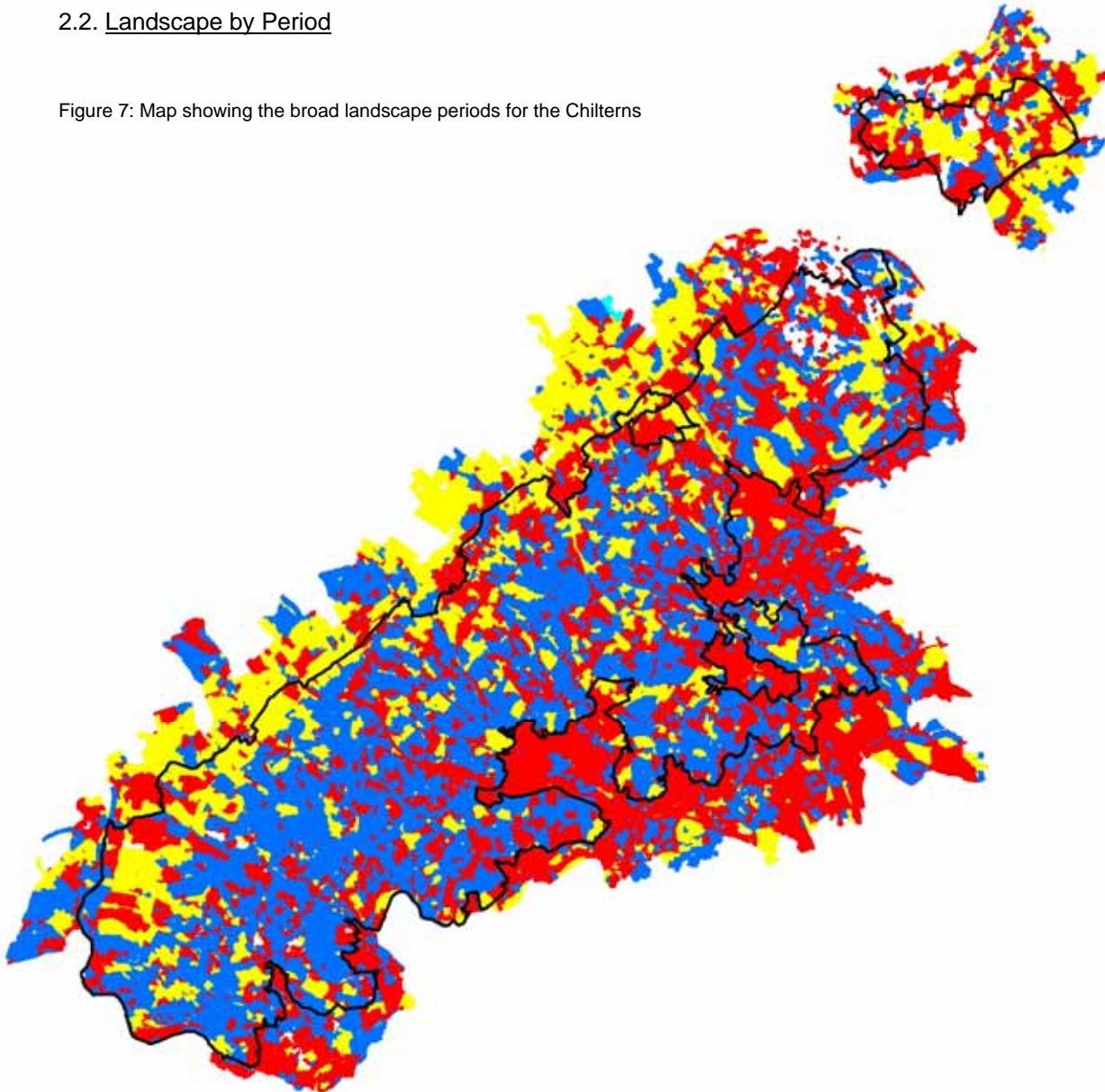


Figure 6: Broad landscape types, statistics for the AONB (above right) and the wider study area (below right).

2.2. Landscape by Period

Figure 7: Map showing the broad landscape periods for the Chilterns



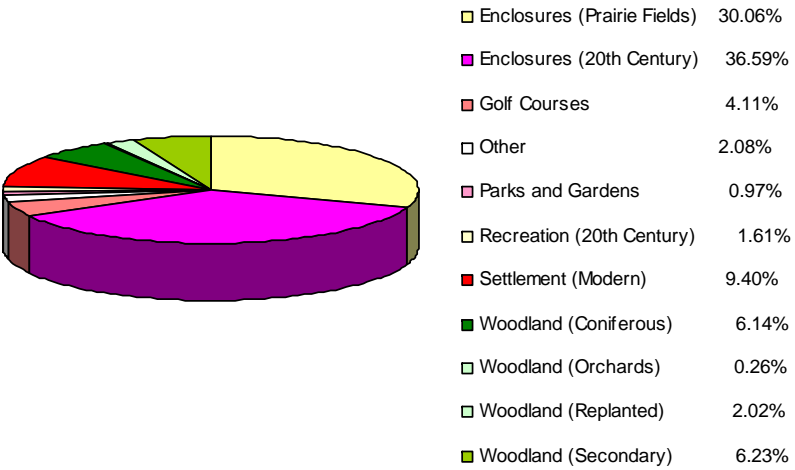
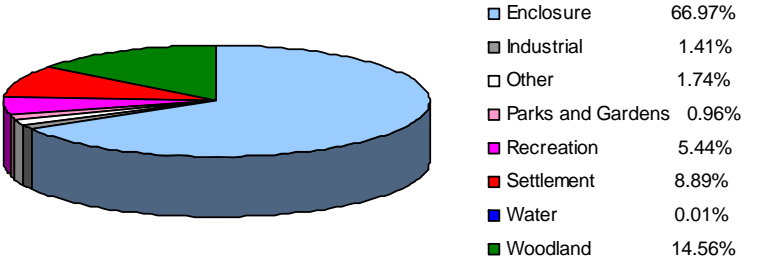
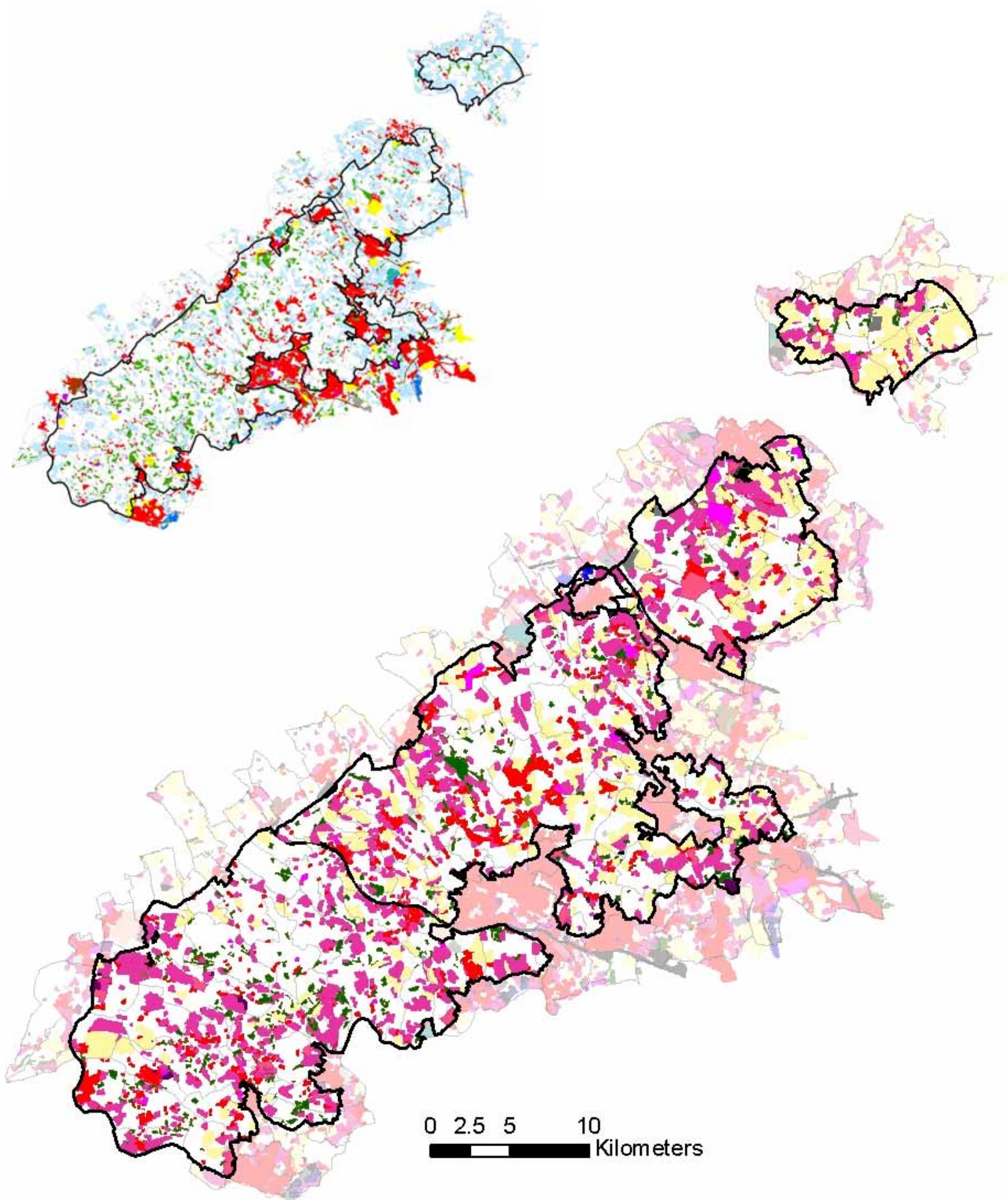
3. Period Based Discussion

The purpose of this section is to examine the historic landscape in time periods, showing the contribution each age has made to the development of the present landscape of the Chilterns. Landscape development is divided into three broad periods beginning with the **20th Century landscape**, regressing back through key periods **18th –19th Century landscape** and **Pre 18th Century landscape**. Each section contains a map depicting the surviving elements of the landscape from that period together with a discussion about the sensitivity, rarity and threats for each landscape type. However, these maps can only provide a very generalised representation of complex local histories. They are no substitute for detailed local research that will often illuminate more complex and long-term historical processes – for example many 18th/19th century parks were built upon pre-existing formal country house gardens or deer-parks. Also, for large areas of modern development these “lost” earlier landscapes have been simplified to a generic category “mixed origins” so there will be gaps in coverage. In each case the white areas are occupied either by pre-existing earlier landscapes or more recent landscapes. The period based sections are split into broad landscape headings and then discussed according to the varying landscape types, in terms of general distribution and patterning. The statistics for each historic landscape type refers to its extent within the Chilterns AONB, while a second figure in brackets denotes the context of this extent with the wider study area. Further details about particular HLTs mentioned in this section can be accessed in **Appendix 1** of the report.

Before the analysis of each period the HLC project can show a generalised overview of the period composition of the Chilterns landscape, showing the distinction between the three different periods, (Figure 7). Examination of the origins of the broad landscape groups adds further depth. For example, 40% of today’s enclosed land has remained largely unchanged for the last two hundred years and has features indicative of a pre-18th century origin (**Ancient Enclosure**). Here, the historic patterns of field boundaries (hedges or walls), roads and paths are still visible and continue in use. Just over one third (37%) the enclosed land was created in the 18th/19th centuries, a product of the “Agricultural Revolution” and enclosure movement (**Post-Medieval Enclosure**). Almost a quarter (23%) has been radically changed within the last one hundred years either by the addition and reorganisation of boundaries or by their removal for modern mechanised arable production, (**Modern Enclosure**).

3.1. Chilterns Historic Landscape: 20th Century

Figure 8: Pie Charts (AONB statistics) and maps showing the Broad Landscape types in the 20th century (top) and the detailed historic landscape types (bottom)



Chilterns Historic Landscape: 20th Century

Twentieth century landscapes define 32% of the Chilterns AONB and comprise:

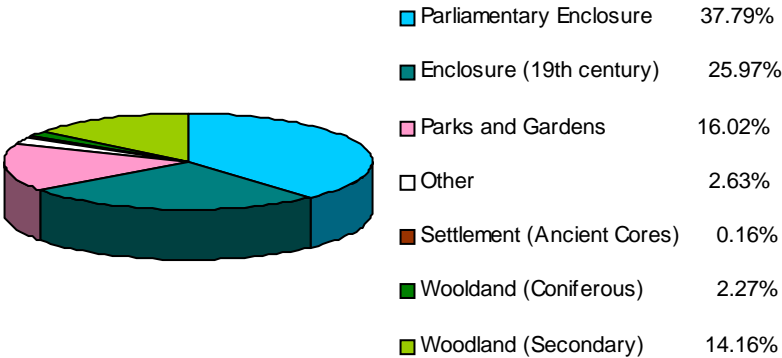
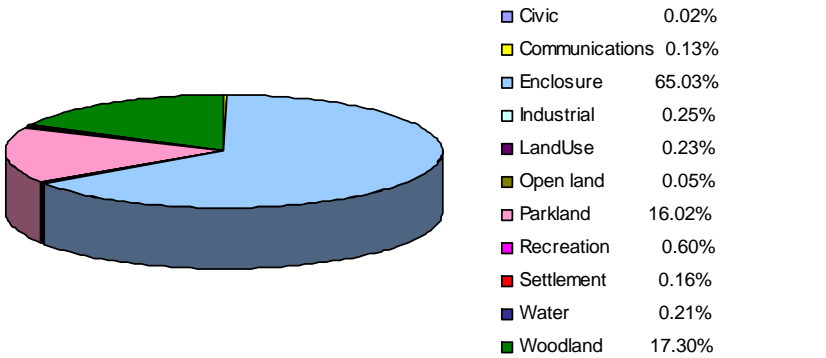
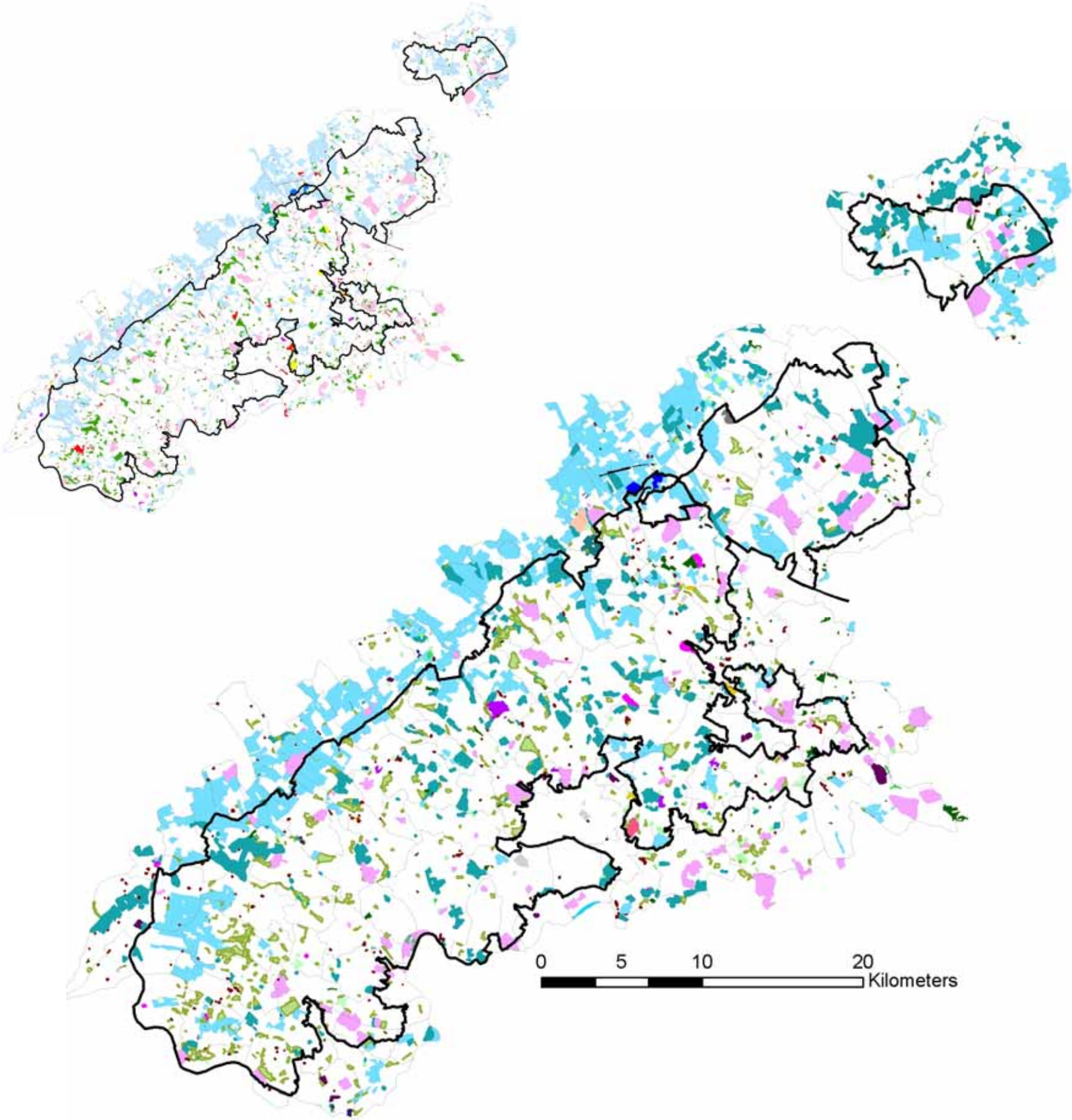
- **Agricultural Enclosures:** Enclosed hedged fields account for the largest proportion of the 20th century landscape at 67% and comprises nearly 11% of the Chilterns AONB as a whole. Modern fields are divided into two distinct historic landscape types: so called 'prairie fields' and '20th century enclosures'. 'Prairie fields' are large areas of arable land created by stripping away field boundaries to accommodate modern mechanised methods of farming. This variety of landscape represents over 30% of the twentieth century landscape. It is found throughout the Chilterns particularly on the clay vales of South Stoke, (Oxon) although the greatest concentration occur at the central and eastern end of the Chilterns, principally around the Bedfordshire parishes of Sundon and Hartington and the Hertfordshire parishes of Flamstead, Gaddesden and Bovingdon. The occurrence of 'prairie fields' diminishes as one travels westward into the more incised, woodland landscape of the Oxfordshire Chilterns. The localised prevalence of prairie fields may be a reflection of geology, topography and land holding. This observation has also been made by other writers, (Hepple & Doggett 1997) and further analysis can be found in Section 4 of this report. By contrast, the other landscape phenomenon of this period century is the creation of new '20th century enclosures'; these account for 36% of the twentieth century landscape in the AONB (and 13% of the entire Chilterns AONB). These new enclosures involve the subdivision of existing enclosures into smaller allotments for a variety of uses: such as hobby farmers creating manageable stock enclosures or as recreational land for pony paddocks. The distribution is somewhat ubiquitous although they tend to concentrate around more urbanised centres, in particular, Kensworth (Beds), Little Marlow (Bucks) and Cromarsh (Oxon).
- **Settlement:** The principal settlements in the study area are outside the AONB, focussed around the historic towns in the river valleys: notably Amersham, Chesham, High Wycombe, Berkhamsted, Tring and Dunstable. Nevertheless, there is significant quantity of modern settlement within the AONB comprising 10% of the twentieth century landscape or 4% of the total Chilterns AONB. Notable areas for new or expanded modern settlement in the Chilterns are upon former common land, such as Naphill and Prestwood Common, (Bucks) and Woodcote, (Oxon), while another obvious type is settlement infill within villages and small towns. The consequence of this growth has had an effect upon the morphology and historic settlement character of villages; for example dispersed forms such as Little Gaddesden, (Herts). Lilley, (Beds) have transformed into more nucleated settlements, (for further discussion see section 4.2: Chilterns settlement).
- **Recreation:** The combination of golf courses and playing fields make up 6% of the 20th century landscape or (2% of the Chilterns AONB landscape as a whole). Golf courses are found almost exclusively to the south of the study area, adjacent to major centres of population, and within easy travelling distance of London. There are a number of courses set in more remote and rural contexts, particularly in Oxfordshire and Hertfordshire Little Gaddesden, (Herts). Notable examples are found at Kensworth near Dunstable (Beds), Hazelmere near Wycombe (Bucks), Berkhamsted, (Herts), Mapledurham (Oxon) in proximity to Caversham. In addition to golf courses the other main type of 20th century recreation are smaller playing fields and recreation grounds; these are also located in close proximity to settlement sites and are in greater frequency. Although recreation grounds are not a significant at a landscape scale they represent an important characteristic of the Chilterns landscape. The only unique recreational area within the AONB is Whipsnade Zoo (Beds).
- **Industry:** Industry represents less than 1% of the landscape in the AONB, and the 20th century landscape, it represents 1.41% of landscape coverage within the wider study area. It is divided between built industrial sites (factories and warehouses) and extractive industry. Most built industrial areas are located next to urban centres near High Wycombe along the river valley of the Wye, south of Dunstable and on former

World War II airfields, as at Benson (Oxon). Extractive industry is largely focussed upon the gravels of the Thames Valley, Little Marlow, Beaconsfield in (Bucks), with chalk extraction located on the scarp areas of Dunstable Downs at Hexton (Beds), Chinnor, (Oxon). The extraction of chalk for the cement industry does reflect the distinctive geological characteristics of the hills and retains some heritage interest, notably at the Chinnor works. Local brickworks which continued into the early twentieth century are also potentially of interest for their contribution to the built environment.

- **Communications:** Apart from a couple of airfields that are outside the Chilterns AONB the principal area of 20th century communications in the Chilterns landscape is the M40 motorway which snakes its way through Buckinghamshire and Oxfordshire. The motorway has had an unfortunate impact upon some landscape types, severing woodlands and also common land, notably Wheeler End and Lane End Commons.
- **Military:** This type represents the smallest broad category of landscape in the Chilterns AONB at (0.2*%). There are very few military sites/ centres within the Chilterns AONB, the most notable examples are the RAF bases at Halton and Strike Command at Naphill, High Wycombe (Bucks). The other examples of this type are military airfields built upon the flatter lands outside the AONB, e.g., RAF Benson (Oxon), and relict airfields from the Second World War, such as Bovingdon (Herts.).
- **Woodland:** Woodland makes up c. 14% of the 20th century landscape. Its distribution is predominantly on the scarp areas at the expense of common land and downland, it is these areas that secondary regenerated woodland is found representing 6.20% of the 20th century landscape in AONB. Notable examples of 20th century woodland can be found at Totternhoe, (Beds) and Watlington, (Oxon). By contrast coniferous woodland plantation is found throughout the Chilterns, particularly adjacent to established woodlands on the dip-slope, this represents 6.14% of the Chilterns landscape and also accounts for some woodland replanting. Notable examples can be found at Hampden, (Bucks), Nettlebed, (Oxon).

3.2. Chilterns Historic Landscape:
18th & 19th Centuries

Figure 9: Pie Charts (AONB statistics) and maps showing the distribution of the 19th century landscape of the Chilterns AONB



Chilterns Historic Landscape 18th & 19th Centuries

Eighteenth and nineteenth century landscapes define 22% of the Chilterns AONB and comprise:

- **Enclosures:** The key components of landscape of this period are fields created by parliamentary enclosure acts and subsequent rationalisation of existing fields in the 19th century. Parliamentary enclosure was promoted at this time as a means of improving the landscape for agriculture, usually converting the landscape from arable to pastoral use, it covers nearly 38% of the AONB landscape for 19th century and comprises 6% of the total AONB landscape. The distribution of parliamentary enclosures in the Chilterns forms a distinctive pattern; it is mainly concentrated in a band, running along the Oxford and Aylesbury clay vales abutting the Chilterns scarp. This area was enclosed incrementally, (usually by parish) from the late 18th to mid 19th centuries where open field farming was once prevalent: Examples within the AONB can be found at Aston Clinton, (1816), Princes Risborough (1823), Buckinghamshire; Tring (1799) Hertfordshire; Aston Rowant, (1834) and South Stoke (1849). By contrast, parliamentary enclosure does not occur with the same degree of frequency south of the Chilterns scarp, where the landscape was already characterised by enclosed hedged fields. Where parliamentary enclosure is found in the Chilterns it is often the result of enclosure of open land, commons or heaths in the 19th century. Examples of this can be found at The Lee (1856) and Naphill Common (1859) in Buckinghamshire; Goring Heath, (1812) and Sonning Common, (1820) Oxfordshire. There is also another general category for 19th century enclosures, these represent 26% of the AONB landscape for this period and over 5% of the AONB as a whole. 19th century enclosures are usually defined by landscape change from the 2nd surveyor's map to the 1st edition, usually as a result of grubbing up of woodlands or wholesale change in field boundaries giving a new character to landscape.
- **Settlement:** The extent of 18th and 19th century settlement is discerned from the 1st edition 6" maps. However, the extent of the majority of villages and towns have been excluded as they were defined long before this period, the result of centuries of growth. Consequently this is discussed under the pre 18th century landscape category. However, using the HLC's time depth facility it possible to map mid to late 19th century farmsteads within the Chilterns AONB by the noting change from the 2nd surveyors map to the 1st edition. This had only a minimal impact at a landscape scale and represents 0.15% of the landscape type for this period.
- **Parks and Gardens:** The 18th and 19th centuries marked the zenith of parks and gardens in the Chilterns and represents 16% of the landscape of this period and 3.85% of the total AONB landscape. These country estates were established by the wealthiest landowners as an aesthetic expression of power and wealth. The most notable creations were Hexton House (Bedfordshire); the 18th century rococo designed house and landscape of the Dashwoods at West Wycombe (Buckinghamshire) and Tring Park (Hertfordshire). Many parks and gardens have earlier antecedents but they were substantial redesigned or expanded during this period as fashion and tastes changed. There are a number of grounds embellished by Lancelot 'Capability' Brown; the landscape parks of Ashridge and Gaddesden Hoo (Herts), Fawley (Bucks), and Greys Court (Oxon). Humphrey Repton, was responsible for having a hand in the design of Bulstrode Park, Shardlowes, (Bucks). Notable 19th century parks and gardens are the neo-gothic Friar Park near Henley, (Oxon) built in the 1880s and Halton house, (Bucks).
- **Recreation:** The late 19th century also heralded the arrival of allotment gardens in villages as seen at Dagnall, and Wheeler End Common (Bucks), Northchurch, Flamstead (Herts), Stokenchurch (Oxon).
- **Industry:** There is very little surviving 18-19th century industry that makes an impact on a landscape level - it represents less than 1% of the landscape of this period,

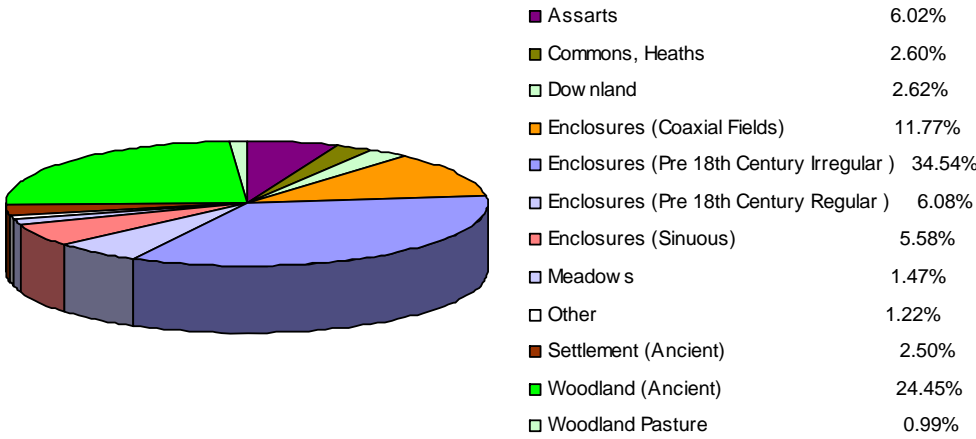
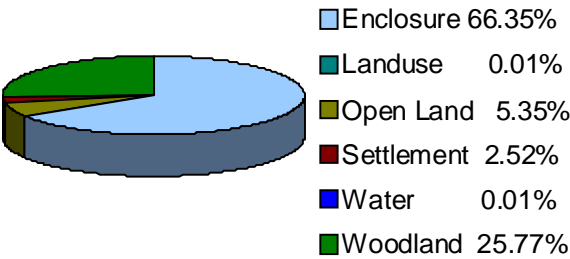
(classified under 'other'). Few active industrial sites survive from the 19th century to the present day. Much of the landscape scale industrial activities at this time focussed on extraction of clays, chalks and minerals. The most discernable is the brick making industries at Moor Common, Lane End (Bucks); 19th century mineral extraction: Clay Pit Hill, Hexton, (Beds); Aldbury, (Herts), Gravel Hill, Mapledurham (Oxon).

- **Communications:** 19th century communications networks are rarely mappable at a landscape scale. Nevertheless, this period saw the first deliberate construction of transport networks since the Romans. The process began with the construction of turnpike roads and followed by canals and then railways, this represents 0.13% of landscape mapped in the Chilterns AONB. The Chiltern's geology and topography presented challenges to canal and railway builders, the former being restricted to a single route through the hills, the Grand Junction canal, (Hepple and Doggett, 1994). Further consideration is given to the road and trackway communications network in the relevant 'deepening' module.

Woodland: Secondary woodland and coniferous woodland dating to the 19th century represents 17.30% of the 18th and 19th century landscape in the Chilterns AONB. It is in this period that demand increased for wood for the furniture making industry; many ancient semi natural woodlands previously used for wood fuel (much of which was exported to London) were converted to the renowned 'cathedral' beech woodlands. However this transformation of woodland composition is hard to discern within the methodology of the Chilterns HLC. However, what has been recorded is the waxing of woodland over this period; similarly to the 20th century, the 18th and 19th centuries is characterised by the growth secondary woodland, which represents 14.16% of the landscape for this period. Secondary woodland colonised areas of open land as traditional forms of landscape management fell out of practice. Particular areas of growth occurred upon downland, e.g. Tottenhoe (Beds), Watlington (Oxon); and common land Naphill (Bucks). However, the largest growth of secondary woodland is derived from the extension of existing ancient woodlands, particularly in the Oxfordshire section of the AONB. Apart from secondary woodlands another notable type for this period is the orchard, which represents less than 1% of the landscape for this period. The Chilterns was famous in the late 19th century for its apples and soft fruit; from the HLC mapping there were distinct concentrations of orchards particularly in the south of the AONB around the settlements of Seer Green and Holmer Green (Bucks); formerly known as the 'Cherry pie villages'. The data and age of orchards is in question as they first appear in any detail on the 1st edition Ordnance Survey maps, further research is needed into the longevity of some orchards, (see conclusions and recommendations in section 8).

3.3. Chilterns Historic Landscape: Pre 18th Century

Figure 10: Pie Charts (AONB statistics) and maps showing the distribution of the Pre 18th century landscape within the Chilterns AONB and wider study area.



Chilterns Historic Landscape: Pre 18th Century

- **Enclosures:** Enclosed fields represent 54% of the landscape of this period and nearly 30% of the Chiltern AONB as a whole. As well as being the largest landscape type, it is also the least well understood. There have been a number of targeted studies on field systems in the Chilterns which have identified the process of enclosure going back to the medieval period (Roden 1965, 1973) while some later primary sources have observed fields being laid out in the early post medieval (Tudor) period, with some survival of common arable fields (Leland 1998). From these sources it appears the nature of enclosure during this period was a continuous and often piecemeal process but it is often hard to distinguish one phase from another without detailed research. In the absence of dating evidence from maps and documentary sources, establishing the provenance of enclosures for this period is hard to determine. Consequently the Chilterns HLC project can only provide generic headings for enclosures that give a broad indicator of antiquity; a number of historic landscape types (HLTs) hold the suffix of 'pre 18th century' for enclosures; these titles are further refined by making distinctions about morphology of field boundaries: regular, irregular and sinuous. The largest category is pre-18th century irregular fields, which represent nearly 35% of the landscape within the Chilterns AONB for this period, and 15% of the AONB landscape as whole. These enclosures are ubiquitous in the Chilterns AONB, although with greater concentrations in Caddington, Studham (Beds), Little Missenden, (Bucks); Wiggington, (Herts); Swyncombe, Rotherfield Greys, (Oxon). Pre-18th century regular accounts for 6% of the landscape for this period and 2.85% of the Chilterns AONB as a whole. The other major type is sinuous enclosures, which represent 3% of the AONB landscape.

Although the majority of enclosure types are described morphologically, there are two enclosure types for this period that are distinctive and have been recorded separately, one of which is assarts. Assarts are enclosures that have been created by a process of woodland clearance in medieval and post medieval times. Morphologically assarted fields are irregular in form but in the absence of maps the use of field name evidence has been used to indicate of woodland clearance such as 'sart' or 'stocking' names. Assarts comprise 6.2% of the landscape for this period and 2.82% of the Chilterns AONB as a whole. They can be found at Bradenham (Bucks) and Swancombe and Woodcote (Oxon). However, the distribution and proportion could be considerably bigger if more detailed research was conducted into some of the enclosures currently classified as Pre 18th Century Irregular.

A second landscape type that merits a separate definition are 'coaxial' fields. Coaxial is a descriptive term for an extensive field system that share the same orientation, often extending over several kilometres. This category of enclosure is often defined by ancient lanes and sub-divided into small, elongated fields. The enclosure layout can be dictated by topography and often incorporates ancient lanes and field boundaries composed of species diverse hedgerows. Often found in heavily wooded areas of the Chilterns, coaxial enclosures are located in the south of the Chilterns scarp, running along or parallel to river valleys. The provenance of these enclosures has been hotly debated; studies undertaken in other areas of the country have tentatively dated coaxial fields to the Bronze Age (Williamson 1987). The examples within the Chilterns AONB also indicate a degree of antiquity, as the relationship with known archaeological features suggests that some components of coaxial field systems pre-date the Roman Road of Akeman Street. (For a greater discussion see section 4. on enclosures and section 6 on Roads and Trackways). Coaxial enclosures represent 11.47% of the Pre 18th century landscape and 5.04% of the AONB landscape as a whole. Some of the best examples can be found in the Chess valley and on the Chiltern ridge radiating north-westward from Chesham; Radnage and Nettleden parish, Oxfordshire and Great Gaddesden, Hertfordshire. However there are no notable examples in the Bedfordshire Chilterns.

- **Settlement:** Historic Settlement is derived from the historic core of settlements as recorded on 1st edition 6" maps and earlier maps for the Ordnance Survey 2". The vast majority of Chiltern's historic settlements probably originated between the 9th and 13th centuries from which time they gradually developed their 19th century form. Many retain substantial late medieval and post-medieval historic building stocks. Historic settlement comprises 2.50% of the landscape for this period and 1.24% of the Chilterns AONB. In addition to mapping the presence of historic settlement, the Chilterns HLC has also recorded variations in historic settlement morphology. National and more localised research has confirmed that the Chilterns is a landscape of predominately dispersed settlement, (Hepple & Doggett 1997), (Roberts and Wrathmell 2001), although the results from the Chilterns HLC has shown that there are more intricate patterns of settlement types. Nucleated settlement forms are found to the north of the Chilterns scarp but also along the river valleys. By contrast there are a number of different dispersed patterns found within the Chilterns. The origins of these varying types of settlement are complex along with the change in extent of some villages, which have constantly waxed and waned through time. A discussion of these patterns can be found in the settlement section in part 4 of the report.

This survey is supplemented by the buildings deepening module of the Chilterns HLC; this has piloted a methodology for recording the character of smaller Chilterns settlements, in particular discerning whether settlements have particular building materials that predominant or have a distinctive architectural styles. (See Section 5 Chilterns buildings). (Doggett, 2006).

- **Parks and Gardens:** Another characteristic of this period was the development of country estates and secular housing. The Chilterns possess some early parks and gardens dating back to the 16th century, although the extent of many today are characterised by landscape designers in the 18th and 19th centuries. The most important parks present in the nineteenth century had already come into existence by 1600, including, Hampden and Fawley, (Bucks). These early designed landscapes had their provenance as former deer parks, Beechwood, (Beds); Hampden, Fawley Court Buckinghamshire; Ashridge, Hertfordshire; Stonor and Greys Court (Oxfordshire).
- **Open Land:** This category is represented by Commons, Heaths, Greens and Downland areas, although subtly different they represent some of the most characteristic landscapes of the Chilterns Area of Outstanding Natural Beauty. In total they make up 4% of the pre 18th century landscape and over 2% of the Chilterns AONB as a whole.

Commons and heaths represent 2% of AONB landscape and 1% of the wider study area as a whole. There are over 213 registered commons in the Chilterns, ranging in size from large open commons such as Berkhamsted to small areas of land, adjacent to settlements, many of them are too small to register at a landscape scale for the HLC project, consequently these smaller ones have been incorporated into other HLC types, mainly historic settlement. The origins of many commons and heaths remains uncertain, although most examples recorded on historic maps were presumably relicts of once even more extensive commons and wood pasture dating back to pre-Norman times. What is known from history and archaeology is that commons had multifarious functions; as a source of fuel, as centres of industry and a pastoral role grazing animals - many contain relict pollards and banks such as the commons at Naphill, (Bucks) Frithsden, (Herts) Nettlebed (Oxon). (See discussion in Section 4 and Appendix 1). In addition to Common and Heaths, another area of open land characteristic of the Chilterns is chalk downland. This represents 2.2% of the pre 18th century landscape or 1.23% of the wider landscape of the Chilterns AONB. Essentially downland is a habitat created by, and dependent on, the grazing of domesticated stock. This practice had long been a part of the landscape management of the Chilterns, where sheep were grazed during the day and transferred their nutrients onto fallow fields at night by folding. However, the change

in agricultural techniques over the last two centuries removed much of the grazing sheep, resulting in a decline in downland, much of it naturally reverting to woodland. (Further discussion of the downland can be found in section 4 of the report).

- **Industry:** Local industries at this time were small scale and therefore not mappable on an HLC scale. The main visible industrial relics from this period are probably to be found in the saw-pits and related remains of woodland industries and the small extractive pits for clay, chalk and gravel. The combination of clay and wood supported a tradition of local pottery, tile and brick industries inherited from the medieval period, which continued into modern times.
- **Woodland:** Ancient semi natural woodland represents nearly 25% of the landscape of this period and near 11% of the Chilterns AONB as a whole. Ancient semi-natural woodland is species rich broadleaf woodland that represents the earliest surviving woodland in the Chilterns AONB, although some areas covered by beech coppices have also been included in this category despite botanical classifications registering them as plantations. Although ancient semi natural woodland is found throughout the Chilterns there is a noticeable concentration of woodland in the central and south-eastern parts, (Buckinghamshire and Oxfordshire), where the topography has enabled the management of large woods along slopes and coombes. Some of the densest coverage can be found at Hambleden, (Bucks) Watlington, (Oxon). By contrast, the character of the ancient woodland in Bedfordshire and Hertfordshire is smaller and more evenly spaced, e.g. Pirton and Kensworth, (Beds); Flamstead (Herts). Generally the extent and form of these woodlands has remained unchanged for hundreds of years, their size and shape maintained by wood banks and boundaries. However, there has also been woodland regeneration that has enlarged the extent of woodland in some areas. There are distinct characteristics that define ancient woodland, with the presence of wood coppices, a continuation of woodland management practice from the medieval period. Coppicing created a sustainable supply of wood used primarily for fuel. Old coppiced stools' can be found surviving in the woodlands throughout the Chilterns including Pigott's Wood (Buckinghamshire) and Bluebell wood, Whipsnade, (Bedfordshire). These woodlands were also a resource for timber, providing much of the building materials that form the core of settlements in the study area. In addition to ancient semi natural another woodland category from this period is wood pasture, which comprises just under 1% of the pre 18th century period landscape and less than half a percent in the wider AONB landscape. Wood pasture consists of large open-grown or high forest trees at variable densities, found on grazed grassland, heathland and/or woodland. Tree management, usually by pollarding, has often helped to produce the characteristic appearance, while grazing by domestic livestock, deer or rabbits maintains the vegetation. The morphology of wood pasture can vary; many are curvilinear in pattern although most are delineated by long established woodbanks. Wood pasture is very rare in the Chilterns due to modern practices of land management and animal husbandry. A few examples do remain at Swan Wood, (Oxon) and Penn Wood/ Common Wood (Bucks), and where the practice of wood pasture is being reintroduced.

The map illustrates the distribution of 100 grasshopper species across the Chiltern Hills. Red dots mark the locations of individual species, with some areas showing higher concentrations. The map includes a scale bar indicating distances from 0 to 20 Kilometers.

4.1 HLC Types and Scheduled Ancient Monuments

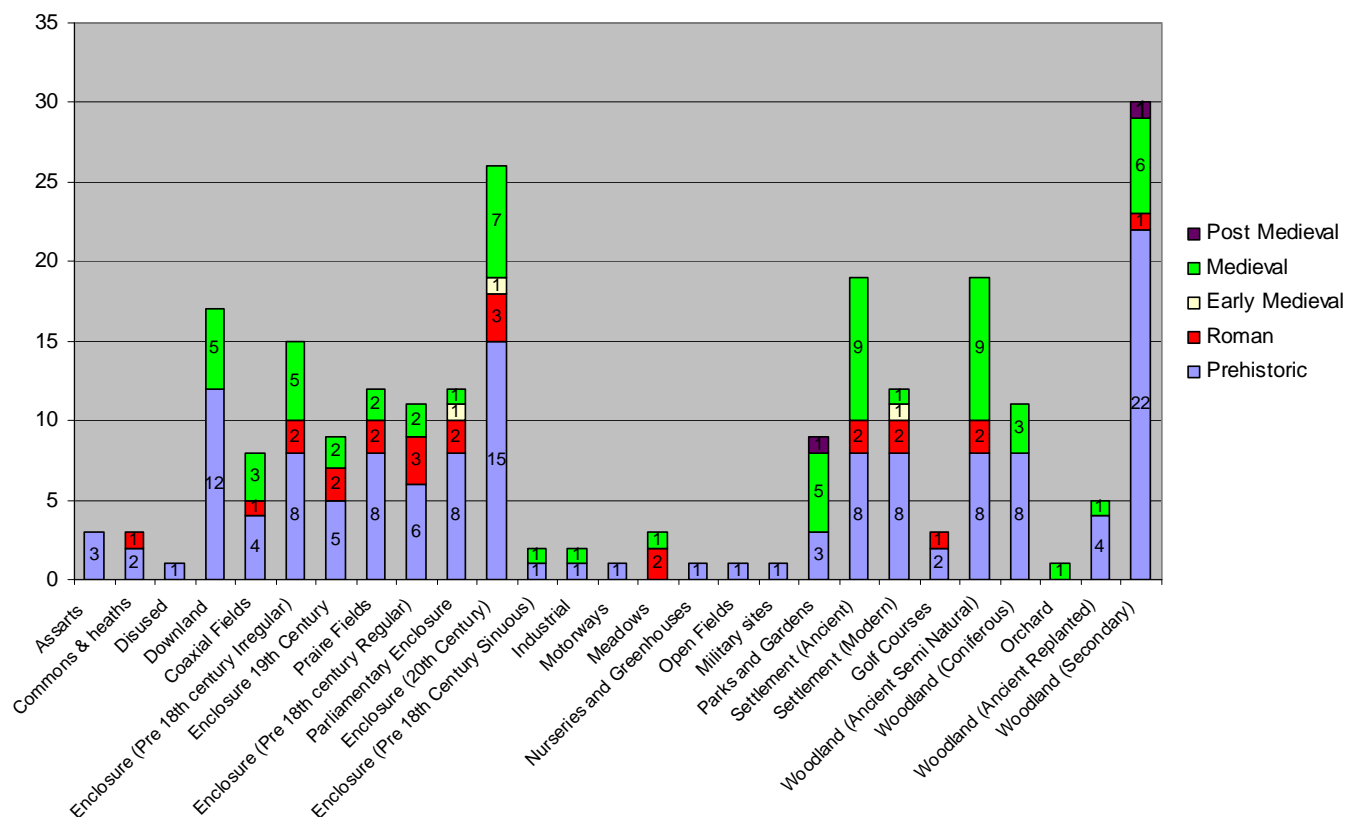
An interesting comparison is to use HLC data in conjunction with traditional archaeological records to try and discern any noticeable patterns in relation to certain monuments or types.

There are a total of 122 Scheduled Ancient Monuments, (SAMs) within the Chilterns AONB and a preliminary analysis has been undertaken of their relationship to historic landscape types. The majority of SAMs date to the Prehistoric and Medieval periods. There is little representation for the Early Medieval and Post Medieval periods, (one monument each) and the Roman. Despite there being 122 SAMs, the number of monuments recorded in the graphs below exceeds this total; this is due to the extent of some monuments that are linear in form, such as the prehistoric Grim's Ditch, (of which there are a number of sections), they extend across a wider area intersecting a number of HLC types. Similarly there are larger monuments that straddle or abut more than one landscape type.

In addition to the scheduled monuments, much more archaeological information is found within Historic Environment Records (HERs). There are caveats to the use of HER data as each HER records information in slightly different ways and has its own biases in the way data has been collected and recorded. There is a noticeable density of data for Buckinghamshire compared to the other counties in the AONB. It does not necessarily mean that Buckinghamshire has a richer archaeological landscape but rather that the level of recording may be different from the other counties. There are a total 4734 HER and SMR records within the Chilterns AONB; the breakdown of data for each county within the Chilterns AONB are: Bedfordshire: 568 records; Buckinghamshire: 4734¹ Hertfordshire: 663 Oxfordshire: 1337. The percentage distribution by period shows that the AONB is made up of Prehistoric 25%; Roman 14%; Early Medieval 3%; Medieval 14%; Post Medieval 33%; Modern 4%; and Undated 7%². Unfortunately it has not been possible to undertake analysis of the relationship of HER records to historic landscape types within the resources available to this project.

In distribution terms most SAMs are to be found in 27 of the landscape types with the greatest numbers in secondary woodland and 20th century enclosures (see Figure 27).

Figure 12: Number of SAMs within HLC Types



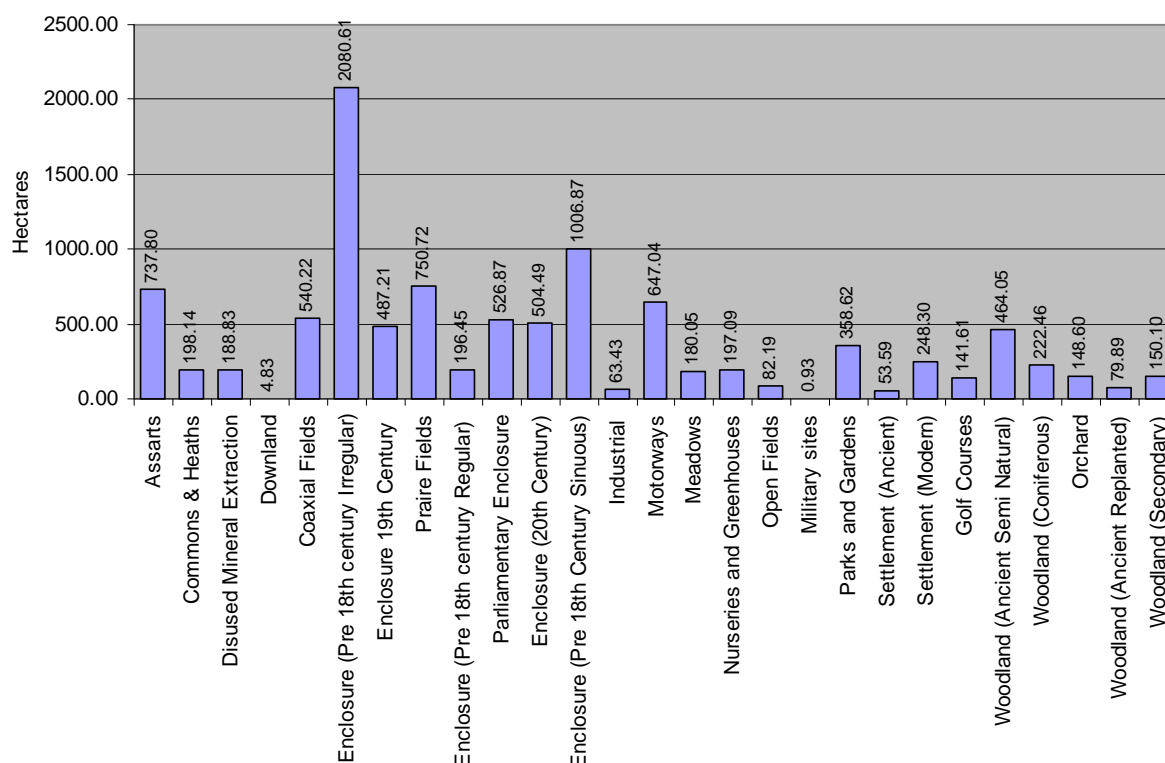


Figure.13: Average Hectares per SAM by Chiltern Historic Landscape Type

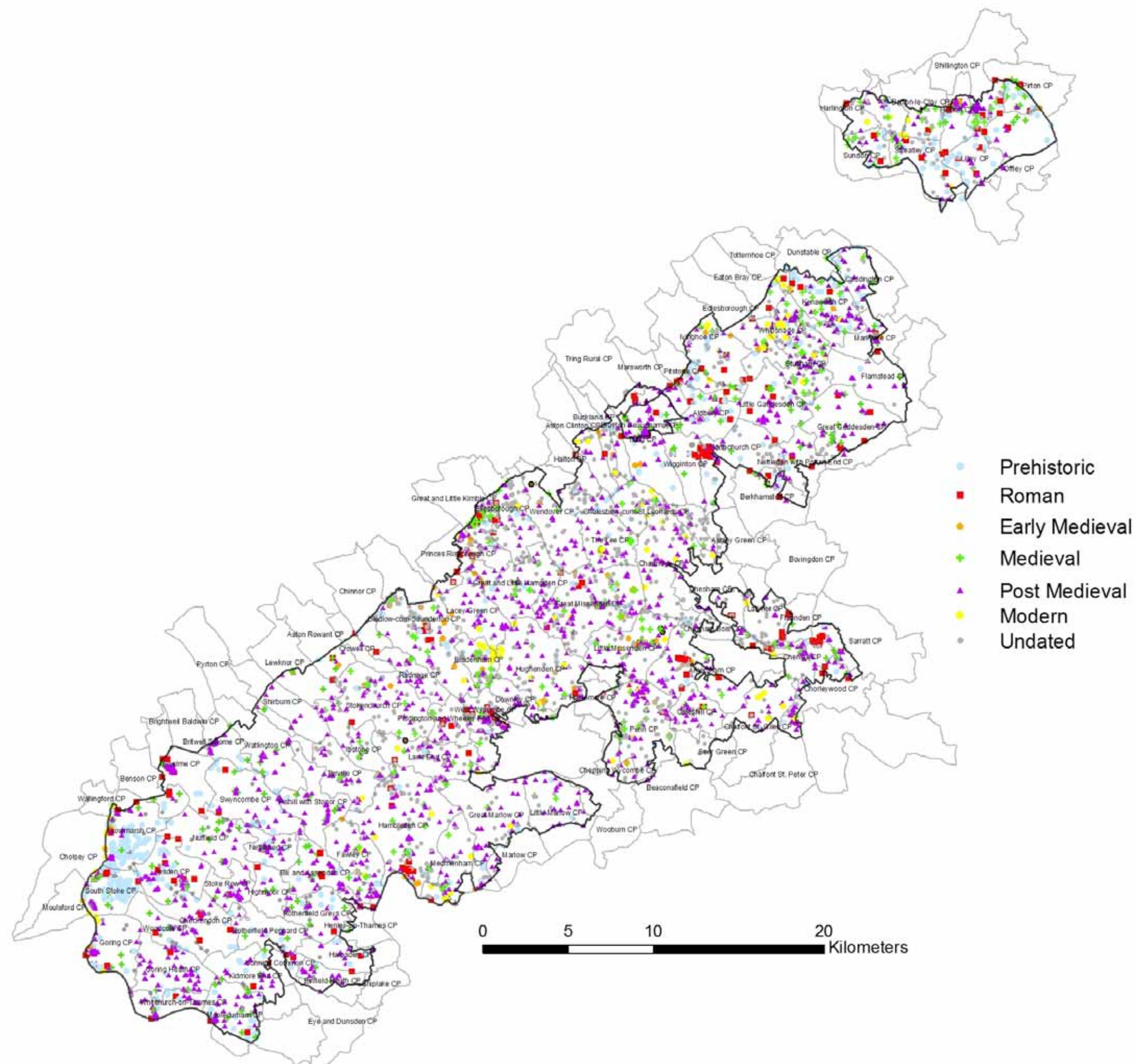
Figure 13 illustrates the densities of SAMs against HLTs. It shows that Chiltern Downland has the highest concentration of SAMs in the AONB, reflecting the exceptional preservation and visibility of earthwork monuments in open grassland. Downland SAMs display a particular bias towards prehistoric monuments such as hillforts: Sharpenhoe Clappers (Beds), Ivinghoe Beacon (Bucks) and a number of prehistoric round barrows. Conversely other open land types such as commons & heaths have fewer SAMs. Other notable types are the woodlands which have some of the highest densities of monuments in particular Secondary Woodland (150.10 hectares) and ancient semi natural woodland (464.06 hectares). The density within secondary woodland is perhaps a reflection of the former landscape, such as former downland where a number of prehistoric monuments are located. Woodland also affords some protection to monuments that would otherwise be threatened by agriculture and cultivation. Also of note are the concentrations of SAMs amongst Ancient Settlement and, perhaps surprisingly, 20th century enclosure. In contrast some of the pre-18th century enclosures have relatively low densities of SAMs.

Conclusions

It seems that historic settlement, woodland and downland areas harbour the highest densities of scheduled ancient monuments in the Chilterns. However, significant numbers are found in certain types of enclosed field systems. The next step would be to correlate this information with Monuments at Risk data to identify management priorities.

4.1.2. HER Distribution Map

Figure 14: Map and pie graphs showing the distribution of Historic Environment Records by period within the Chilterns AONB.



4.2. Historic Environment Records

In addition to Scheduled Ancient Monuments,(SAMs), the Chilterns HLC project has also analysed the distribution of monuments from county HER (Historic Environment Record) data. Unlike the selective data of SAMs, HER data represents the known sites, monuments and buildings that have been found through excavation, survey or chance finds. There can also be subtle variations across the counties as each HER has its own methods of recording, figure 15 shows that proportionally Oxfordshire has a higher ratio of prehistoric monuments than the other counties, with Hertfordshire possessing more Roman sites, Bedfordshire a higher degree of modern monuments while Buckinghamshire has more undated ones. There are further biases with the distribution of HER data as the discovery of archaeology tends to be dictated by the occurrence of development, such as motorways or urban expansion of towns or where archaeologists have deliberately selected areas to undertake their research. An appropriate axiom is that archaeology is found where people search for it.

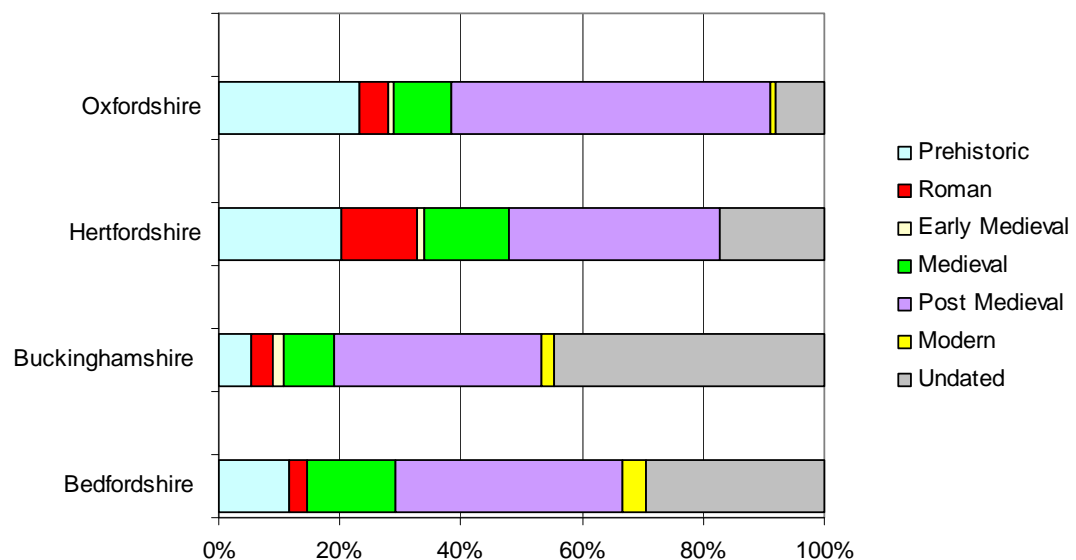


Figure 15: Graphs showing the distribution of Historic Environment Records by period within the Chilterns AONB.

The analysis of HER data against historic landscape types (HLTs) (figure 16) shows the division of monuments by periods although there are particular patterns each landscape type there are particular biases for monuments of particular periods. Historic settlement has a concentration of post medieval sites owing to the number of historic buildings. Parliamentary enclosure has a high representation of prehistoric monuments and finds. Ancient woodland and secondary woodland too contain a large number of sites although interestingly a large proportion of these are undated. This is perhaps a reflection of the lack of information about archaeology found within woodlands, (see section 6.5.). Another graph (figure 17) shows the average frequency of monument occurrence against HLTs. Unsurprisingly, historic settlement has the highest ratio of sites to HLTs, with one monument for every half a hectare; this generally reflects the large concentration of historic buildings records and archaeological discoveries made within the cores of settlements. Other landscape types with large HER densities are historic parks and gardens, 1 record for every 5.59 hectares of landscape. The concentration of monuments for downland (every 7.51) hectares and commons and heaths (10.67), this complements the findings for monuments that are protected under scheduling. However, there are some less sensitive landscape types such as disused mineral extraction sites that have a high concentration of recorded (but largely now destroyed) archaeology, (3.55) which is a reflection of patterns of disturbance and discovery. By contrast, analysis of HER data show that some of the dominant landscape types in the Chilterns contain the least concentration of sites; in particular ancient woodland, has an average density of 21.78 hectares per record, this may well reflect the lack of knowledge of data within woodlands for

this area, a topic that's further discussed in the woodlands deepening module. Low densities of HER records are also found in many categories of enclosures: coaxial fields (25.73); assarts (35.05); sinuous enclosures (39.40); an explanation for this low site representation could be attributed to a number of factors, including enclosures being under pasture, the position of enclosures away from potential settlement areas and rights of way where there would be chance of intervention and disturbance of the ground.

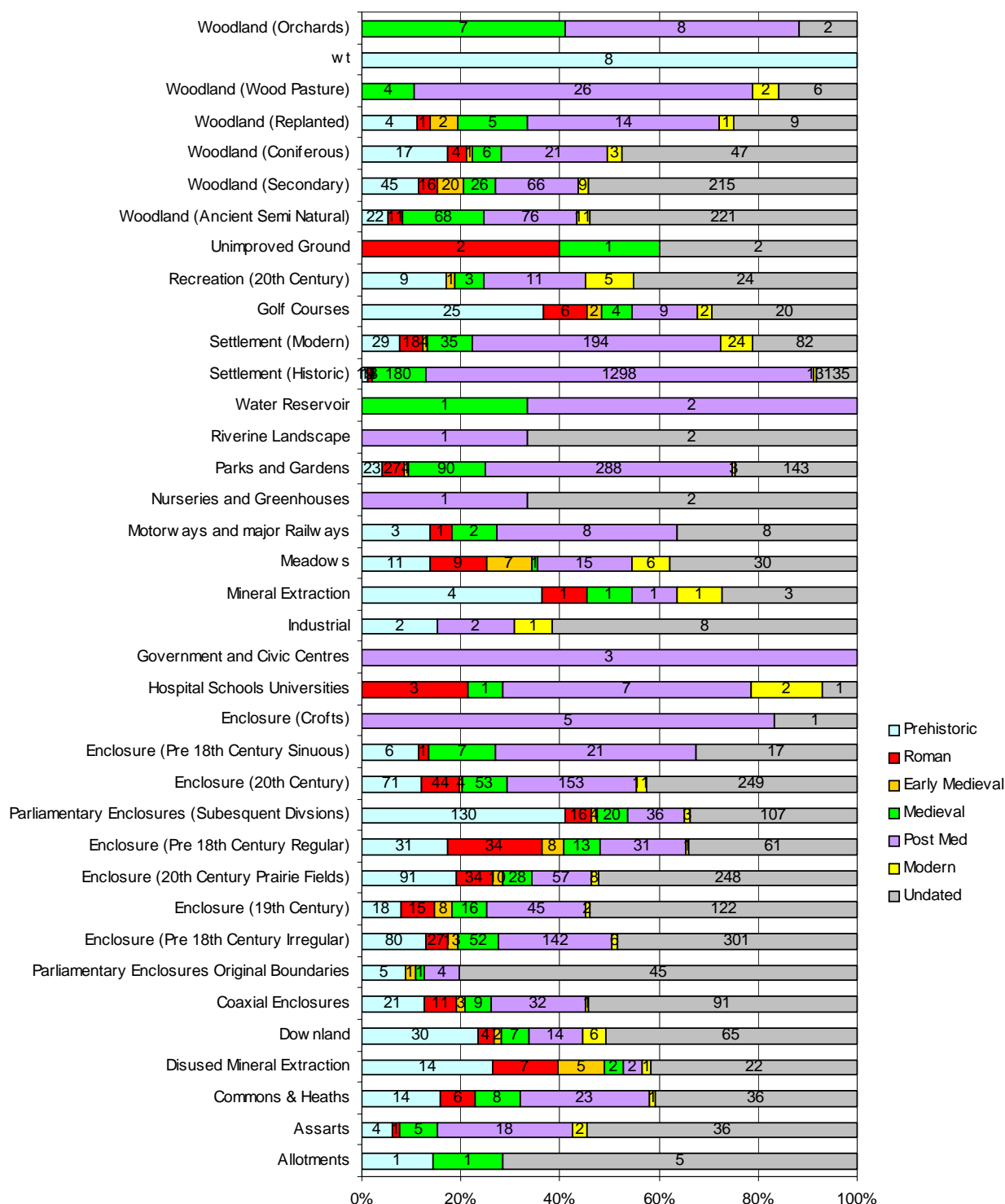


Figure 16: Graphs showing the number of Historic Environment Records by period against Historic Landscape Types in the Chilterns AONB.

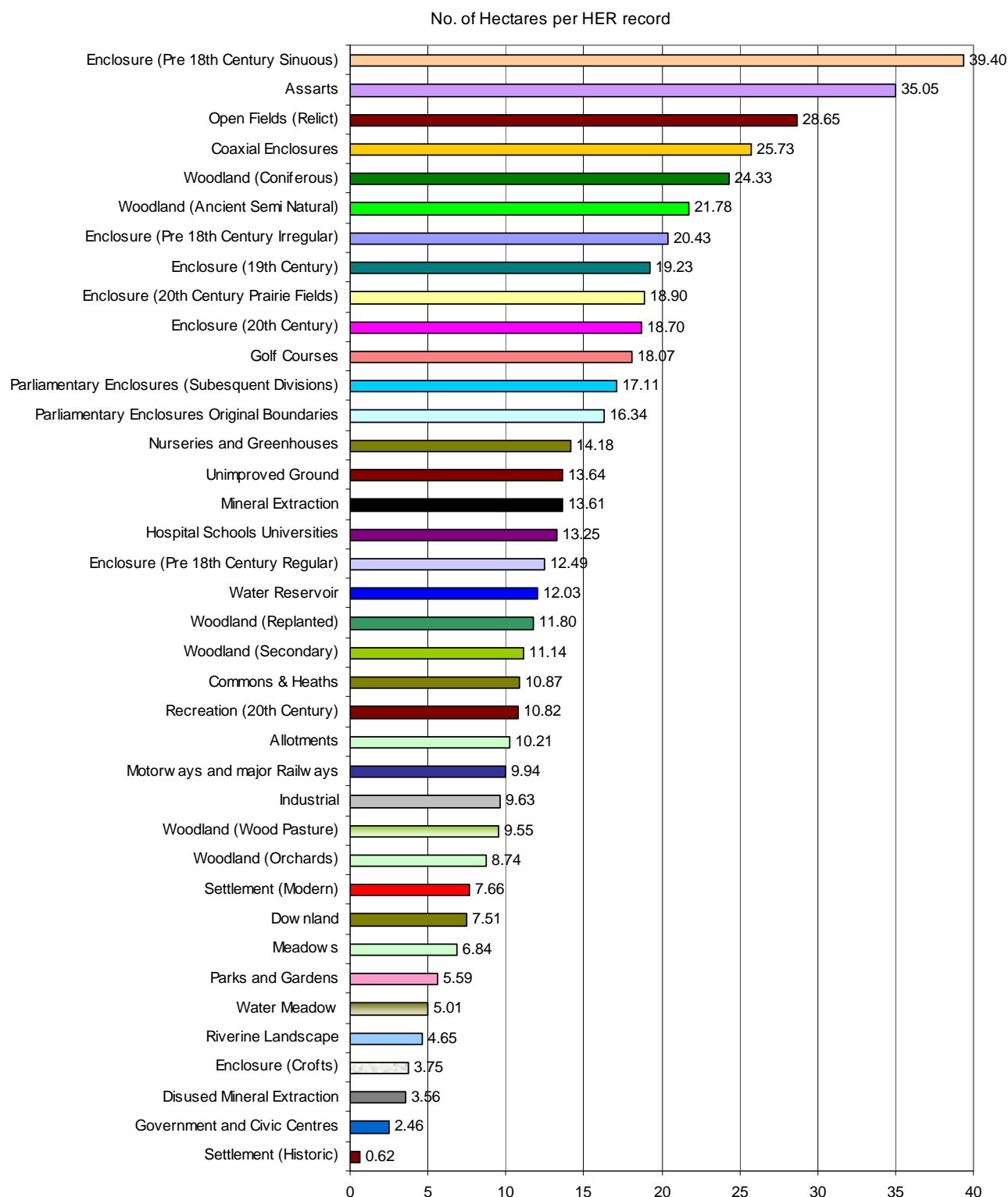


Figure 17: Graphs showing the number of Historic Environment Records by period against Historic Landscape Types in the Chilterns AONB.

5. Chiltern Landscape Types

5.1. Introduction

One of the uses of the Chilterns HLC project is for analysing landscape change. Using the HLC time depth it is possible to analyse the transformation to the Chilterns countryside over a two hundred year period, and also make inferences about earlier landscapes. This section takes a thematic view of Chilterns landscape character, selecting some of the most prominent landscape types facing change in the Chilterns and drawing some conclusions as to the changes occurring to particular types. The main areas of focus are open land: commons and heaths, enclosures, woodland, designed landscapes and settlement.

5.2. Open Land (Commons, Heaths and Downland)

5.2.1. Commons and Heaths

Commons and heaths are one of the defining landscape characteristics of the Chilterns. A total of 1217 ha² commons were recorded on the Chiltern HLC project, comprising some 2% of the AONB landscape³. The origins of Chiltern commons and heaths are not well understood but they may have assumed something like their earliest documented form between the 10th and 13th centuries with the establishment of the manorial system where poorer quality land was not cultivated by the lord or his tenants, but might be available for grazing by livestock: this was the 'waste of the manor'. Most commons are privately owned although rights of common have their origin in local custom and include, for example, the right to graze stock, to enable pigs to forage on beechmast and acorns (pannage), to remove peat for the hearth (turbary), to fish (piscary) and to collect bracken or firewood (estovers). Commons provided an important economic role in the Chilterns as places for grazing livestock and as a crucial source of fuel and were also social centres for local gatherings and festivals (Giggins, B. Green, D., & Welch, C. 2006). Historic and archaeological evidence has shown their significance as centres of industry; with brick making, pottery, tile kilns located on or around many commons (Hepple & Doggett 1996). The rights were enjoyed by specific commoners, usually by virtue of the rights being attached to the property they occupy, often adjoining a common. However, many rights of common ceased to be exercised during the twentieth century, owing (among other factors) to changing agricultural practices, increased motor traffic on roads across unfenced commons, and a decline in commoners' reliance on self-sufficient sources of fuel, timber, animal bedding *etc.* The function of commons today is now one of recreation and leisure, although old rights for use still exist on some commons. The importance for protecting and managing commons has been recognised with a series of Acts of Parliament which has recently culminated in the Commons Act, (Defra 2006).

The location of commons and the activities upon them are due in part to their physical characteristics, many are typically found upon the least fertile soils. Topography also seems to be a determining factor as the majority of commons are found beyond the scarp and are orientated in a northwest to south east alignment. 85% within the AONB, are located on the spurs of the Chilterns, typically above 150m OD. Commons and heaths occurring below this height tend to be large in size such as Goring Heath, Sonning Common (102m), Marlow Common (117m) and Binfield Heath (Oxon) (92m). Figure 18 depicts the distribution of surviving commons in the western and central Chilterns against the bedrock and superficial geology; this shows the commons of Wheeler End & Lane End, Turville Heath (Bucks), Russell's Water Common, Nettlebed, Stoke Row, (Oxon) coinciding with outcrops of Lambeth mudstone and London Clay formation, while sand and gravels correspond with the former Sonning Common, (Oxon). The remainder of commons are found upon the clay with flints.

³ Many of the smaller commons and greens have been omitted from the mapping process as they tend to form an integral part of villages, consequently they have been recorded as an attribute of the historic settlement type.

The soils on these particular areas are acidic and loamy, not free-draining favouring woodland and pasture habitats, (NSRI 2006). There are exceptions to this pattern, most notably at Cow Common, Ewelme (Oxon) where there is the only known example in the Chilterns of a common situated on the Lower Chalk.

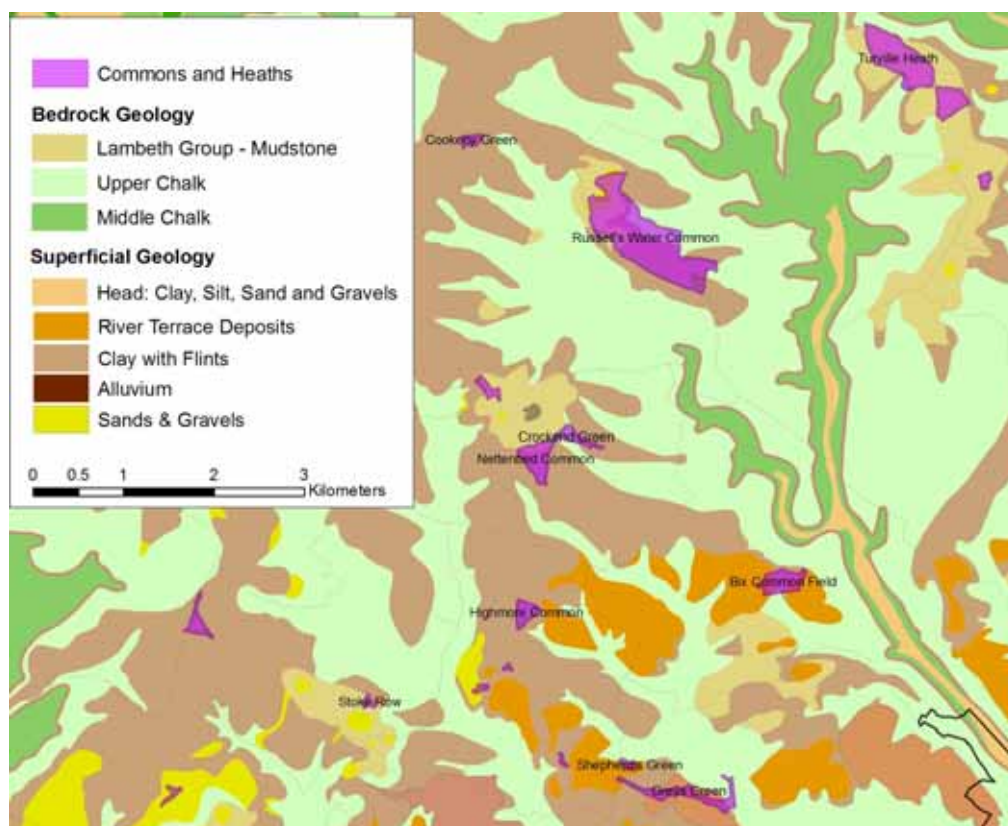


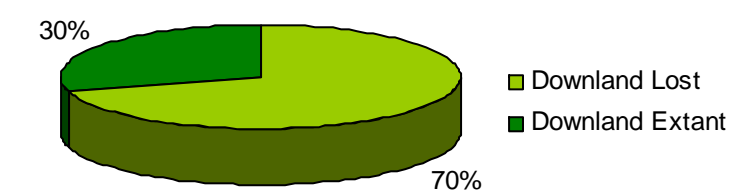
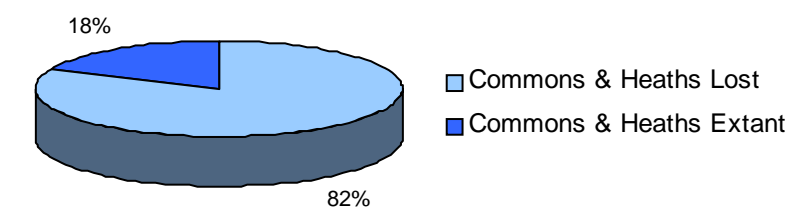
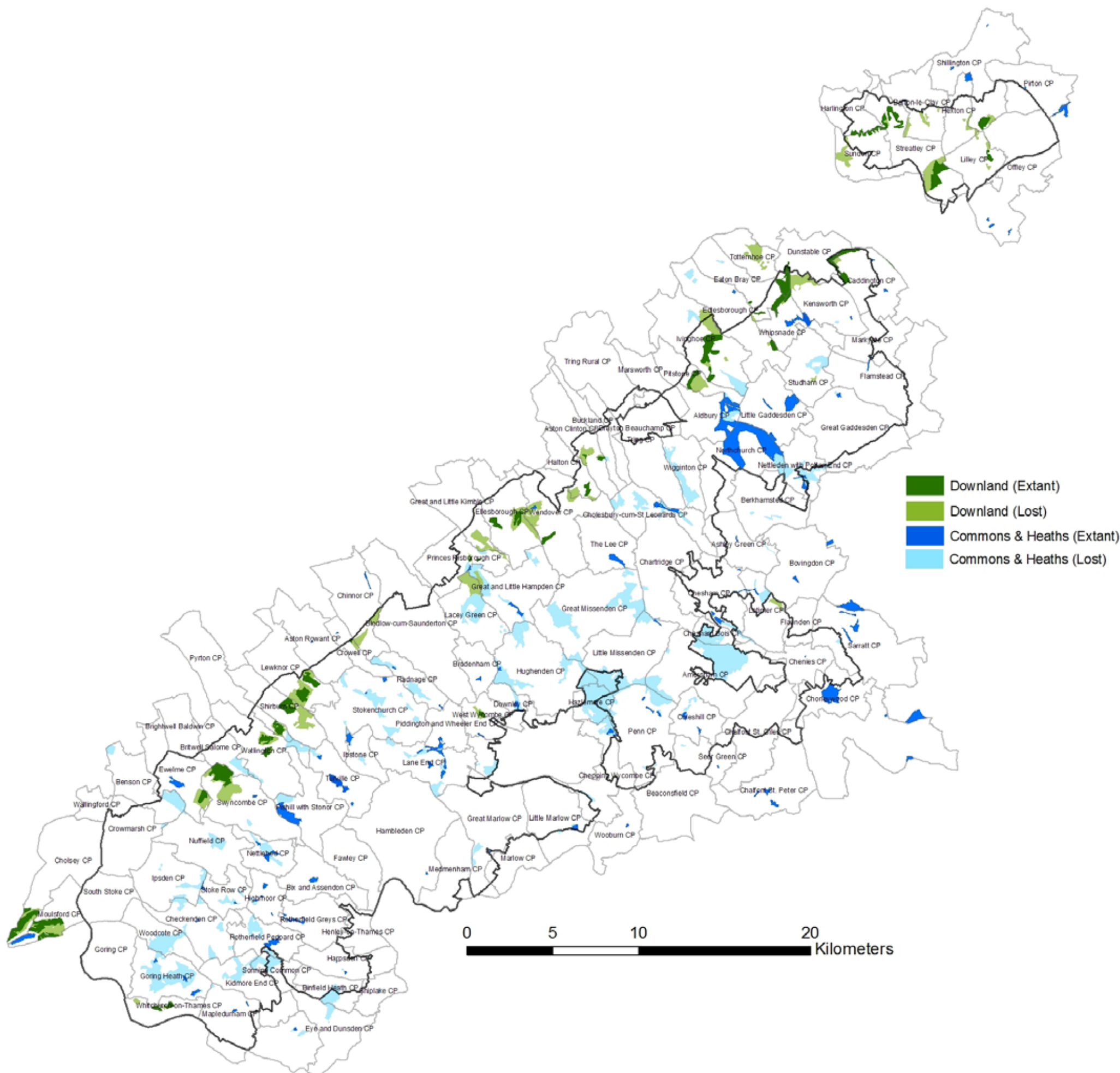
Figure 18: Commons in the central Chilterns in relation to Geology

Analysis of Change

From current mapping evidence, the extent of Chilterns commons, heaths and downland appears to be substantial, with this form of landscape intermittently punctuating the landscape. However, this is only a surviving fraction of the commons that used to exist in the Chilterns; over the last two hundred years there has been an incremental loss in common land due to changes in agricultural practice and the increased threat of urbanisation. Figure 15 shows a comparison of the present coverage of commons against the former extent, from the beginning of the 19th century against their survival at the end of 20th century. It shows a transformation in the landscape with the loss of commons, heaths in the Chilterns AONB from the beginning of the 19th century to present day amounting to 4508 hectares². The mapping shows that this can be attributed to four main causes: modern settlement, enclosure, recreation, industry and the regeneration/planting of woodland.

Commons and Downland

Figure 19: Map depicting the extent of Commons, Heaths and Downland in the early 19th century against the current extent.



The main catalyst for the disappearance of commons and heathland was the advances in agricultural technology, which made possible the cultivation of land hitherto regarded as waste. This led to the introduction in the 19th century of Parliamentary Enclosure Act known as the General Acts of 1845 which enabled common land to be enclosed for 'improvement' for agriculture and for profit; commons such as Wycombe, Holmer Heath, Penn (Bucks), Wiggington Common, (Herts) and Goring Heath (Oxon) were enclosed in this process. Enclosure on commons makes up 15.55% of the AONB landscape (see Fig.33). However, other commons such as Berkhamsted, (Herts) were spared enclosure; this was due to the landlord's unwillingness to enclose or the soils being too poor for agriculture, (Hepple and Doggett 1994).

However, by the late 9th century there was an agricultural depression and the profitability of agriculture further declined so too did the role and function of commons. Much of the common land that survived into the late 19th and 20th century gradually reverted to scrub, oak and beech woodland as livestock grazing and management ceased. This is the state of many commons including Naphill, (Bucks) and Berkhamsted, (Herts.), which is characterised by stands of secondary woodland. Changes in land practice have altered the character of many commons and heaths but the demand for housing in the 20th century brought another, more profound, episode in transforming Chiltern commons. New housing seems to have focussed upon the areas of former common enclosed by parliamentary enclosure act, where the land divisions may have presented convenient allotments for housing or the land had proved uneconomic to farm. In total modern settlement represents 27.71% of former common land. These successive changes of enclosure, woodland regeneration and urbanisation have succeeded in erasing the subtle character of an open landscape with its complementary common edge settlement pattern, (see settlement section). Many commons have witnessed this process such as Studham (Beds); Naphill, (Bucks) Sonning (Oxon), while some commons have completely disappeared under urban development such as Prestwood, Stokenchurch (Bucks), (see settlement section).

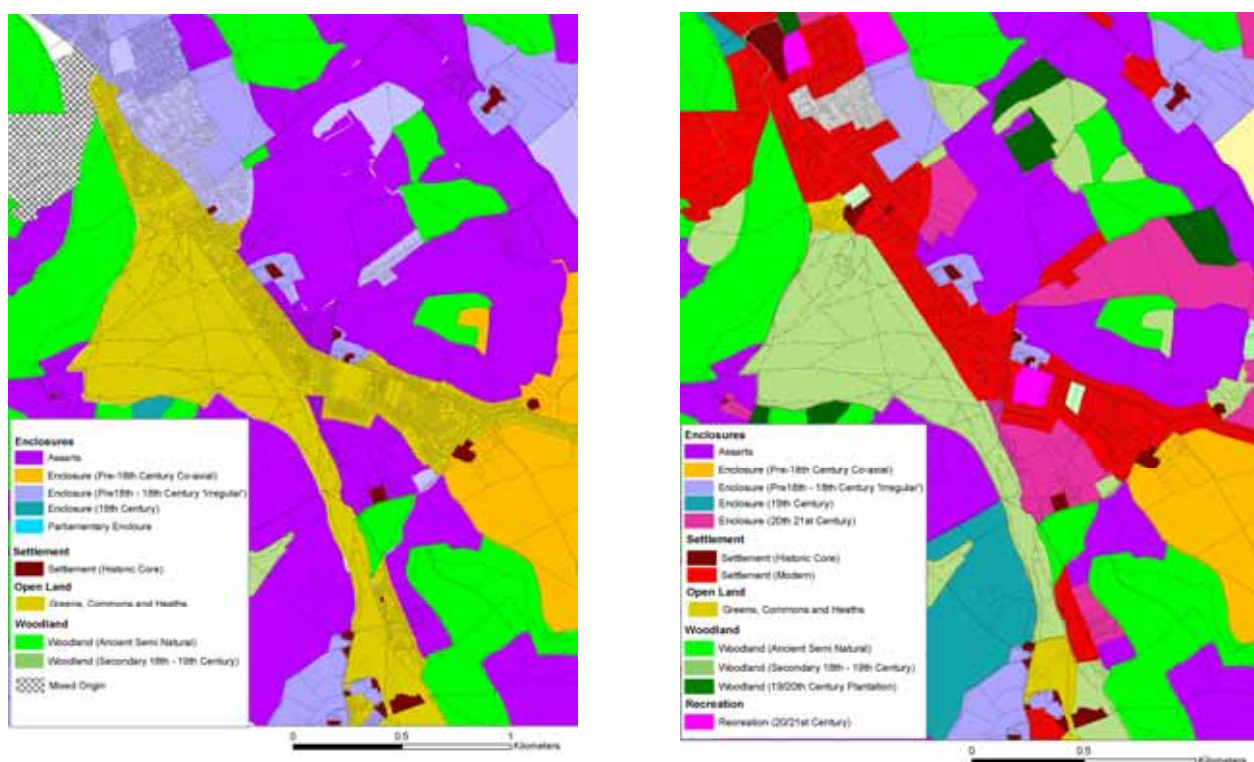


Figure 20: Naphill Common, Hughenden depicted in the HLC map, showing the changes occurring over a two hundred year period. The 2nd map (left image), shows the full extent of 'Napple' common c. 1810 as it extends and incorporates Downley common. By the 20th century dense secondary woodland (right), has colonised much of the common while a process of enclosure followed by settlement has taken over the remaining common.

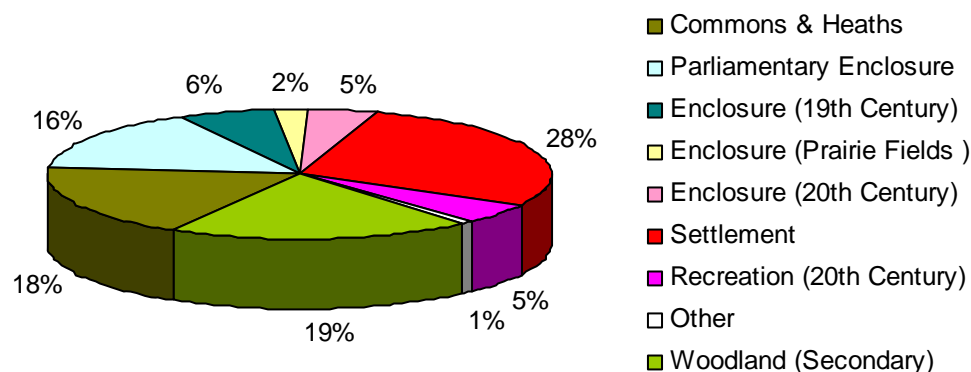


Figure 21: Graph depicting the fate of common and heathland within the Chilterns AONB lost since the 1800s.

Another effect of the recent changes to commons and heaths is that by the 20th century many appear to be separate entities where in fact they were once a part of a larger network; linked together by thin tracts of land, Peppard Green was once attached to Sonning Common, Kingwood Green and Shiplake Bottom (Oxon), (Figure 22) and Downley with Naphill Common (Bucks). These commons were usually sinuous in form, and characteristically they tapered towards key roads and tracks that join the common. This is perhaps indicative of livestock management where herds were funnelled in and out of commons to be grazed. Possibly the best surviving example of this type is the network of commons at Wheeler End in Buckinghamshire where the common is linked to Cadmore End and Lane End Commons. It is not known exactly why commons are attached together in this manner, perhaps for reasons of tenure and seasonal holding, these themes merit further investigation.



Figure 22: (left) showing the interconnection with Shiplake Bottom, Kingswood Sonning Commons with Peppard Green (right) shows the development of the present day landscape which has largely severed these connections.

Despite the large loss of common land, there are some good surviving examples of commons, in terms of their historic extent, within the Chilterns AONB. These are found at Kensworth Lynch, Whipsnade (Beds) Wheeler End, (Bucks), Berkhamsted and Hudnall, Common (Herts), Bix, Peppard Green, Cow Common, Ewelme (Oxon). A table showing the

degree of change over the last 100 years for the major commons in the Chilterns, (Figure 23) this illustrates the proportion of change and the type of development affecting it, whether it is secondary woodland colonisation or modern housing.

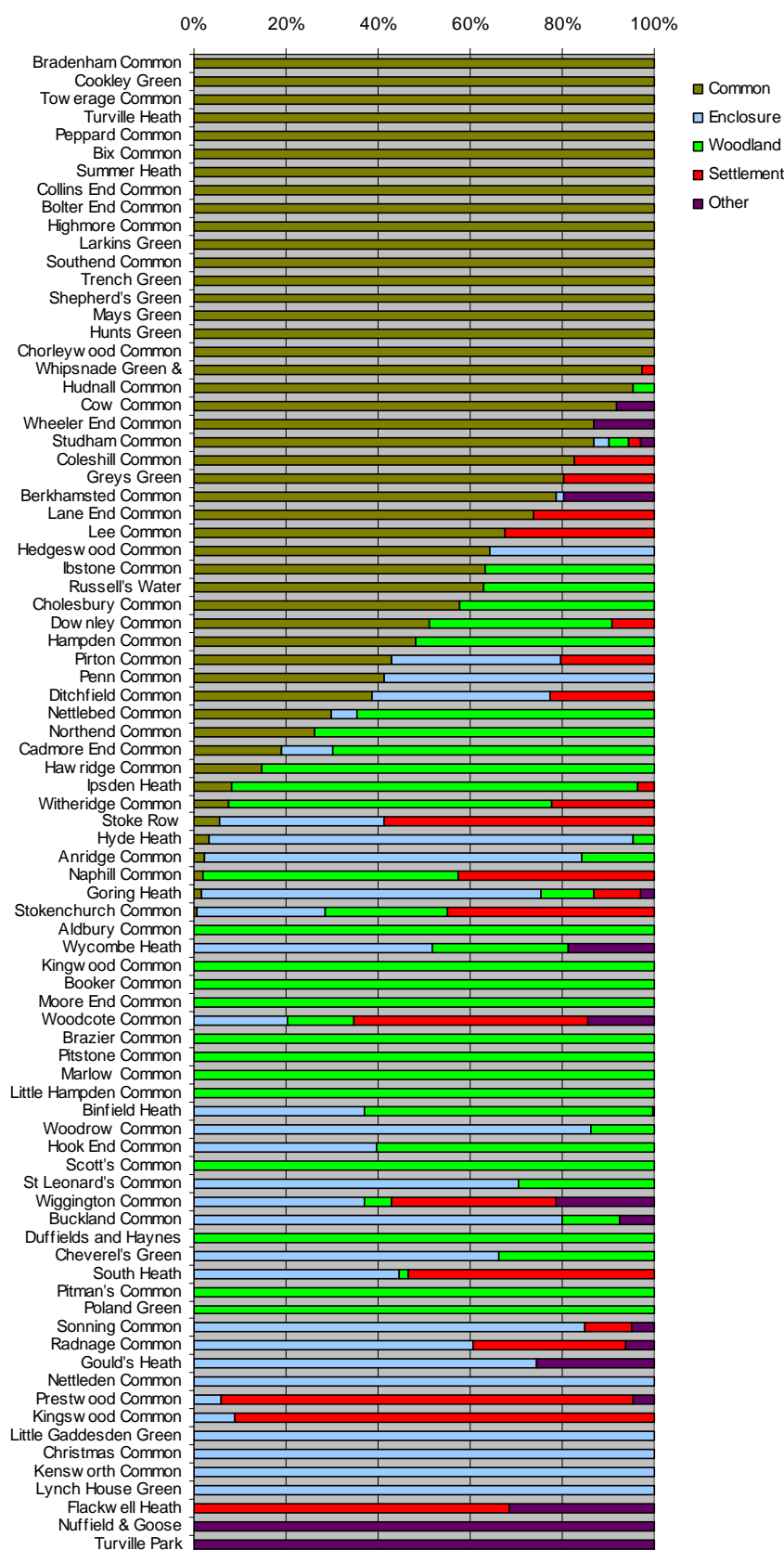


Figure 23: Graph depicting the composition of former common and heathland within the Chilterns AONB.

The results of the analysis show that there are great differences between commons. There is potential to use this information for management purposes as in the restoration of some common land. Potential sites might include Radnage Common, Bucks Kensworth Common (Beds) and Nettleden Heath (Oxon).

5.2.2. Downland

Downland is another landscape that is synonymous with the Chilterns. It is an environment characterised by grassland almost exclusively on the scarp areas. The landscape is one of dry coombes, rounded hills, steeply sloping scarps and free draining calcareous soils. As seen from the statistic of SAMs and HER data, Chiltern downland is archaeologically sensitive, containing numerous prehistoric and medieval monuments, e.g. Ivinghoe Beacon, (Bucks), Five Knolls at Totternhoe (Beds). The conditions are also acknowledged as being important for biodiversity, with the downland accommodating rare species of flora and fauna. These habitats and the appearance of downland is down to centuries of landscape management. Up until the 18th century downland was used as a form of grazing land, managed in the same way as common land – the established practice was for livestock, in particular sheep, to be fed upon the downland pasture during the day before being folded upon arable land of the clay vales at night. However, this practice became largely obsolete with changes to agricultural practice and intensive farming.

Analysis of Change

As a consequence of this end in management practice the extent of downland has declined markedly since the early 19th century; over 65%, (2261 hectares²) of downland has been lost within the AONB. The more northerly part of the Chilterns has borne the brunt of landscape change, particularly in Bedfordshire where sites for chalk extraction have been located at Totternhoe, now used as landfill sites. What survives of downland areas is the steeper areas on the scarp edge, the best sites are to be found at Knocking Hoe, Totternhoe Knolls and the Barton Hills (Beds) and at Pitstone and Ivinghoe Beacon, (Bucks). Although a more recent threat to downland is the creation of golf courses which account for nearly 5% of downland loss since the 19th century, examples of loss can be seen at on the Dunstable Downs at Kensworth, and Warden Hill, Streatley (Beds) where both areas are in close proximity to large centres of population (the towns of Dunstable and Luton). The siting of golf courses on downland is often preferred by course designers as the landscape resembles traditional links courses and the settings are usually scenic and aesthetically pleasing to participants. More downland has been left to revert to scrub and eventually woodland, Coombe Hill, Whiteleaf Cross and Bledlow and Beacon Hill, Lewknor the woods and scrubs have crept forward on the summit and invaded the scarp sides.

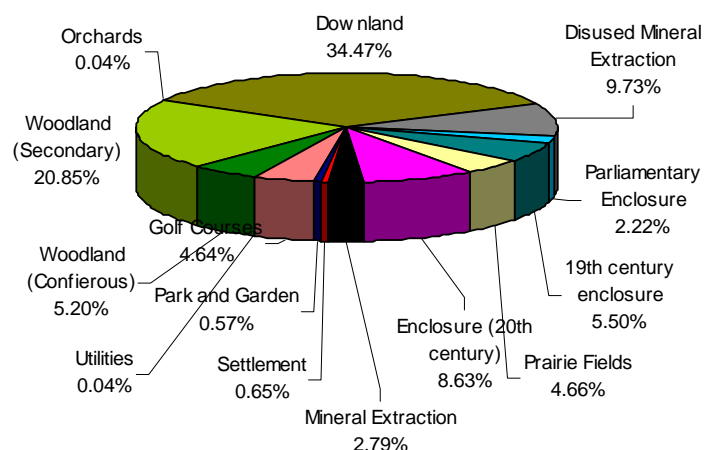


Figure 24: Map depicting the fate of Downland in the Chilterns AONB since the 19th century.

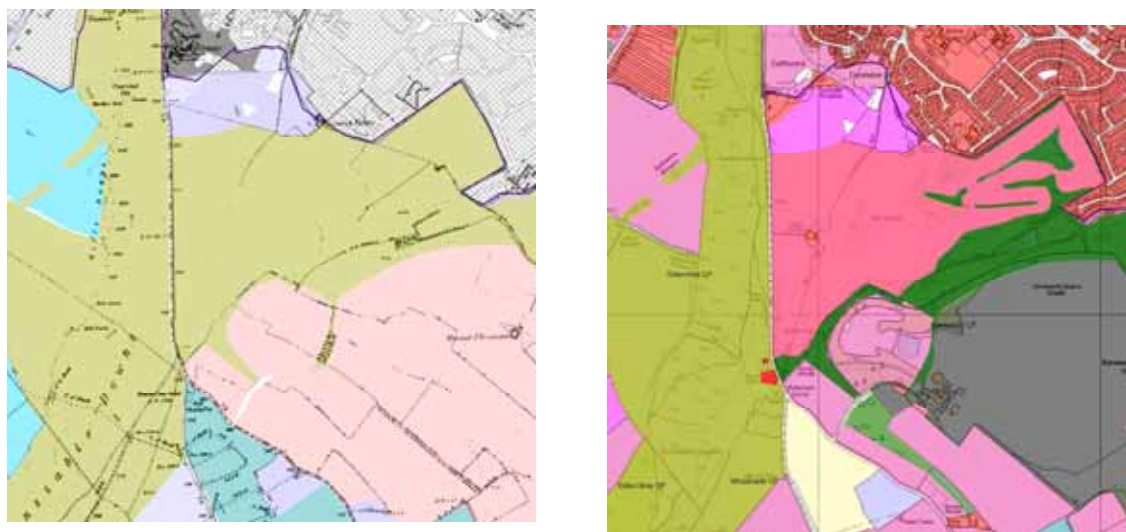


Figure 25: HLC maps depicting the loss of downland at Kensworth to a golf course. The left image shows downland (brown) adjacent to sinuous enclosure (salmon pink), compared to the landscape of the 20th century (above right), downland has been lost to golf course (deep pink) and the siting of chalk extraction (black), which is another activity responsible for downland loss.

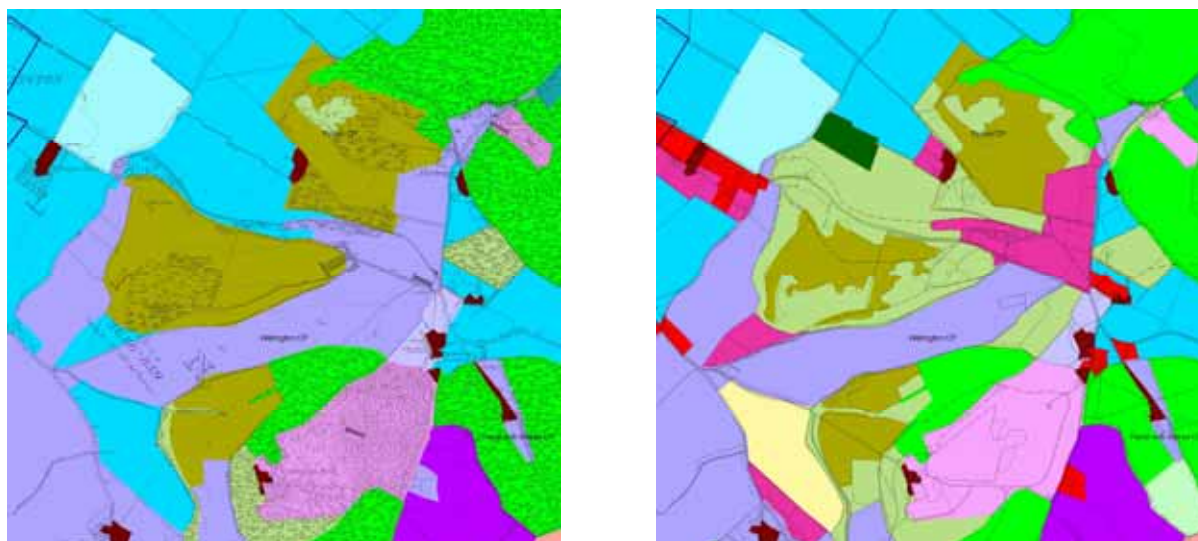


Figure 26: HLC maps depicting the loss of downland at Watlington. The left image shows the extent of downland (brown) in the late 19th century where it is found on the scarp areas surrounded by ancient enclosure (bright green), and irregular and assarted fields (purple), with parliamentary enclosure on the vale (blue). By the 20th century (right image), much of the downland has been lost to secondary woodland (fern green).

5.3. Enclosed land

Enclosed land forms the most extensive HLC type in the Chilterns AONB. Its main use is for agriculture, mostly arable farming. However the decline in agriculture in the 20th century has meant the growth of smaller enclosures for recreation and leisure, while the economic viability of farms has seen the growth of larger farms and the trend for the grubbing up of hedgerows to maximise crop yields and to accommodate the large machinery. This landscape type has a significant impact on aspects of the social and cultural life of the AONB, where both its form and maintenance are defining characteristics of the aesthetic appeal of landscape and is by turn a major influence upon matters such as tourism and planning.

Older enclosure (comprising pre 18th century enclosure) accounts for 42% of enclosed land in the Chilterns AONB, while 18th and 19th century enclosures for 21% and modern enclosures account for 37%. When compared to the wider study area the ratios for enclosure are slightly different with pre 18th century making up 37% while modern enclosure and pre 18th and 19th century enclosures are 38% and 25% respectively. These modest differences reflect the dominance of parliamentary enclosed landscapes on the clay vale, largely excluded from the AONB. Noticeably the AONB's enclosed landscapes have seen almost as much modern change as those outside the AONB, probably reflecting the general emphasis on agricultural production over environmental concerns in government policy until the closing years of the twentieth century.

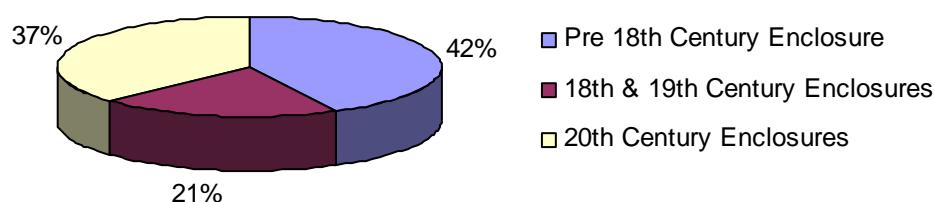
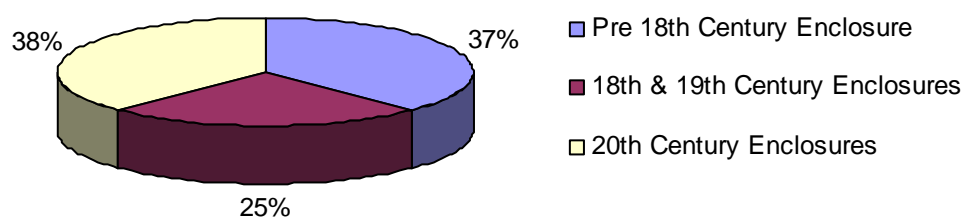
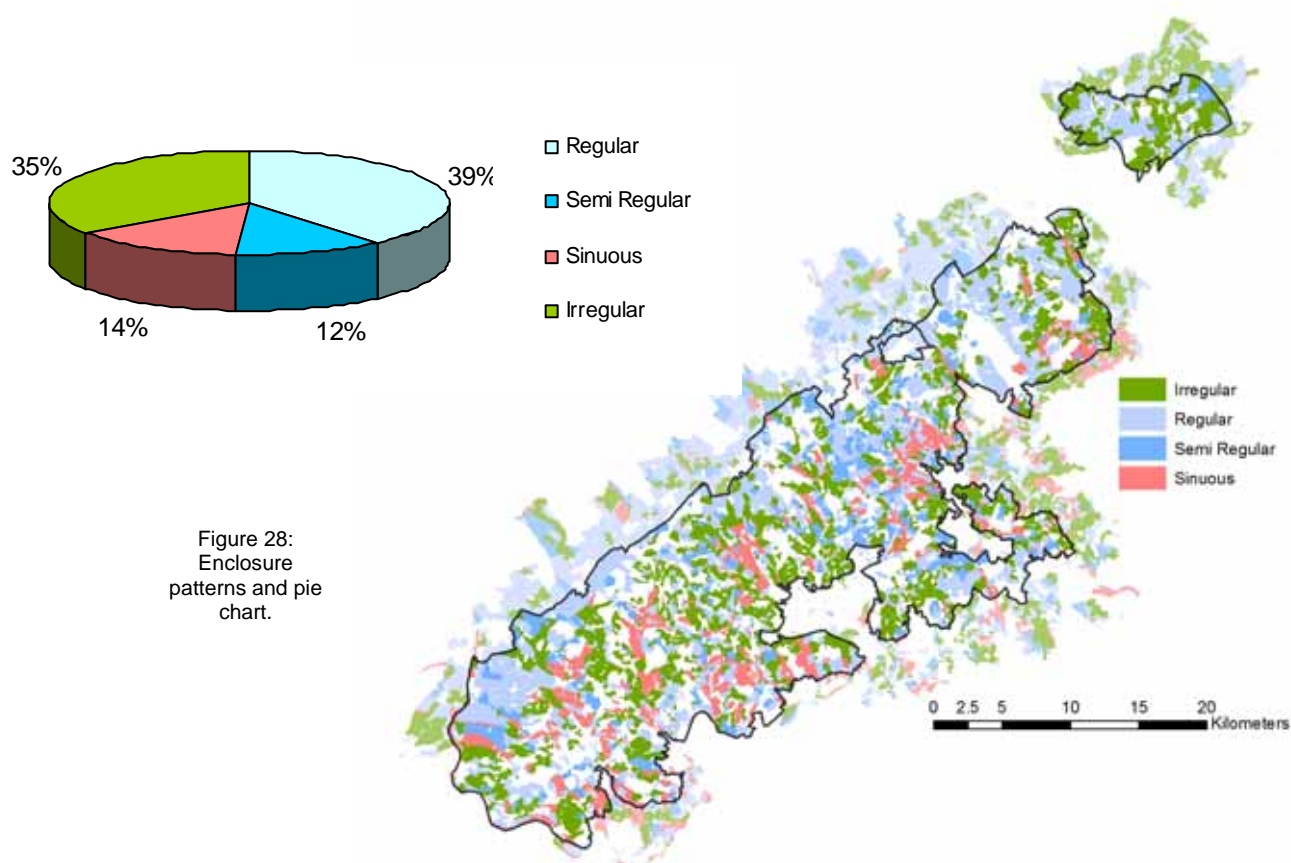


Figure 27: Pie charts showing distribution of Enclosures by period within the AONB (above) and the ratio of enclosures in the wider area (below).



5.3.1. Enclosure Patterns

Within the scope of the HLC project a record of the general shape or morphology of enclosures was made. Although this morphology is integrated in the detailed landscape descriptions, a separate record was made to discern overall character distribution. The predominant enclosure patterns within the Chiltern AONB are fields that are regular or rectangular in shape. Regular enclosures are indicative of the later planned enclosures by Act of parliament in the 18th and 19th centuries, although the majority are 20th century enclosures, (see 5.3.8 and Appendix 1 for further discussion). Regular enclosures form 39% of all enclosure types and are made up of Parliamentary enclosures and 20th century enclosures, which constitute 80 % of this form while pre 18th century regular make up 20%. Outside the AONB, regular enclosures make up 60% of field types of which 75% are made up of parliamentary enclosures. These patterns, coupled with their small size, point to enclosure by individual farmers for their own use or by agreement of small groups over a considerable time. By contrast, irregular fields making up 35% of enclosures in the AONB, of which the majority (90%) are older enclosures from the pre 18th century, while a further 8% of irregular enclosures are made up of 20th century prairie fields, (prairie fields are included in this category as the amalgamation of fields results in irregularity). The distribution of irregular shaped enclosures, are found generally south of the Chilterns scarp. While sinuous enclosures represent 15% of the landscape. Also of interest is the form of boundaries in there is close correlation with enclosures with wavy boundaries and the older irregular, sinuous enclosures. The predominant form is straight field boundaries which have, to some degree, adjusted the character of some fields. Where curving boundaries usually coincide they are found with two categories, the first is clayland landscapes of planned parliamentary enclosure where subsequent enclosure of the open fields has fossilised the extent of former enclosures, where field landscape has fossilised the shape of furlongs and strips (examples) these normally manifest themselves as fossilised strips but can be a part a much wider field system of planned enclosures. The second type is found within the more wooded landscape of the Chilterns, enclosures are formed from the loss of woodland, where the only discernable pattern is the remains of a curving boundary in the landscape (example needed).



Examination of the origins of these broad landscape groups adds historic depth, (Figures 7). For example, 40% of today's enclosed land has remained largely unchanged for the last two hundred years and has features indicative of a pre-18th century origin (**Ancient Enclosure**). Here, the historic patterns of field boundaries (hedges or walls), roads and paths are still visible and continue in use. Just over one third (37%) the enclosed land was created in the 18th/19th centuries, a product of the "Agricultural Revolution" and enclosure movement (**Post-Medieval Enclosure**). Almost a quarter (23%) has been radically changed within the last one hundred years either by the addition and reorganisation of boundaries or by their removal for modern mechanised arable production, (**Modern Enclosure**).

5.3.2. Enclosure Size

In addition to assessing the dates and patterns of enclosures the Chiltern HLC project also quantified the trends in enclosure size. This was done in two ways; firstly, a broad character assessment of enclosure size by roughly estimating size within GIS, the categories are defined as 'small', equating to enclosures up to 5 hectares in extent; medium 5 to 25 hectares and large above 25 hectares. Figure 24 illustrates this shows this broad snap shot of field sizes and the broad range that enclosure types have been classified under.

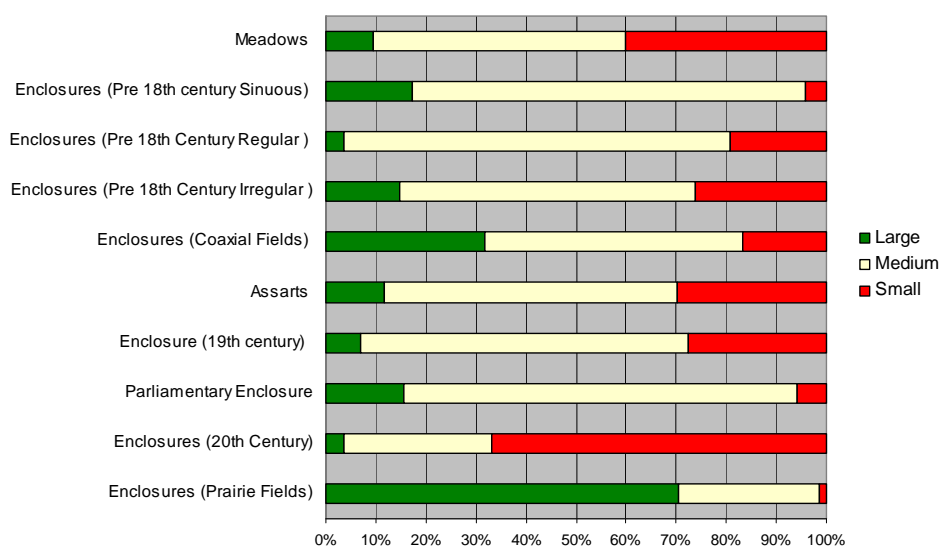
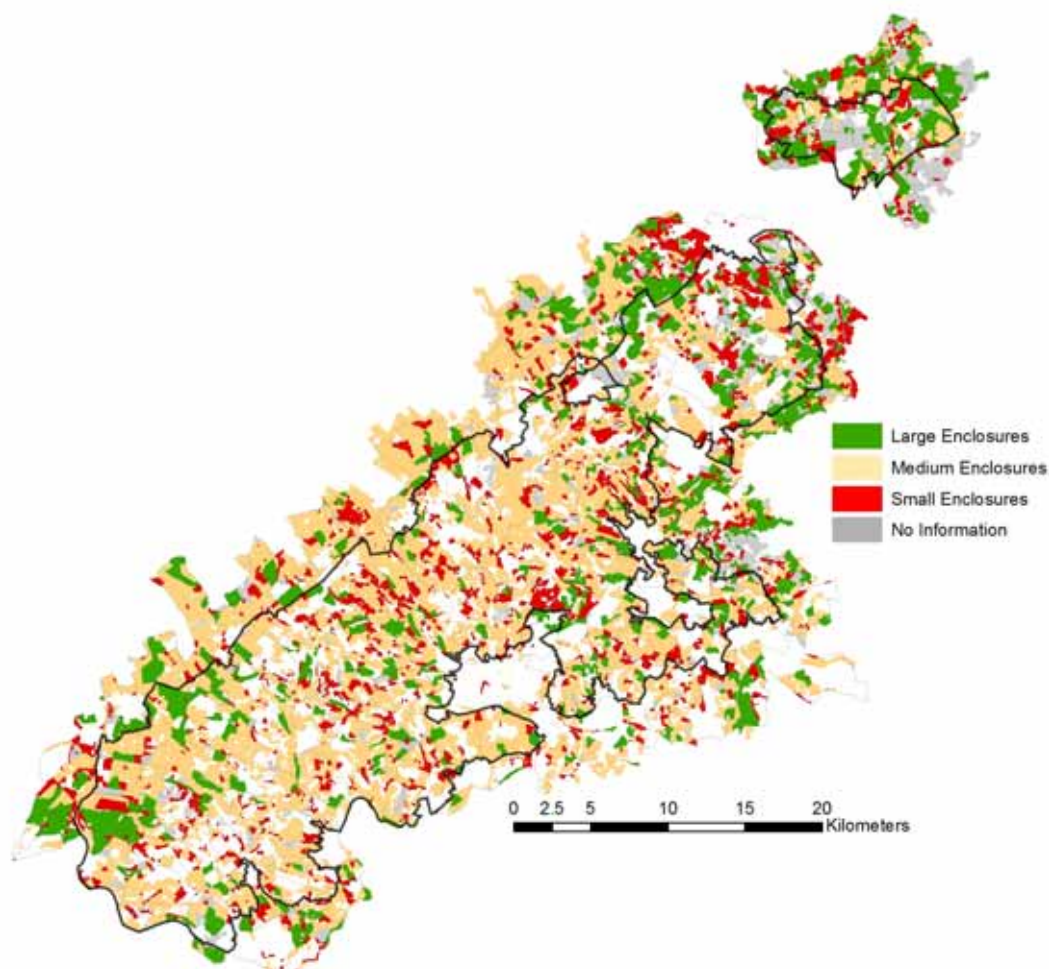


Figure 29:
Distribution
of Enclosure
size in the
Chiltern
AONB

Of all the enclosure patterns pre 18th Century Enclosure and 20th Century Enclosure has the largest proportion of small fields, although perhaps there is not the difference that might have been anticipated. Both Post Medieval and Modern Enclosure types are dominated by medium sized enclosures. Large enclosures are relatively rare in the Chilterns AONB occurring mainly in the north of the scarp and to the east. They are mainly associated with modern 'prairie' fields.

A second method calculated the mean average size of enclosures in hectares based on the number of fields divided by the total area, (figure 25). This gives a precise figure for field types rather the variation of banding as seen in figure 24 although, in many ways, the calculations for averages supports the results of the broad estimate of size overall findings in figure 24. Some of the smallest enclosures are those found in close proximity to settlements, including crofts, fossilised strips and pony paddocks. In contrast, at the larger end of the scale are parliamentary enclosures and prairie fields.

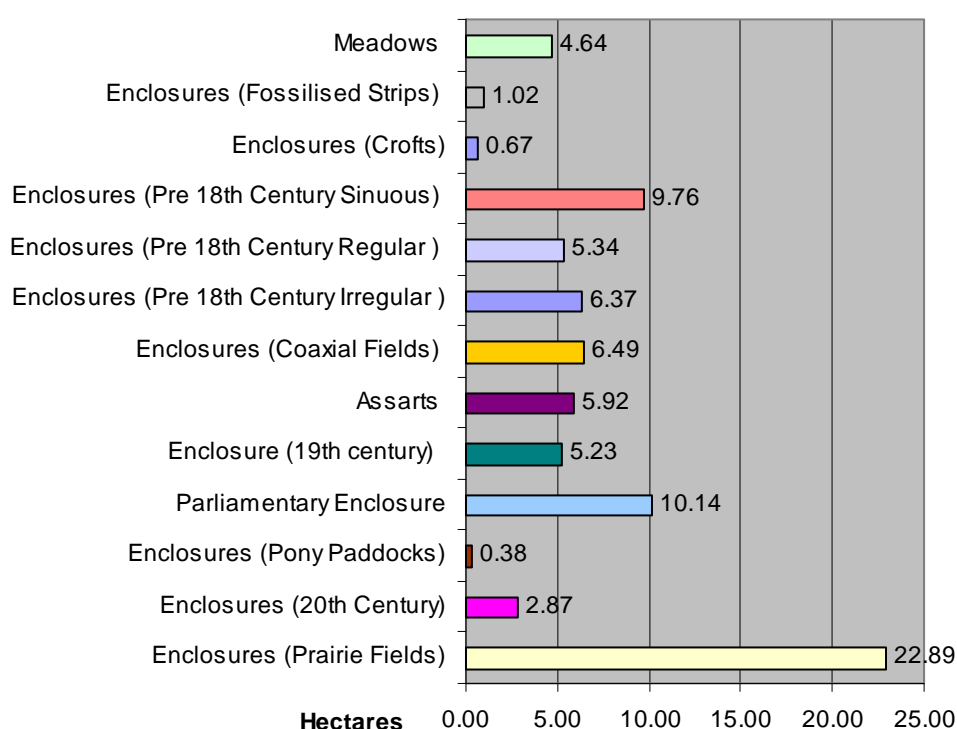


Figure 30: Mean Average Enclosure size by Historic Landscape Type in the Chiltern AONB

5.3.3. Enclosure Origins

A further analysis of HLC was to identify the origins of enclosures in the Chilterns, providing a snapshot of the historic evolution of its landscape. An immediate impression from the mapping results shows a familiar distinction between the north and of the scarp and the rest of the Chilterns. The category 'Enclosed from Open fields' forms a recognisable pattern, which coincides with the distribution of parliamentary and 19th century enclosure upon the clay vales with very little 'Ancient Enclosure' to be found. By contrast, the composition of fields upon the chalk of the Chilterns is almost exclusively 'Ancient Enclosure' at (46%) with little or no known enclosure of open fields. However, it is noticeable that the greatest concentrations of anciently derived land are found in Buckinghamshire and Oxfordshire. The second largest category is enclosed from other enclosures, (40%) where new enclosures in the 19th and 20th century have replaced or radically transformed the character of earlier field systems. They are to be found throughout the Chilterns with a greater degree of presence in Hertfordshire and Bedfordshire. Much of the enclosures have been created out of existing fields (20th century) or derived from open fields in the case. About 1% of enclosures have been created from former common land, while a further 3% has been created from former woodland. It is noticeable that the greatest variety of enclosure origins is to be found in the Oxfordshire section of the Chilterns.

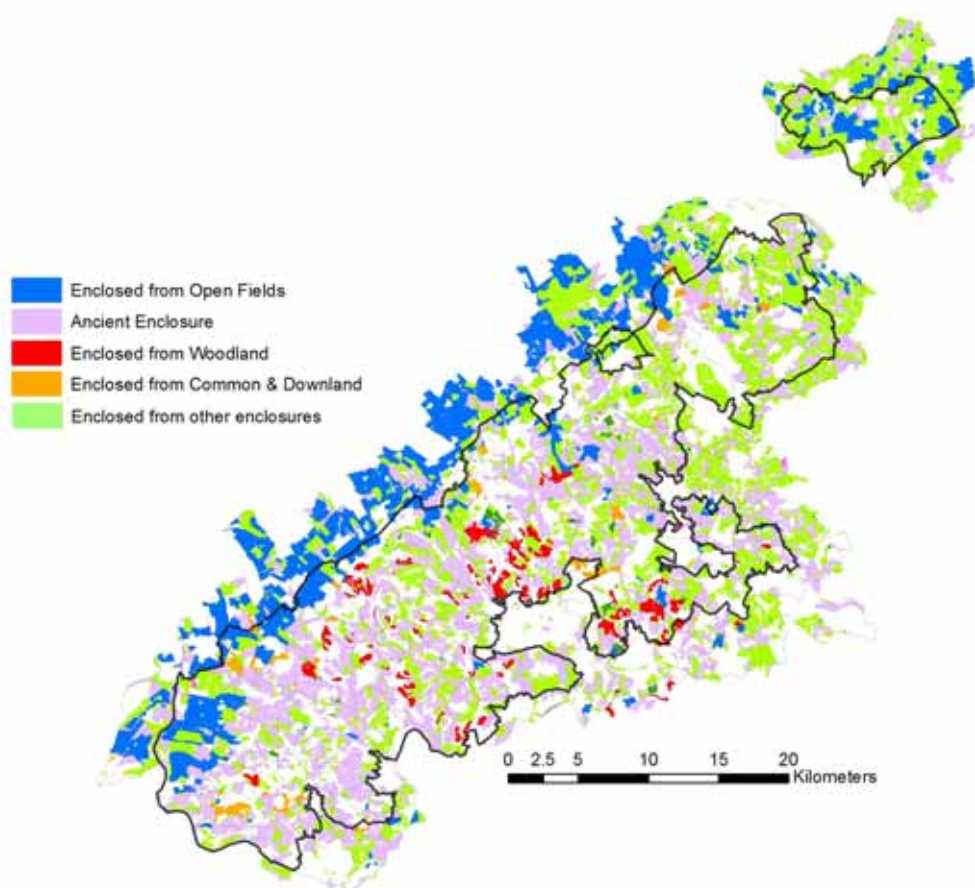


Figure 31: Distribution of Enclosure origins in the Chiltern AONB and wider study areas

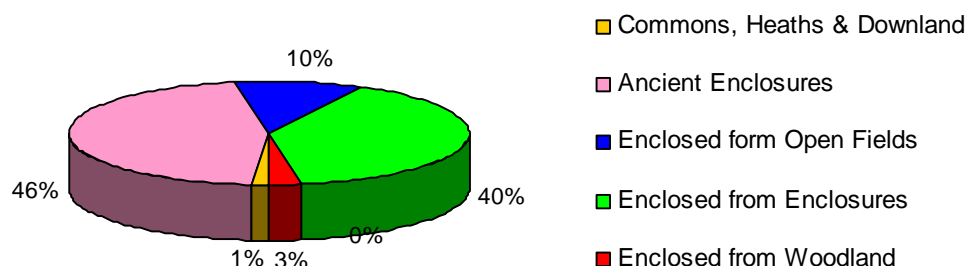


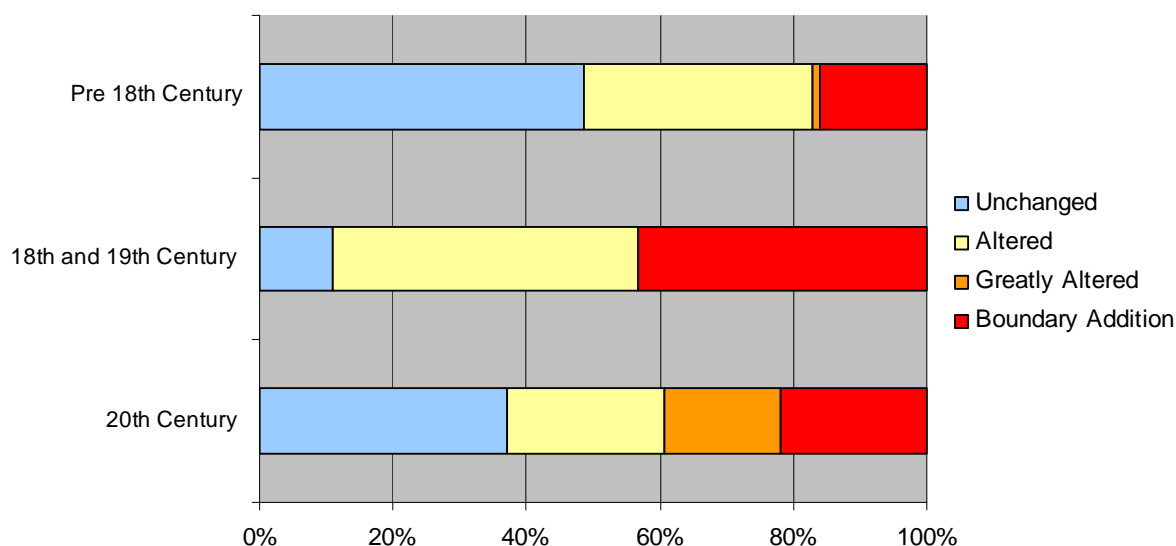
Figure 32: Pie Chart of Enclosure origins in the Chilterns AONB

5.3.4. Analysis of Change: Enclosure: Degree of Change in Chilterns

Although the HLC has defined enclosures according to their character based on relative date, there is an additional category within the Chilterns HLC that assesses the degree of preservation or boundary loss for enclosure types. Pre 18th century and 18th and 19th century enclosure types have changed little in the last 150 years, especially when compared with 20th century enclosure type. Most modern enclosure is an alteration of a previously enclosed landscape (greatly changed), with just 5,600 hectares newly enclosed since the 1st edition 6" map. The HLC mapping (see Figure 33 below) suggests that nearly 50% of the enclosed landscape has remained largely unchanged for the last 150 years, if not for considerably longer. However, the HLC process did not evaluate the continuing presence of smaller landscape features such as barns and trees or the nature of boundary type. Nor did it assess the intrusive features of modern life such as polygons, new roads, street lighting or elements leading to the suburbanisation of the countryside. These have a significant impact upon the appearance and condition of the landscape and all play an important part in shaping the landscape visible from the ground. Many places will have a different feel today to that of a couple of centuries ago, although the basic pattern of enclosure has remained the same.

The changes to the field boundaries in the Chilterns AONB show that the majority survive to a great degree, although surprisingly the 18th 19th century landscapes have had greater alteration perhaps due in part to the location of the enclosures on former common land and woodland and proximity to settlement.

Figure 33: Graph showing the degree of change to enclosures boundary loss/gain in the Chiltern AONB according broad period.



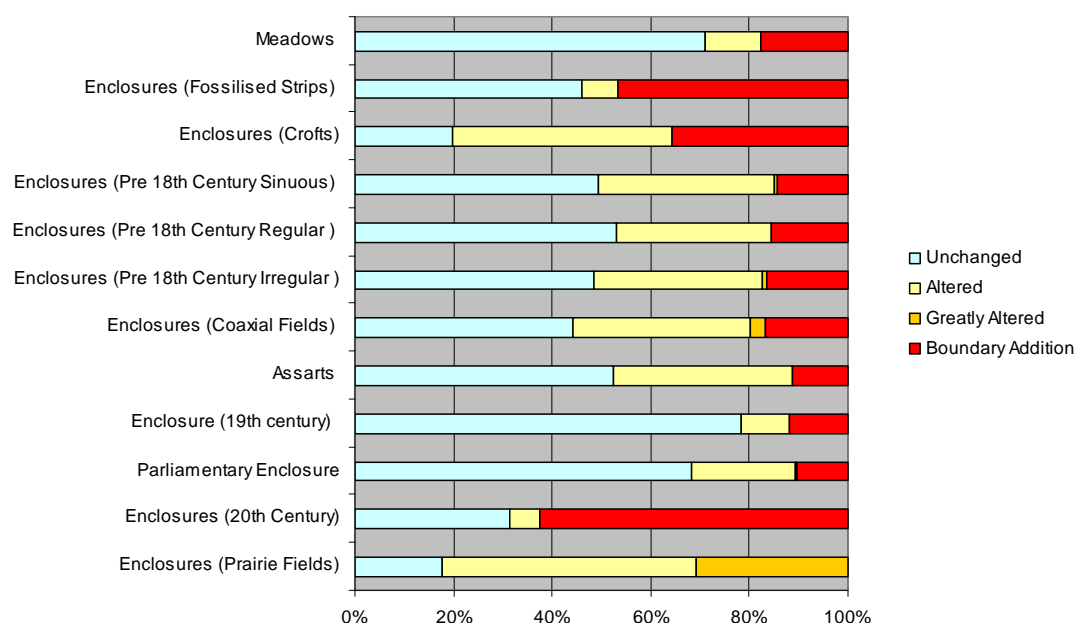


Figure 34: Graph showing the degree of change to existing enclosures in the Chiltern AONB by detailed type.

Figure 34 shows the breakdown of boundary loss for extant enclosures by historic landscape type. The measurement for loss is measured from changes from the 1st edition OS map to current Ordnance Survey mapping. The degree of change is measured by the quantity of boundaries lost and the relationship to the enclosure size. The measurements are a useful gauge for the degree of landscape preservation and can help identify types in need of preservation. Overall, the pattern of change shows that there is a good degree of survival for most enclosure types, the best preserved examples are 19th century enclosure (78% unchanged), meadows (70% unchanged) and parliamentary enclosure, (68% unchanged), while assarts, Pre 18th century regular and sinuous fields all have over 50% of the type unaffected by boundary loss. With the exception of prairie fields, which by their very nature have a high degree of boundary loss in their creation, the most changes occurring to an enclosure type in the AONB are crofts with 43% altered while 37% have had boundary additions. These alterations are perhaps a reflection of their close proximity to settlements, where there is a greater chance of change – either by rationalisation or addition of boundaries. Also of some concern are coaxial fields, an important landscape type in the Chilterns (see below) where only 43% of extant enclosures remain unaffected by boundary loss.

5.3.5 Coaxial Enclosures

One of the most significant enclosure types in the Chilterns are 'coaxial' fields, these are so named because they have two clear axes of orientation. The age and origins of these enclosures are somewhat uncertain and they have been the subject of much debate by archaeologist and landscape historians, although the accepted view from other parallels is that they range in date between the later Bronze Age (1000 BC) and the later Anglo-Saxon period (AD 900) (Williamson 2001). One hypothesis is that coaxial fields originated from a network of earlier routeways for the droving of cattle, these acting as framework for eventual enclosure of the landscape. Although there is a lack of dating evidence for these fields, there is some indication in the Chilterns that these enclosures are of some antiquity, the coaxial field boundaries at Aston Clinton appears to be cut by the Roman road of Akeman Street giving a relative date to at least the Iron Age (Bull 1993). The age is also borne out by the environmental evidence, of species diverse hedgerows with some species taken many years to colonise, (Casselden 1986). Coaxial fields are found in more remote places in the Chilterns, (see Appendix 1 for a full discussion), but perhaps the best example of surviving coaxial fields in the Chilterns is to be found in Chartridge and Cholesbury, (Buckinghamshire), (Figure 35). An alternative theory to the prehistoric origins of coaxial enclosures is that they are the result of woodland assarts in the medieval period. Part of the area of Chartridge and Cholesbury is cited within a monastic cartulary as an area of clearance in the 12th and 13th centuries by the monks of Missenden Abbey, the *totum essartum de pedenora* identifies the area around Little Pednor Farm as being part of an assarted landscape (Jenkins 1955). Further research needs to be undertaken to establish a better chronology for this landscape type through a combination of documentary research and archaeological investigation.



Figure 35: Aerial photograph of coaxial enclosures at Cholesbury and Chartridge, Buckinghamshire (© Stereoscope Ltd).

Analysis of Change

Coaxial fields are potentially some of the most important historic landscapes in the Chilterns and are worthy of preservation as a conservation priority. Although, some co-axial landscapes are under threat from change, since the 19th century 35% of coaxial fields have been lost, while current statistics for field boundaries indicates that 60% have been altered to some degree; figures 49 and 50 illustrate the loss of boundaries at Great Gaddesden, Hertfordshire have already suffered from the rigours of modern agricultural practice, where much of the hedgerows have been removed since the 19th century.

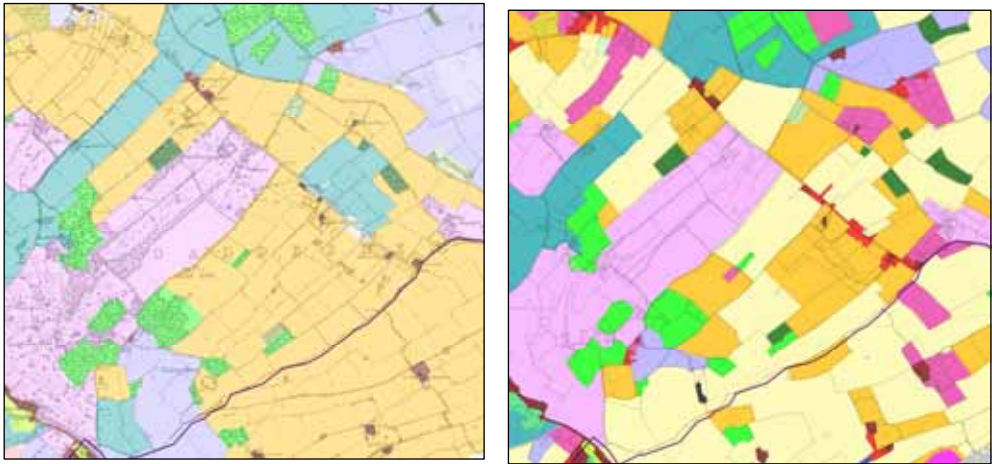


Figure 36: The loss of coaxial enclosures at Gaddesden, Hertfordshire image on the right shows the current extent of coaxial enclosures surrounded by 20th century prairie fields; the image on the left the extent of coaxial enclosures in the 19th century.

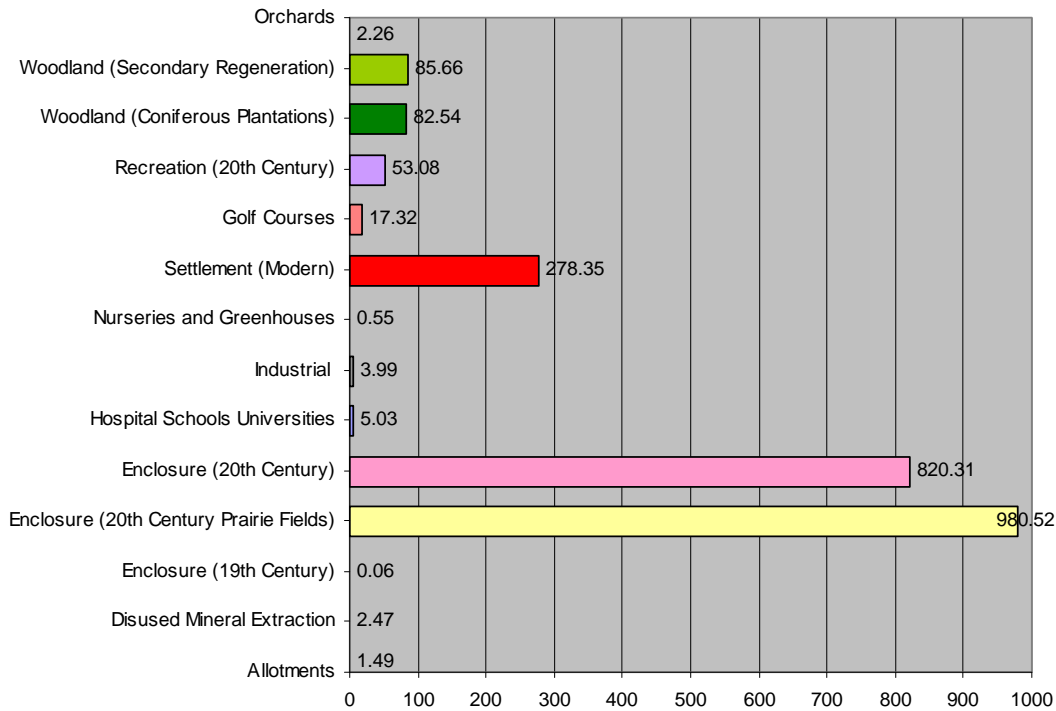


Figure 37: Table showing the historic landscape types that have replaced coaxial enclosures.

5.3.6. Assarts

One characteristic of Chiltern enclosures is the proliferation of small irregular shaped fields, many of which lack mapping evidence to securely date them and have been classified by the HLC project as irregular enclosures whose origins date to before the 18th century. A fair proportion of these enclosures originated as assarts, enclosures created by clearance of woodland. Assarts have no fixed date but are believed to have been created mostly in the medieval period, particularly in the 12th and 13th centuries when there was the so called 'land hunger' in England, where the growth in population led to a greater demand for arable land. A consequence of this growth was that more marginal land was brought into agricultural production, including woodland areas. Although undertaken by most communities particular practitioners of assarting in the Chilterns were monastic establishments such as Missenden Abbey, established in 1133. Missenden was undertaking clearance in 1190 -1200 (Hepple and Doggett 1997). Although perceived as a medieval practice there is evidence that assarting continued into the post medieval period, (Roden 1965). Without the benefit of documentary research it is hard to securely date enclosures from existing map evidence, although within the scope of the Chilterns HLC project it has been possible to identify assarts using evidence of field size and the presence of place or field name evidence; names such as sart, stocking, lea – all of which are indicators of woodland clearance.

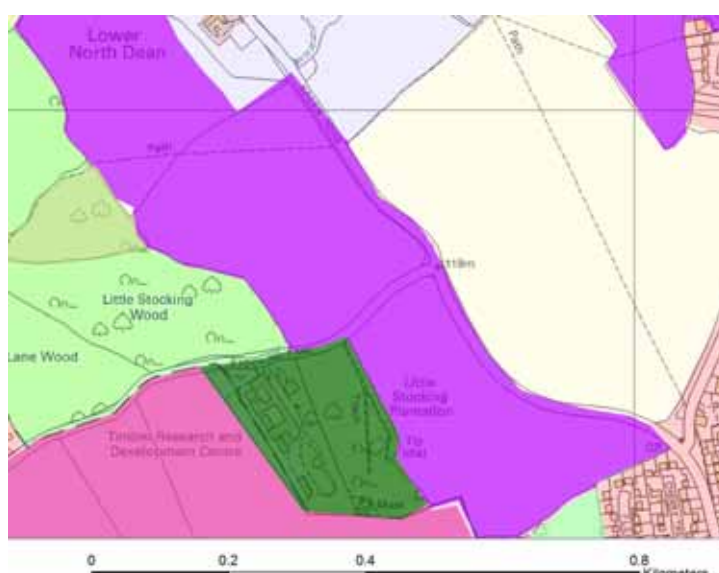


Figure 38: Assarts (purple) at Lower North Dean, (Bucks) with the presence of 'stocking' place name.

The HLC results show a bias of surviving assarts in Buckinghamshire and Oxfordshire Chilterns, particularly in the Naphill, Prestwood, West Wycombe and a slim possibility of assarts coinciding with coaxial enclosures (see 5.3.5 above); by contrast there is a dearth of assarts in Bedfordshire and Hertfordshire. The explanation for this absence in the north eastern Chilterns can be attributed to two factors, firstly the landscape in Bucks and Oxon is more wooded and fields systems appear more readily in this better preserved landscape than the largely treeless and open landscape of Hertfordshire and Bedfordshire. Secondly, the use of placenames has been more extensively employed for the Bucks and Oxon mapping whereas there is a lack of data for Herts and Beds. Aside from these factors, documentary research on the Bedfordshire and Hertfordshire Chilterns indicates that extensive assarting had already taken place in the 12th and 13th centuries, particularly in Whipsnade, Little and Great Gaddesden, Flamstead and Kensworth where the Pories of St Giles and Holy Trinity de Bosco were active.⁴ However, the character of assarted enclosures in this area has been all but erased due to the influence of 20th century agriculture.

⁴ Roden, D. 1965

Analysis of Change

The HLC project has shown that the areas of assarts are relatively unchanged, although there has been a 25% loss of known assarts since the early 19th century. The area responsible for the most loss of type is the proliferation of 20th century enclosures, which have converted or subdivided assarts into smaller paddocks. The other area of notable change is that a number of assarted fields have reverted back to woodland (both secondary regeneration and coniferous), which represents 33% of loss. Surprisingly prairie fields only represent 13% of loss of assarts which is perhaps a reflection of the wooded location in which this landscape type is found, and its unsuitability for modern mechanised farming.

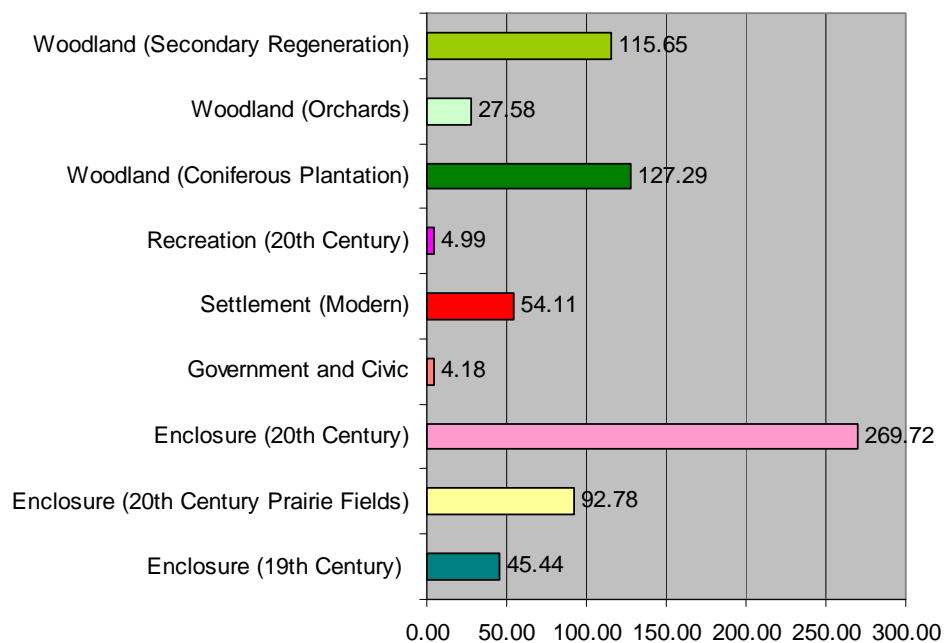


Figure 39: Graph depicting the loss of assarts since the early 19th century to other historic landscape types.

5.3.7. Parliamentary Enclosures

For many centuries the Chilterns landscape had undergone a process of piecemeal enclosure, whether by intakes of woodland by assarting, or later agreement by local landowners to subdivide a portion of lands. However, by the 18th century the drive for greater productivity in Britain heralded the introduction of parliamentary enclosure acts that transformed the way landscape was managed and looked. This process involved the majority landowners of agreeing to enclose their open fields and then apply for an Act to authorise enclosure; in turn the government appointed commissioners to oversee enclosure, adjudicating and apportioning claims. The economic and social consequences of Enclosure Acts are much debated but the impact upon the countryside was profound, with the redrawing landscape with planned rectangular fields and the establishment of new farms away from village centres. As far as the influence of Enclosure Acts upon the Chilterns are concerned, there was little impression upon the hills where most of the landscape was already enclosed, but biggest effect was felt on the strip parishes on the clay vales north of the ridge, where a large proportion of the landscape was open fields; enclosure acts arrived later to this part of the Chilterns (early 19th century) but notable examples of this are found at Ivinghoe, (1825) Princes Risborough and Aston Clinton. This process was heavily biased to the north of the region where on the clays where enclosure transformed the former open fields. By contrast the enclosures to the south are more modest in extent.

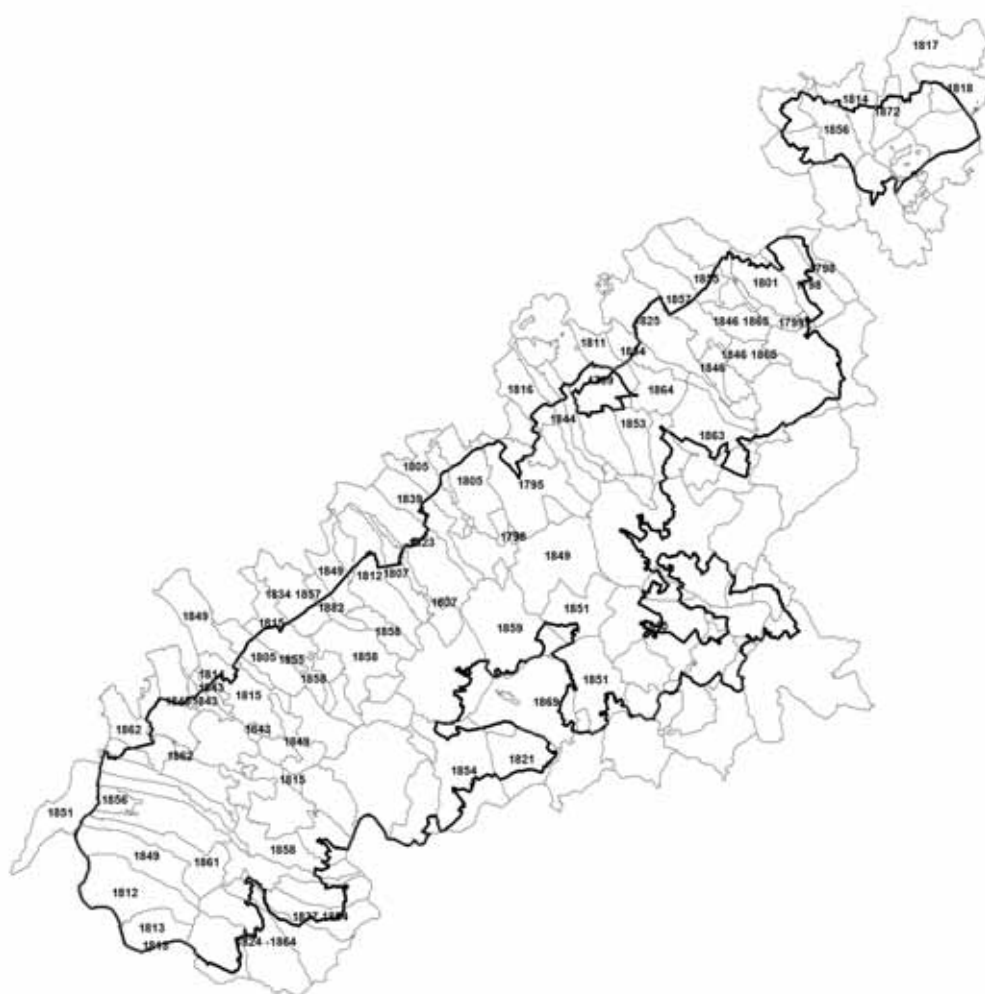


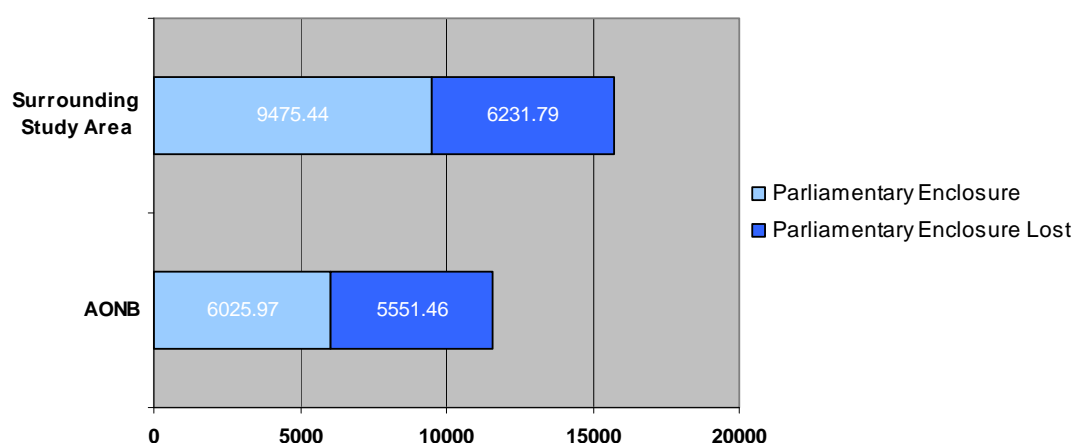
Figure 40: Map showing the extent of parliamentary enclosure awards in the Chilterns study area (after Tate 1947).

This process of wholesale parliamentary enclosure acts was not yet complete; the Victorians in their zeal for improving common land introduced a second wave of Enclosure Acts under the General Acts of 1845. As a consequence c. 104 hectares was lost at Wigginton (Herts), over 809 hectares of Penn, Wycombe, Holmer Heath was awarded in 1855, while c. 280 hectares lost at Stokenchurch common awarded in 1862.

Parliamentary enclosure made significant local contributions to the Chilterns landscape, and radically changed its setting as the previously open field arable landscapes of the Icknield Belt to the north of the Chiltern scarp were converted into hedged fields. The legacy of parliamentary enclosure provides a distinctive layer to the Chiltern landscape, although the rectilinear field boundaries and the straight roads of Wigginton and Naphill are not so locally familiar as the irregular fields and winding roads of the 'old enclosed' landscapes.

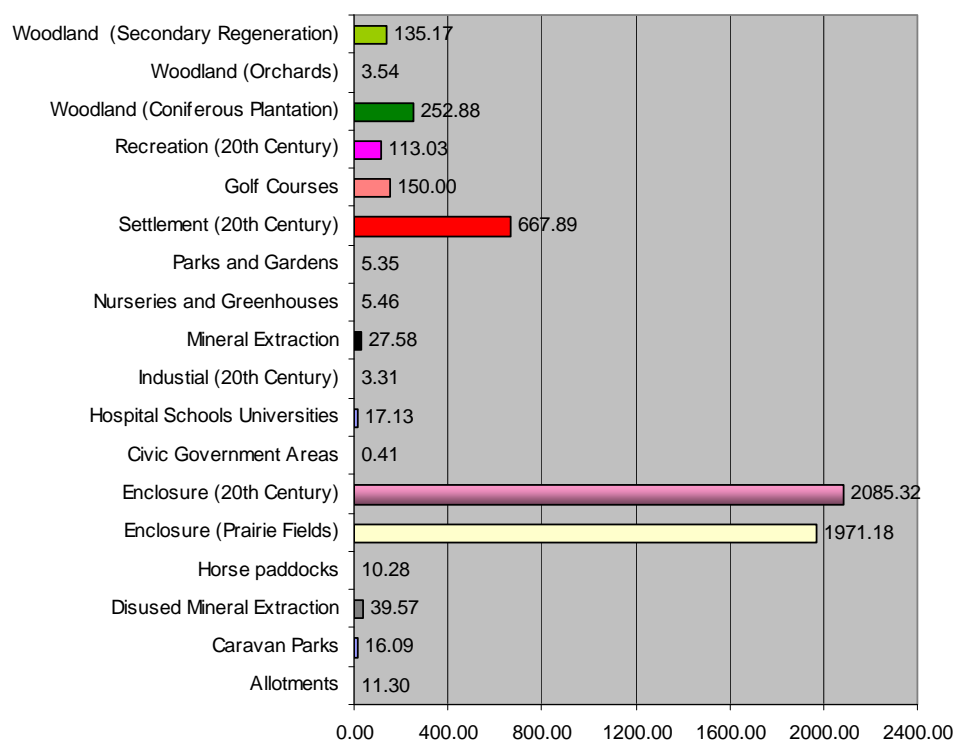
Analysis

Analysis of the survival of parliamentary enclosure fields over the past 120 years shows that the degree of loss within the AONB is marginally greater than in the surrounding study area (Figure 58b). Most loss is attributable either to the grubbing up of hedgerows to create modern 'prairie fields' or to subsequent sub-division and reorganisation. New residential development, recreation (including golf courses) and woodland have been secondary factors.



Figures 41: The loss of parliamentary enclosure since the late 19th century within the AONB and without in hectares²,

Figure 42: (below) shows the breakdown of the loss of parliamentary enclosure within the AONB.



5.3.8 Twentieth Century enclosures and Pony paddocks

The creation of 20th century fields corresponds to the increasing trend for the land being used for recreation and lifestyle purposes, with the proliferation of horse paddocks and hobby farming. Some modern enclosures are the result of reorganisation following major development (e.g. motorway). The emergence of modern enclosures is contributing to the changing character of the Chilterns landscape; the boundaries of these enclosures are man-made, usually wooden or wire fenced, supplementing the traditionally hedged boundaries that have stood for hundreds of years.

As agriculture continues to decline in the Chilterns and money spent on leisure pursuits increases there is the prospect that there will be a continued growth in the number of modern fields - with larger, established enclosures being subdivided into smaller landholdings. One consequence of this landscape change would be that man-made fencing could become the most ubiquitous boundary type in the Chilterns. There is a question to what extent this is an acceptable or inevitable part of landscape change or whether controls should be put in place in certain circumstances and support given to more traditional methods of hedgerow creation. Currently there are regulations, which offer protection for existing hedgerows and maintenance of their character (HMSO 1997), however there are only limited controls on the introduction of new boundaries available through the planning system.

Origins of 20th Century Enclosure

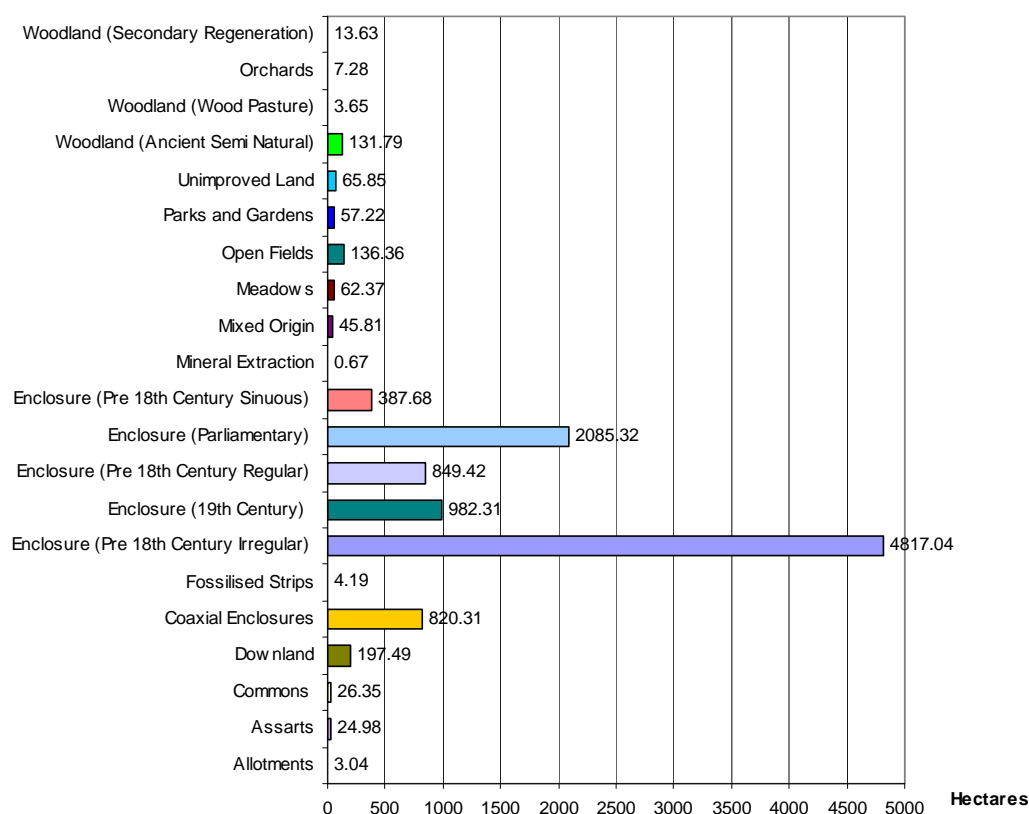


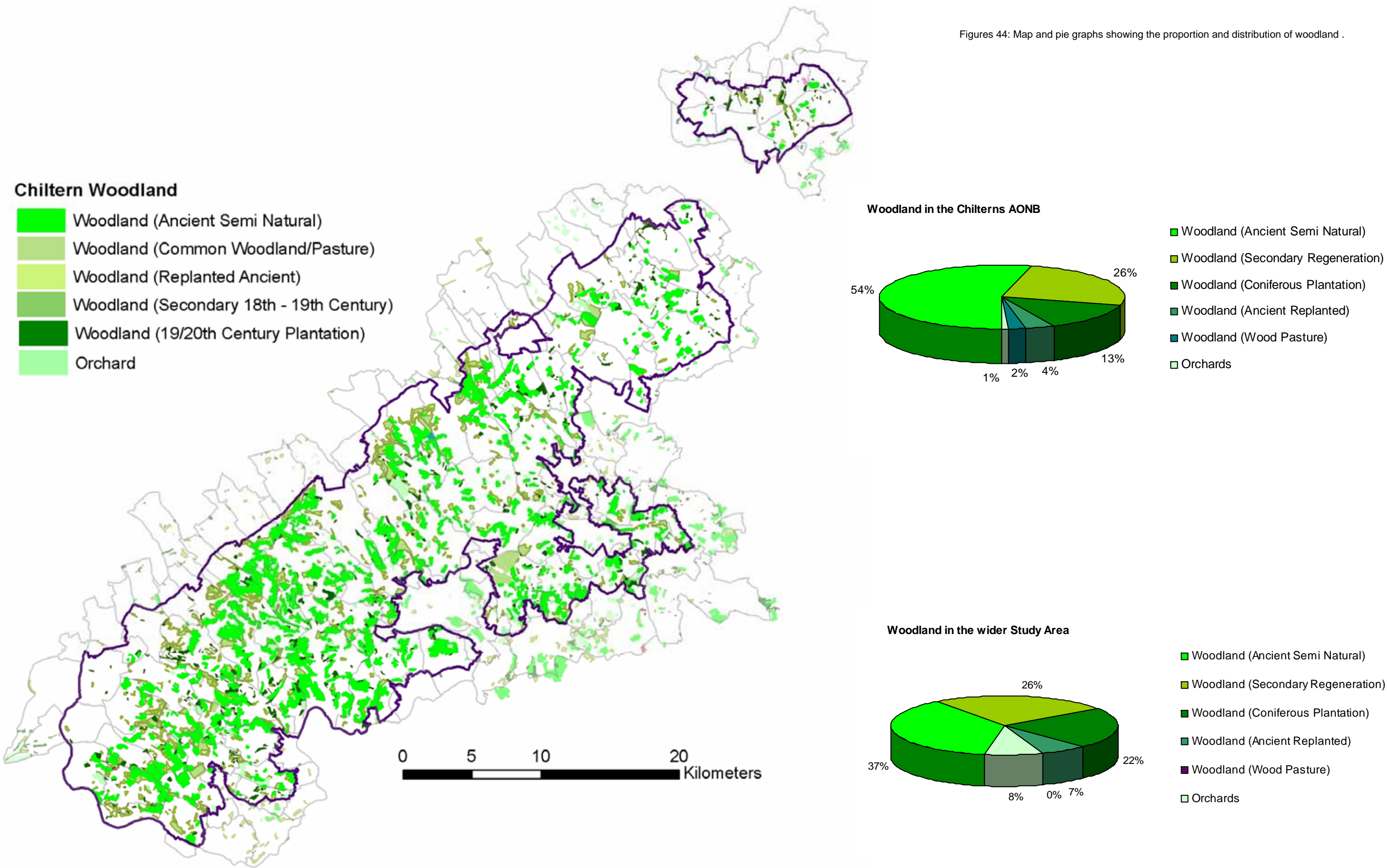
Figure 43: The origins of 20th century enclosures in the Chilterns

5.4. Chiltern Woodland

Woodland represents one of the defining elements of the Chilterns landscape. In total, woodland covers over 16,000 hectares of the Chiltern AONB or 21% of the landscape total. Two thirds of the woodland is ancient in origin, either ancient semi natural or wood pasture, (this HLC type comprises most of the Ancient Woodland identified by English Nature, although it excludes some small areas of insufficient size for the purposes of this characterisation exercise), while a third is the result of subsequent regeneration or coniferous plantations. Orchards represent a small fraction of woodland at 1% of the total. By contrast, the makeup of woodland for the remainder of the study area is significantly different; firstly, woodland density is noticeably lower comprising only 3000 hectares or 15% of the area. The composition of woodland is radically different too, with ancient semi natural woodland making up only 37% of the total with later woodland types making up the lion's share of the woods with over 50% of the total. Of interest is the quantity of orchards found just outside the AONB boundary, contributing to 8% of the total, this is a reflection of the soft fruit areas around the Chalfonts (Bucks)⁵. Thus the AONB designation appears to have been significantly influenced by the concentration of ancient woodland. Over 60% of woodland in the Chiltern AONB is ancient and has remained wooded for at least the last 400 years. These woods also contain many historic features as reminders of the way our forebears used them. Stumps with many vertical stems coming out of them are a sign of coppicing techniques that were used to produce timber suitable for firewood, charcoal, laths and hurdles. The Chilterns used to supply much fuel-wood for London. Ancient beech pollards are a feature of some wooded Chilterns commons. Some of the pits in the woodland floor are the remains of sawpits, used by foresters to saw trees into planks to make them easier to remove. By the early 19th century Chiltern beech woods around Wycombe and Amersham, were used by chair leg turners or 'bodgers', who made the components of Windsor chairs that were assembled in local factories in Wycombe, woods around these towns accommodating it especially the commons of Naphill and Downley although by the late 19th century the industry had spread into the Oxfordshire Chilterns with bodgers working in the woods around Stoke Row and Checkendon and while other factory centres were established at Chinnor and Stokenchurch, (Hepple & Doggett 1994). Despite their widespread distribution there is little evidence for bodgers camps and datable archaeological evidence remains sparse.

⁵ These statistics excluded woodland that coincides within designed landscapes or parks and gardens, which would otherwise increase the extent of woodland coverage in the AONB.

Figures 44: Map and pie graphs showing the proportion and distribution of woodland .



5.4.2. Ancient Semi Natural Woodland

Ancient Semi-Natural Woodland is species rich broadleaf woodland that represents the earliest surviving woodland in the Chilterns AONB although some areas covered by beech coppices have also been included in this category despite botanical classifications registering them as plantations as many are planted on the sites which have historically ancient woodland. Although ancient semi natural woodland is found throughout the Chilterns there is a noticeable concentration in the central and south-eastern parts, (Buckinghamshire and Oxfordshire), where the topography has enabled the management of large woods along slopes and coombes. Some of the densest coverage can be found at Hambleden, (Bucks) and Watlington, (Oxon). By contrast the ancient woodlands in Bedfordshire and Hertfordshire are smaller and more evenly spaced. Generally the extent and form of these woodlands have remained unchanged for hundreds of years, their size and shape maintained by wood banks and boundaries. However, there has also been woodland regeneration that has enlarged the extent of woods in some areas. The tables below illustrate the average sizes of woodland types within the Chiltern AONB, it is noticeable that ancient woodland (figure 45) has, on average much larger woodland size than either secondary regenerated or coniferous plantations. The largest woodland areas are found on the scarp areas of Buckinghamshire and Oxfordshire. Very little woodland above 20 hectares is found in the Bedfordshire and Hertfordshire Chilterns.

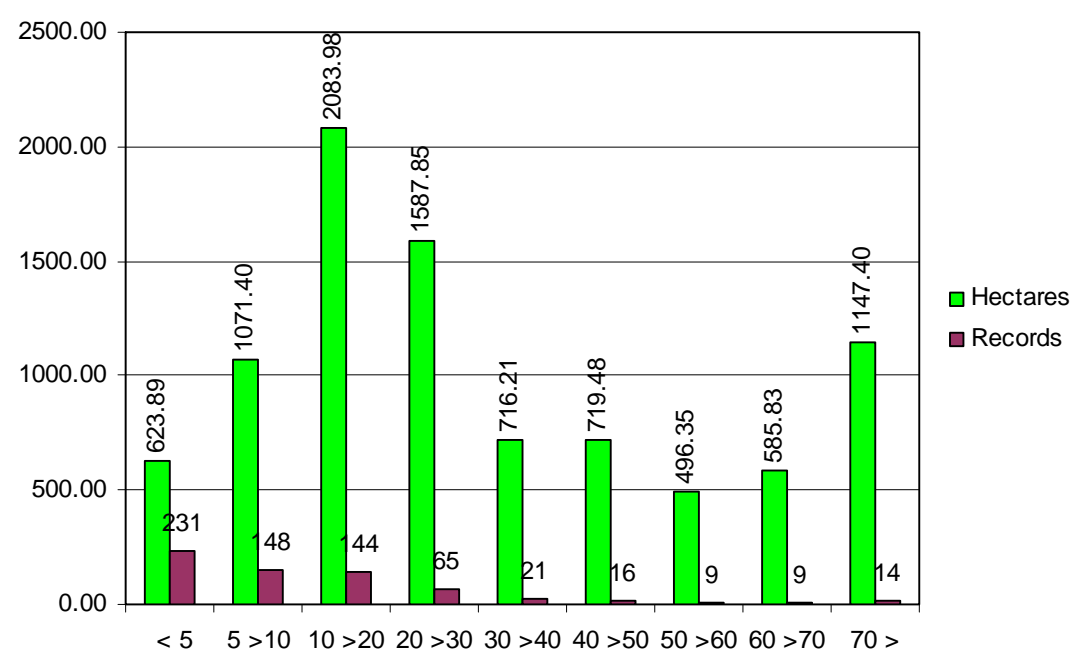


Figure 45: Average woodland size (hectares 2) of Ancient Semi Natural woodland in the Chilterns AONB

Analysis of Change

Since the late 19th century there has been a 9% loss of ancient woodland, largely due to woodland replanting⁶ and clearance for fields. The pie chart in figure 41 highlights the causes of this loss noting that replanting of coniferous woodland as being a chief culprit of change, while the establishment of modern enclosures in the 20th century has also had an impact. There has been some loss of woodland from extractive industries particularly around Totterhoe (Beds).

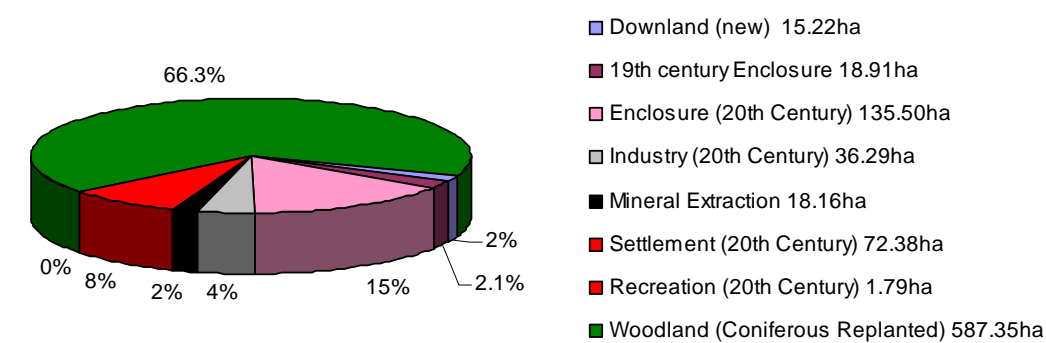


Figure 46: Pie chart showing the causes of the 9% of ancient woodland lost to other historic landscape types since the late 19th century.

⁶ Due to the problematical identification of woodland species from aerial photographs this figure is will be higher.

5.4.3. Secondary and Coniferous Woodland

Secondary woodland is the term given to woodlands that have re-grown on ground that has previously been used for other purposes. Some secondary woodland has been planted, but the majority have come about through the natural processes of colonisation and succession particularly common land examples at, Naphill, (Bucks) Nettlebed, (Oxon), and downland at Princes Risborough (Bucks) and Chinnor (Oxon). The greatest concentrations of secondary woodland are found at Barton-le-Clay (Beds), Aldbury (Herts) and Ipsden, (Oxon). In comparison to ancient semi natural woodland, secondary woodland is usually smaller in extent with the modal average size of woodlands being 5 to 10 hectares in extent (Figure 47).

There are many examples of earlier archaeological sites incorporated into secondary woodland, e.g. Sharpenhoe, (Beds), Boddington Hillfort (Bucks), Ravensburgh Castle, (Herts) and the tumuli at Pishill, (Oxon). Woodland acts as an aid to preservation in the sense that it protects from other more damaging activities (e.g. ploughing) but trees can themselves cause damage, especially if vulnerable to wind-blow.

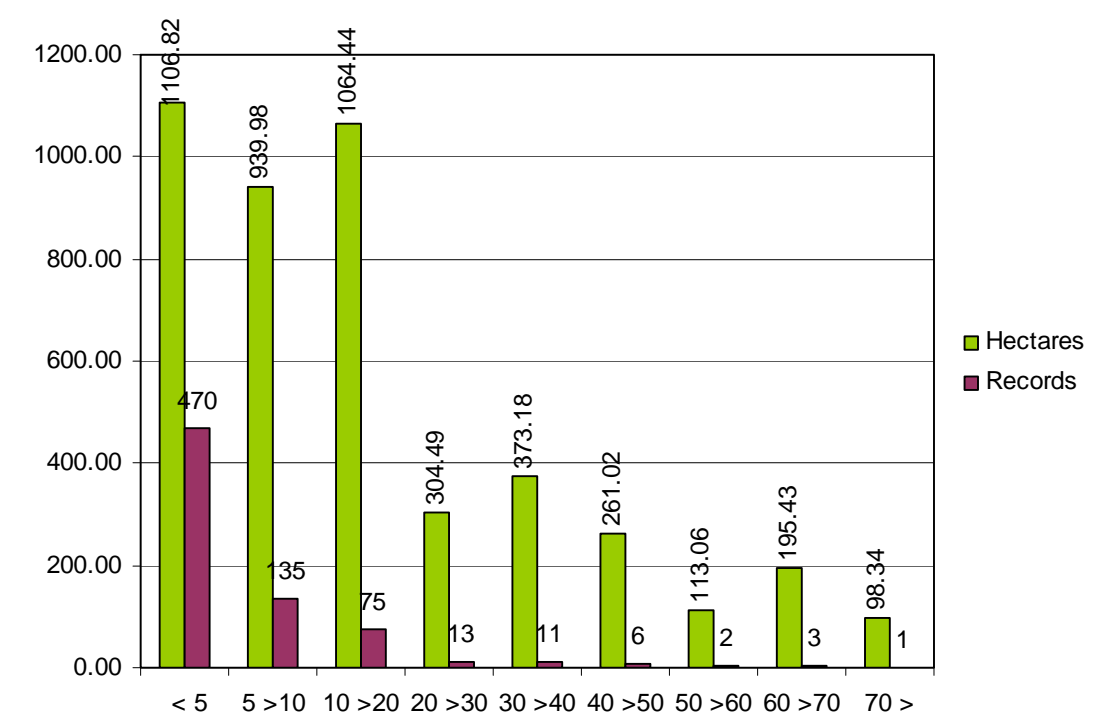
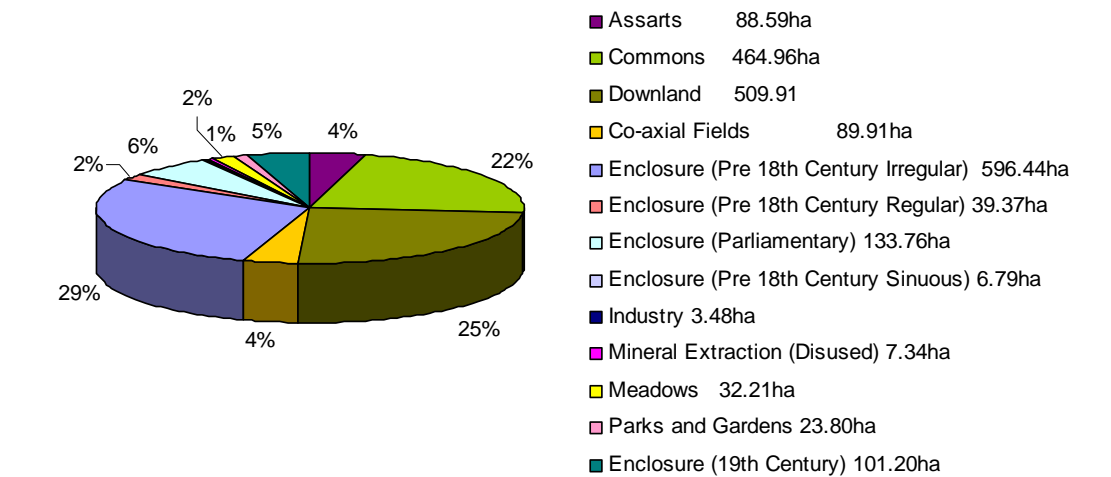


Figure 47: Average woodland size of secondary woodland in the Chilterns AONB and below the origins of secondary woodland in the AONB taken from the 1st edition Ordnance Survey Maps.



Woodland plantations are characterised by blocks of trees that are all of one age often consisting of only one or two species of tree within each regular block of planting. Very often the species planted were non-native species and in particular conifer, but many plantations were of broadleaves such as oak or beech and often plantations were a mix of conifer and broadleaves. Whatever the species, the end result was very much concerned with producing a ‘crop’ of trees for felling. Plantations are found throughout the Chilterns although there are greater concentrations in Oxfordshire (Swyncombe) and Buckinghamshire, especially at Fawley and Medmenham. The main difference in the location of plantations compared to secondary woodland is that the former were deliberately placed, mostly on former enclosed fields, whereas the latter have grown up due to reduced grazing mainly on commons and downs.

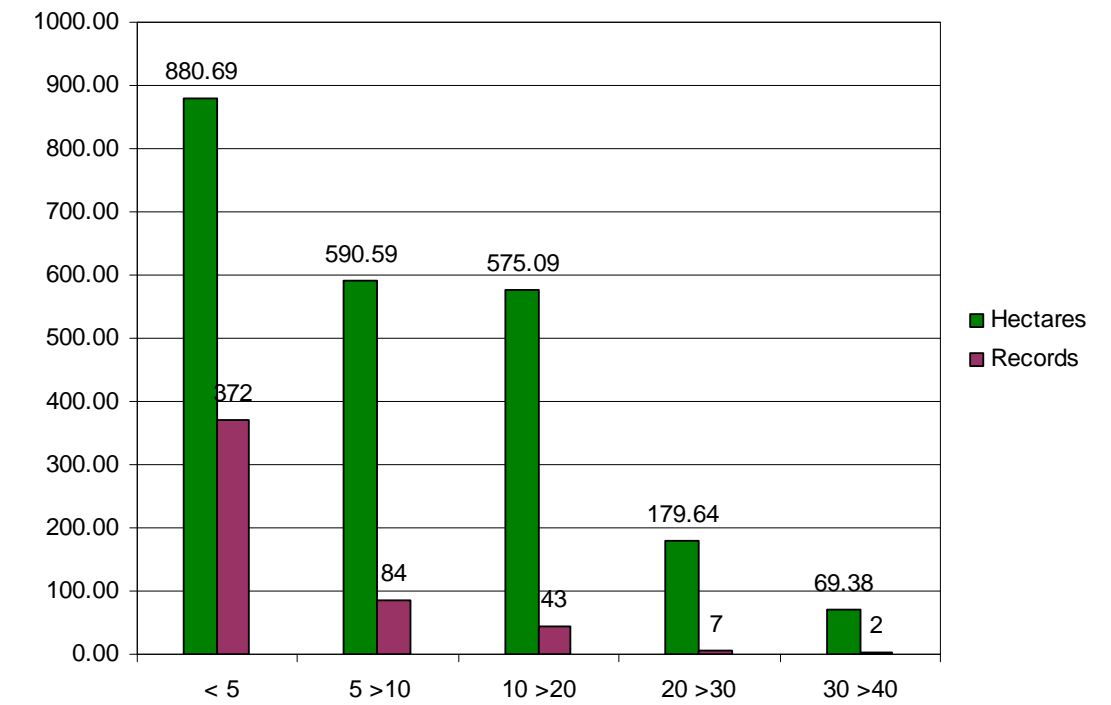
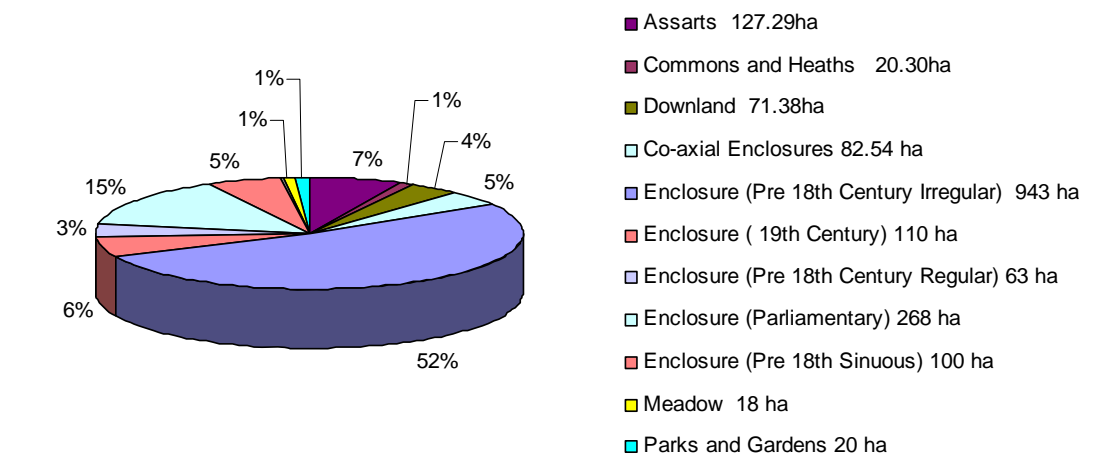


Figure 48: Average woodland size of coniferous woodland in the Chilterns AONB and below the origins of coniferous woodland in the AONB taken from the 1st edition Ordnance Survey Maps (c 1880).



When both secondary woodland and coniferous woodland are analysed together, there is a noticeable increase of these landscape types over a hundred-year period. Figure 49 below illustrates this effect with the focus being on downland and commons. This transformed many iconic landscapes such as the downland at Whiteleaf Hill; which formerly was open landscape but until recently covered by trees.

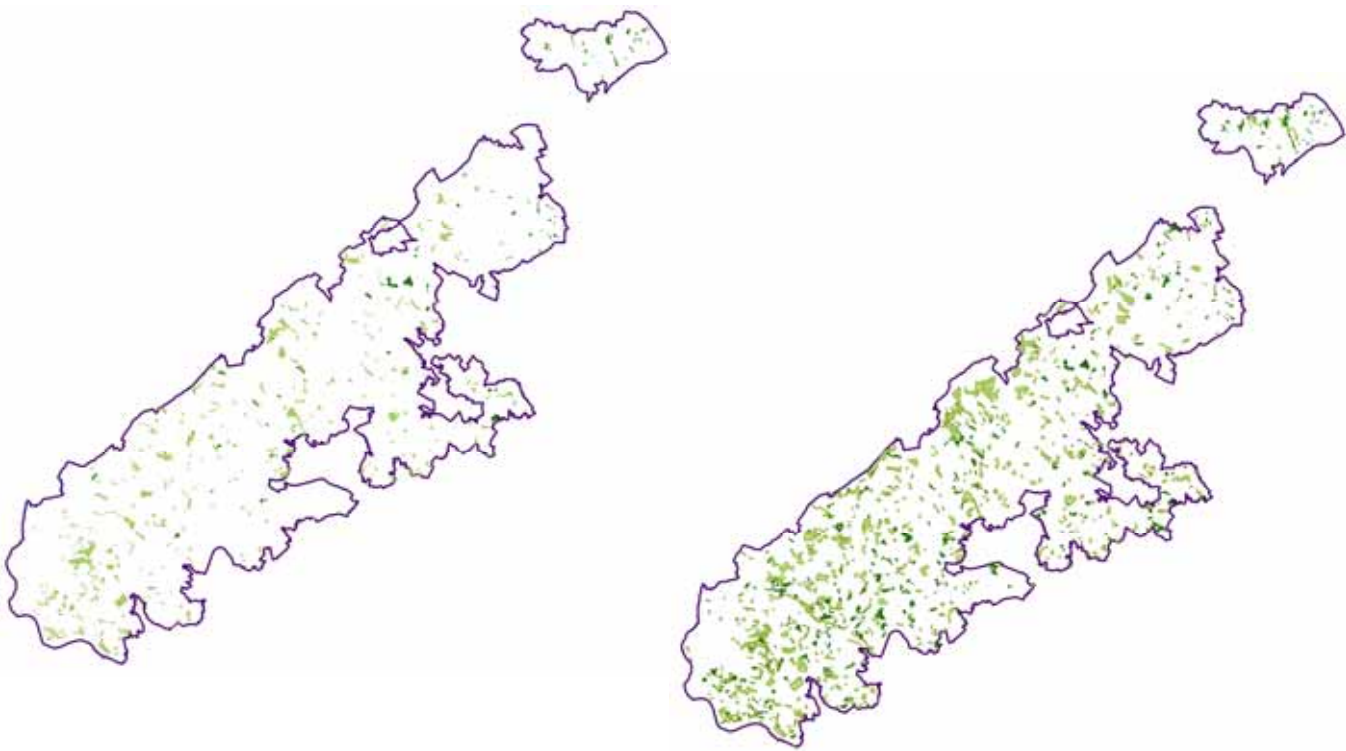
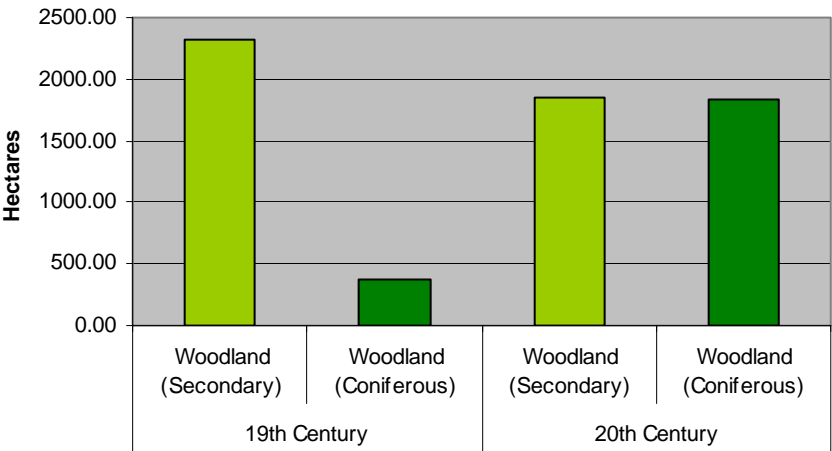
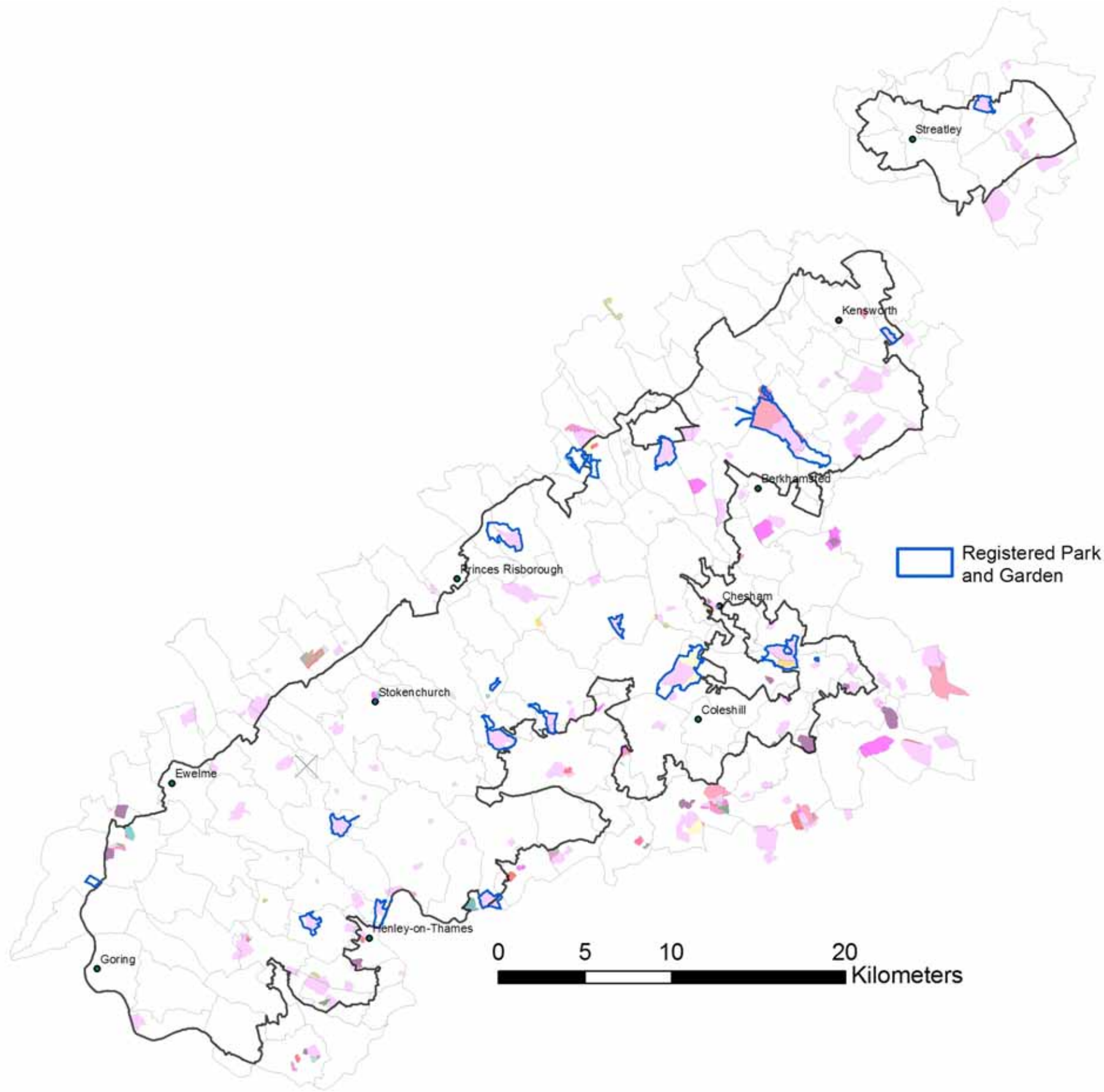


Figure 49: Increase in Secondary and Coniferous Woodland from the 19th century (left) to the 20th (right)

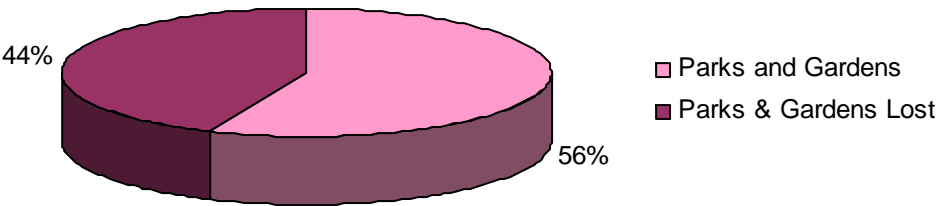


5.5. Designed Landscapes and Recreational Areas in the Chilterns

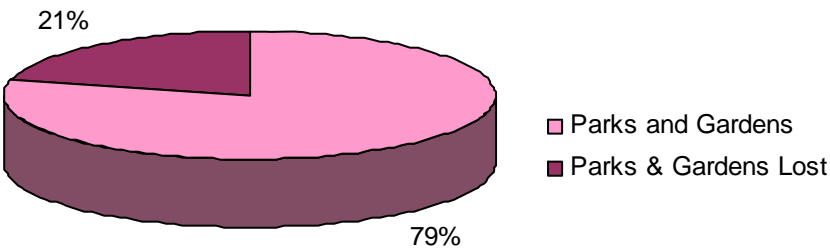
Figure 50: Map and pie charts showing the extent of Parks and Gardens in the Chilterns in the 19th century and their relative loss in the 20th century to other landscape types.



Parks and Gardens outside the AONB



AONB Parks and Gardens



5.5.1. Designed Landscapes

The Chilterns is possesses some prominent country houses and designed landscapes, they make an important contribution to the landscape character with distinctive designs to fit in with the region's natural topography and represent an important chapter in the social and economic history of the Chilterns. There are 94 distinct parkland and designed landscapes identified by the Chilterns HLC project making up over 3900 hectares or 4% of the present AONB landscape; of these only 18 are recognised as being nationally significant and are protected by inclusion on English Heritage's Register of Parks and Gardens. There are also Parks and Gardens that are designated as conservation areas, of which 8 overlap the English Heritage Register. Historic parklands in the Chilterns range in date from the 16th to the late 19th century and encompass a variety of forms and styles. The creation of large houses and their designed landscapes were an opportunity for the landed elite and the wealthy in banking and commerce from the city of London to express their status and prosperity. The Chilterns was particularly attractive as the because of the accessibility to the capital and agricultural land was cheaper than in the surrounding landscape. Some of the earliest examples were large houses set within pre-existing medieval deer parks, such as Hampden Park, Bucks. However, the appearance and layout of parks changed over the centuries with successive fashion. From the French influence of formal parks in the late 17th to early 18th centuries with geometric avenues, ornamental plantations and Italianate houses, as seen at parts of the gardens at Sir Francis Dashwood's West Wycombe to more naturalistic forms of designed landscape in 18th and 19th centuries in the vision of Capability Brown and Humphrey Repton, with vistas (examples at Golden Valley, Ashridge (Herts), Latimer and Fawley Court in the 19th style. In the 20th century the function and maintenance of large estates declined and many surrendered to commercial uses, although some of the most prominent were maintained under the custodianship of organisations such as the National Trust, (e.g. Ashridge, Bradenham, West Wycombe and Greys Court).

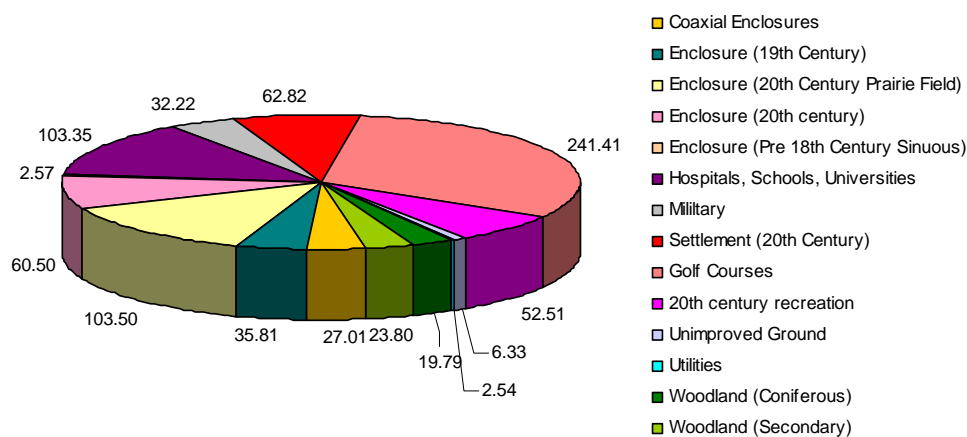


Figure 51: Pie chart showing the fate of parks and gardens in the Chilterns AONB.

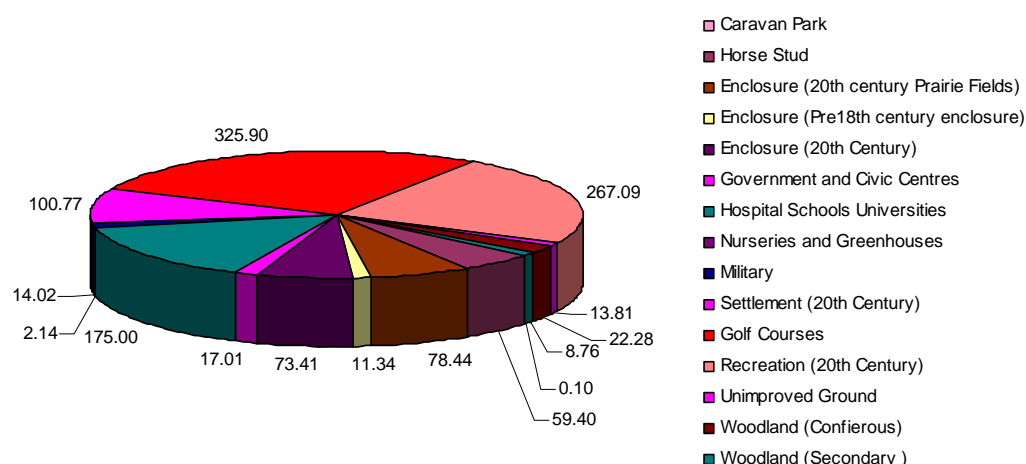


Figure 52: Pie chart showing the fate of 'lost' parks and gardens in hectares for the wider study area.

5.5.2. Landscape Change:

Using the HLC time depth it is possible to see these changes, the pie chart and map in Figure 66 & 67 shows that since the late 19th, designed landscapes in the AONB have experienced a 21% loss in extent while in comparison, the loss of designed landscapes outside the AONB stands at 44%, perhaps a reflection of the vulnerability of designed landscapes to change given their proximity to large centres of population. A major factor within the AONB has been the conversion of parkland to recreation and golf courses (38%) as large houses and their estates provide an ideal aesthetic setting for golf courses and health clubs. The most notable example is Ashridge Estate, Gaddesden (Herts) where over 55% of the parkland has been converted to a golf course, while an example outside the Chilterns AONB is the conversion of parkland to a stud at Aston Rowant (Oxon). Of course in many of these cases relict parkland and parkland features will have survived. Reversion of parkland back to agricultural land in the 20th century represents the second largest statistics loss at 31%, although this figure includes ancient enclosures such as coaxial fields that were incorporated into parkland estates but survived intact until the park had been surrendered back to farming. Loss to agriculture may reflect the economic decline of large estates, where the cost of managing a park became too much for some families. Examples of this found at Shardeloes, (Bucks) while a more extreme example can be seen at Newnham Murren, (Oxon) where parkland has been completely lost and is now fields, (Figure 48). Another significant loss is the conversion of estates to institutions such as schools and universities at 13%. Conversely, there have been examples where parks have expanded; a particular example is Henley Park, (Oxon), where the northern end of the park has been extended since the 19th century.



Figure 53: Designed Landscape of Newnham Murren, in the 19th century (left) and in 2003 (right).

5.6. Chilterns Settlement

The Chilterns HLC has made a distinction between historic settlement (settlement is defined from the 19th century 1st edition map) and the later development occurring after this date.

Settlement within the Chilterns AONB shows a high degree of variation. Historically, the Chilterns was an area of predominantly dispersed settlement forms, comprising single farmsteads, interrupted rows and common edge settlements, although there are occasional nucleated villages in the river valleys. Most of the larger market towns have been excluded from the AONB such as Dunstable, Luton (Beds), Caversham (Berks), Amersham Wycombe, Chesham (Bucks), Berkhamsted, Rickmansworth, Tring (Herts); Henley (Oxon). These towns have been the focus for much urban growth in the 20th century. A glance at the map and pie charts in figure 55 shows the ratio of historic settlement and modern settlement within the AONB and without. Overall the AONB designation seems to have limited the extent of settlement growth within the Chilterns with settlement in the Chilterns comprising under 5% of the total AONB landscape. However, the proximity of the Chilterns to an ever growing London and the proposed expansion of towns such as Aylesbury and High Wycombe is putting increasing pressure on the context and setting of the Chilterns AONB.

From the HLC data it is possible to see the incremental growth in settlement within the Chilterns AONB. So far the pattern of urban growth has been steadily increasing, the graph shown in Figure 54 (this excludes recreation and civic areas) illustrates a significant rise in the period 1880-2003 with coverage more than tripling in area. The recent decades have seen a marked increase in housing development from the to the beginning of the 21st century with development clustering around existing settlements, often developing the open spaces next to common land and heaths (see also commons chapter) or infilling what are perceived as gaps in linear villages. Although the development is piecemeal and incremental it is having the effect of compromising the character of some historic settlement forms (see settlement sections 5.7.1 - 5.7.4). The 1950s: represents a hiatus in mapping sources but largely the extent of modern urbanisation has formed at this point, most noticeably around the principal towns outside the AONB. Tring and Berkhamsted,(Herts.); Amersham, Chesham and Wycombe (Bucks).

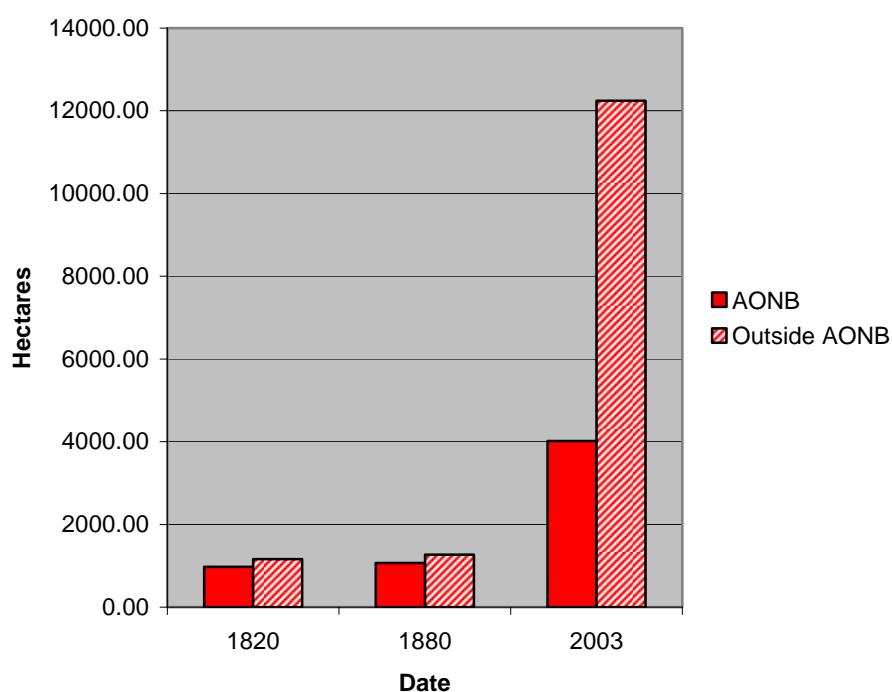


Figure 54: Incremental growth of settlement in the Chilterns AONB and the wider study area

5.6.1. Growth of Settlement in the Chilterns

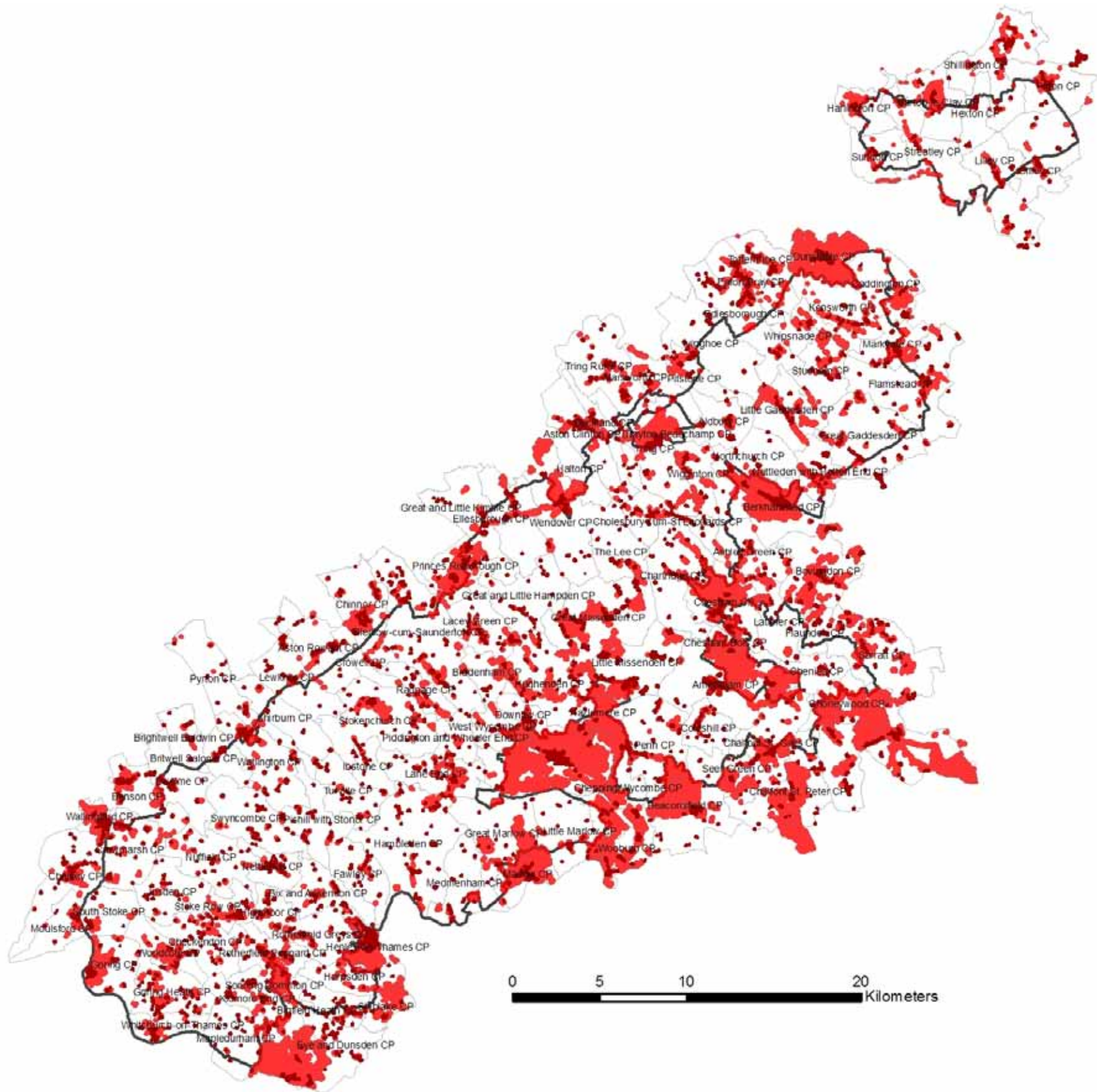
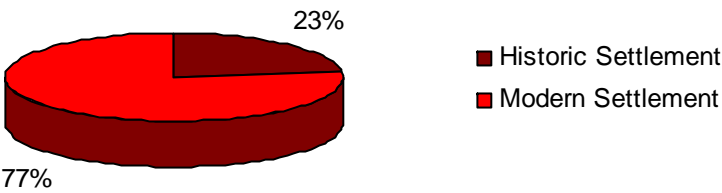
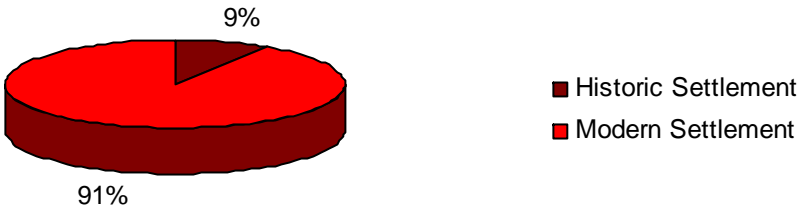


Figure 55: Map and pie graphs showing the proportion and distribution of historic and modern settlement in the Chilterns (Historic Settlement has been 'buffered' or increased in size to highlight its presence).

Settlement Proportion (AONB)



Settlement Proportion (Surrounding Study Area)



5.6.2. Chilterns Historic Settlement

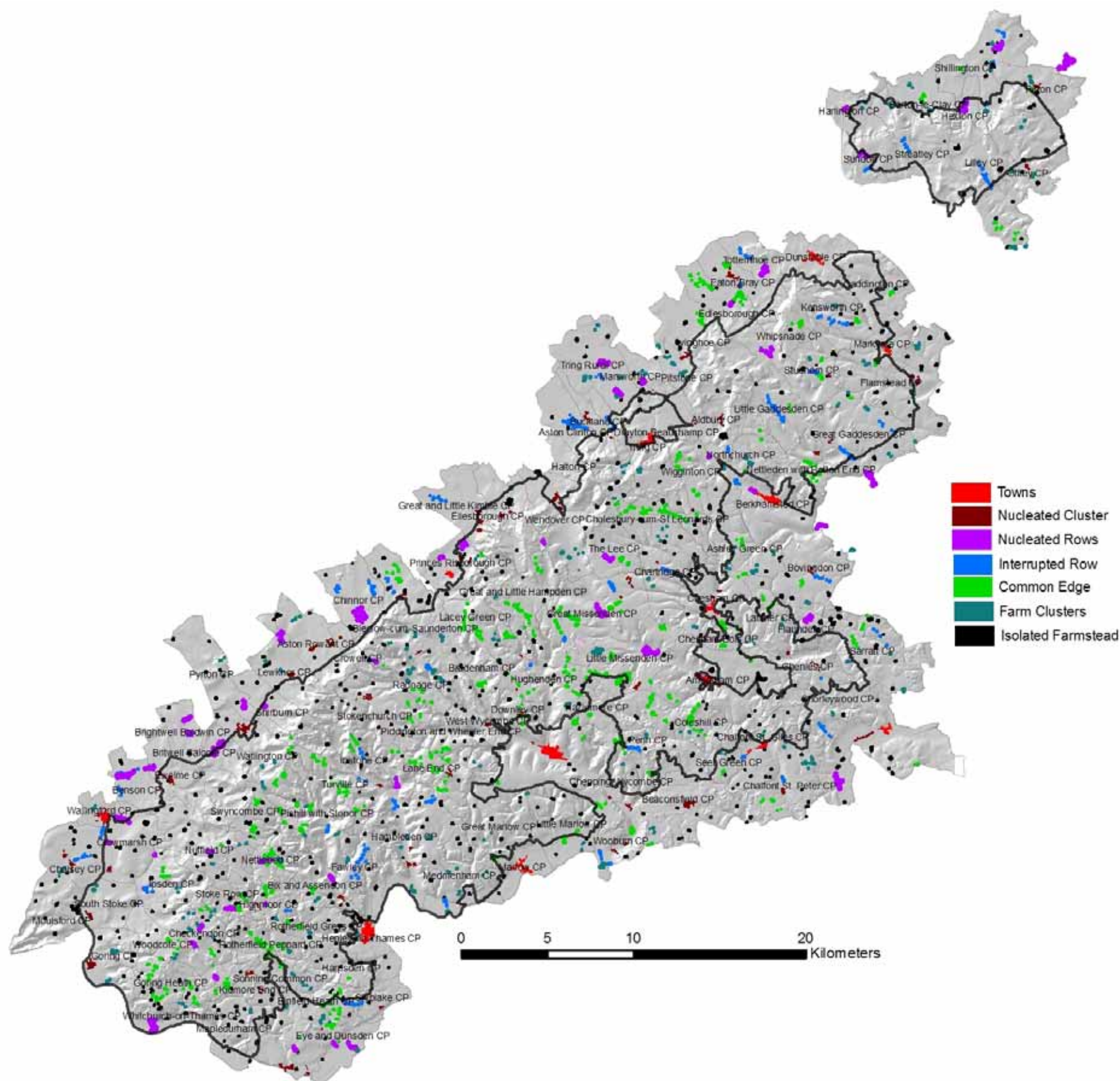
Although the majority of Chilterns settlement was built in the last century, at the heart of most villages and towns there is an 'historic core'. The Chiltern HLC project has mapped these cores but also recorded the distinctive plan character of each settlement. A classification of settlement 'morphology'; based upon the model devised by Lewis, Dyer and Fox, (1995) was employed to record the distinctive character and also inform and discern whether there are any distinctive patterns and understand the subtleties of settlement pattern in the Chilterns. The recognition of these distinctive patterns can also lead to recommendations for the protection and preservation of settlements. Within the Chilterns the following categories of settlement morphology was defined:

- Towns
- Nucleated Settlement
- Linear Settlement
- Interrupted Row
- Common Edge Settlement
- Farm Clusters
- Individual Farmsteads

(Examples and precise definitions of these types can be found in Appendix 1 of this report under 'Historic settlement' type). Using these definitions, the HLC project has produced a distinct distribution map of settlement, (Figure 56). As with the other landscape themes such as enclosures and woodland the character of settlement is markedly different in particular areas of the Chilterns. Broadly an immediate distinction can be made between the clay vale which is characterised by nucleated forms (nucleated clusters and nucleated row settlements) and the south of the Chilterns scarp cover by the AONB which is predominantly dispersed in morphology. These broad distinctions echo the conclusions drawn by a number of authors and geographers including the work of Roberts and Wrathmell (1999) who have shown the Chiltern scarp as defining the boundary on the cusp of two major national settlement zones. With the benefit of HLC these broad statements can be refined further to show that there are more subtle local patterns. It is noticeable from the map that nucleated settlements to the north of the AONB are strung along the route of the Icknield Way, while common edge and interrupted rows settlements are found at particular localities associated with distinctive topography and soils. In contrast the more nucleated forms found in the Chilterns AONB tend to occur in the major river valleys, of the Chess (Chesham and Amersham) Misbourne, (Wycombe). Further analysis of this historic settlement character is discussed in section 5.7.4.

There are just over 800 listed buildings and structures in the AONB⁷, of which the vast majority (80%) are located within historic settlement cores. They date from the 12th century to the 20th century with the majority dating to between 1600 and 1900.

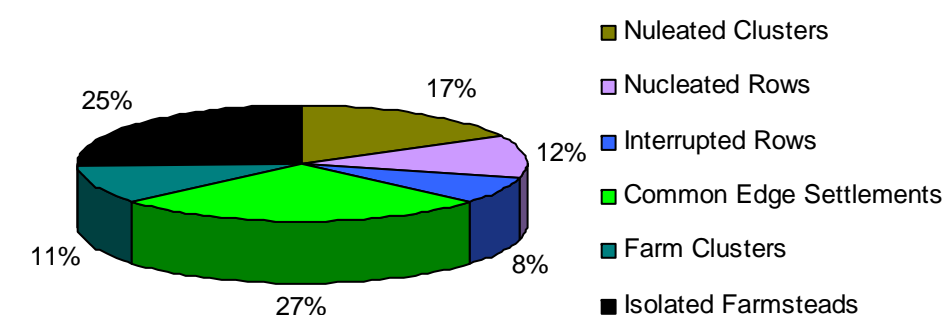
⁷ Approximate number obtained from the districts within the Chiltern AONB



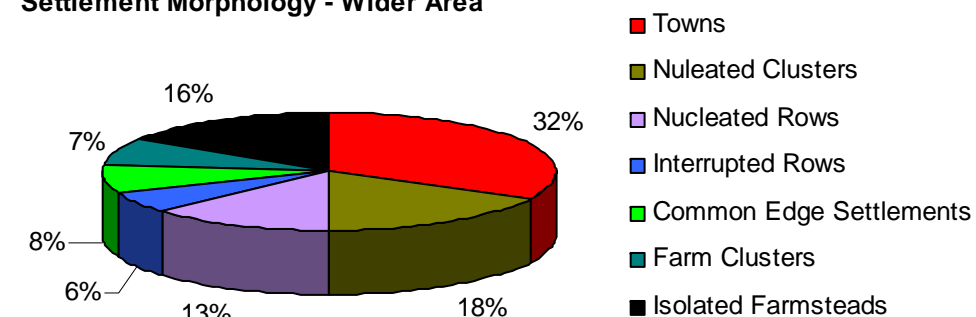
5.6.3. Chilterns Historic Settlement Morphology

Figures 56: Map and pie graphs showing the proportion and distribution of historic settlement in the Chilterns

Settlement Morphology - Chilterns AONB



Settlement Morphology - Wider Area



The distribution of different types of historic settlement pattern appears to have a direct relationship to landform. Figure 57 depicts a relief map overlaid with the settlement morphology produced from HLC data. Traditionally the Chilterns is associated with dispersed landscape but there are a number of key towns and nucleated villages found throughout the region. The analysis of settlement types with relief shows a correlation of towns, (Chesham, Amersham, Wendover and High Wycombe) with a location along the main river valleys, on the alluvium of the Chess, Misbourne, (0m –100m). The evolution of these settlements into principal towns is certainly due to their location along these arterial routeways through the Chilterns. Consequently given their location it is obvious to see why these settlements have grown and flourished. It is also noticeable that large nucleated clusters such as Great Missenden (itself believed to be failed medieval town), are also located along the valleys, while there is a general dearth of nucleated settlements found on the higher ground. In contrast to the more prominent settlements, this map also illustrates another interesting pattern in the location of common-edge settlements, the majority depicted seem to be located on the higher ground, (155 –200 metres) on the spurs of the dip slope with overlying geology of clay with flints.

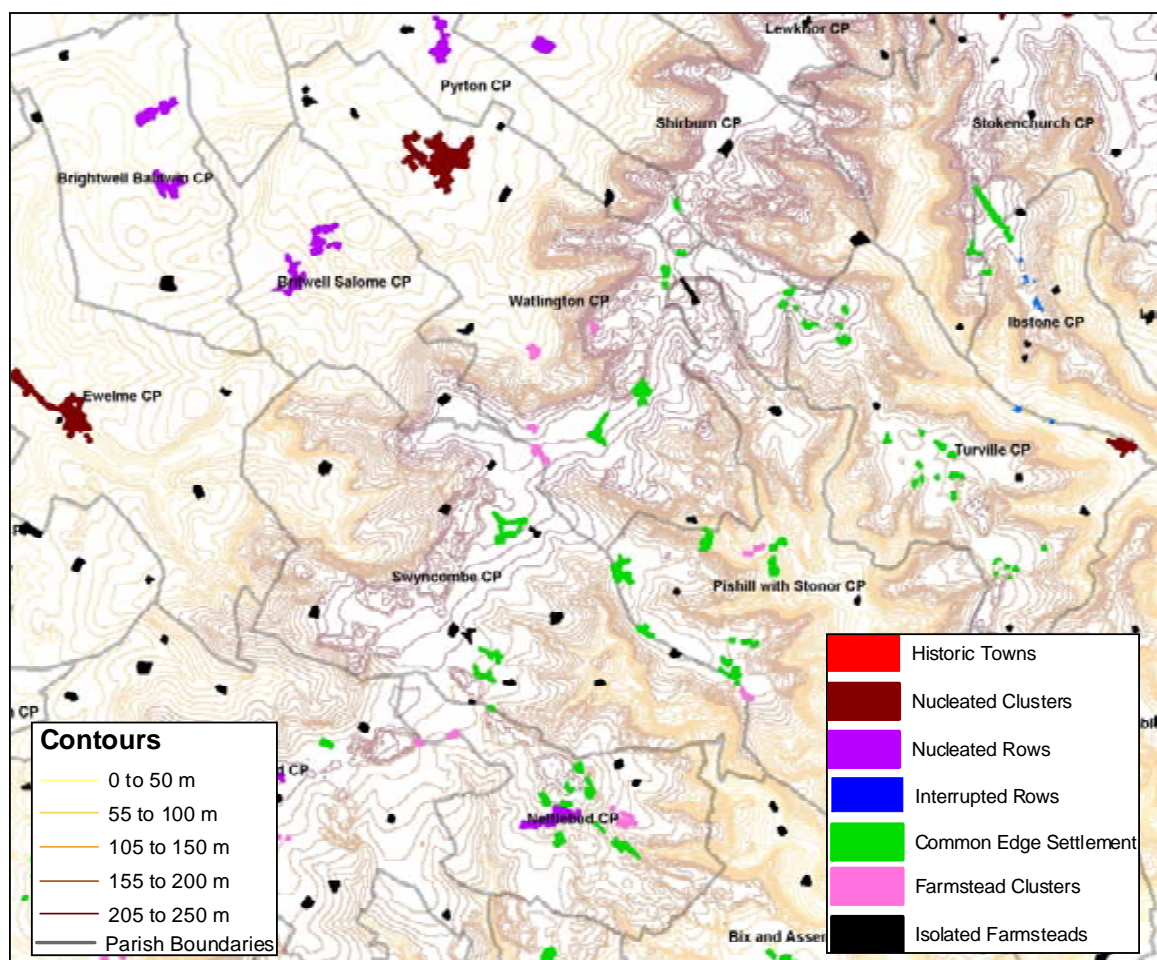


Figure 57: Correlation of Historic Settlement patterns against heights in the Oxfordshire Chilterns

5.7. Settlement Analysis

5.7.1. Loss of Common Edge Settlements

Modern development can present a problem for maintaining the character and distinctiveness of old dispersed settlement plans, particularly common edge settlements and interrupted rows. Examples of these transformations can be seen at Prestwood and Little Gaddesen. The development of Prestwood Common (Bucks), (Figure 58) shows how a former common edge settlement has been completely lost to incremental 20th century urbanisation. Prestwood's character has altered from a small settlement in its own right with the former common at its heart to suburban extension of Great Missenden. The lack of defined centre in common-edge settlements makes them a settlement type vulnerable to change. Other examples of this change can be seen at Stokenchurch, (Bucks) where the common has almost been entirely covered in housing, and Goring Heath, (Oxon). The example of Goring Heath also illustrates another change in character for settlements founded next to larger commons, Goring Heath in the early 19th century was one of the Chilterns largest common areas extending across some 800 hectares abutting it was not just the settlement of Goring Heath but a number of distinct settlements scattered around the fringe of the heath, all with their own character, e.g. Cray's Pond to the north, Collins End, to the south. Since the enclosure of the heath in 1851 these settlements now appear as farmsteads clusters or small hamlets. It is important from an historical perspective that these origins are acknowledged and recognised. Figure 59 below lists the a number of common edge settlements within the Chilterns AONB that have had their character altered by 20th century settlement, over 70% have had significant change of which 50% have altered to nucleated settlements.

Common edge settlements have some recognition through conservation area designations although settlements are sometimes too diffuse to be recognised as coherent entity. Of the conservation areas examined c.15 coincide with common edge settlements. Common edge settlements have also been a focus for development although unlike interrupted rows there is a process of landscape change that has to be in place for development to take place. From the analysis of loss of commons and heaths in section 5.2.1., the general pattern shows that commons are more likely to be developed when they have been enclosed and taken into private ownership rather than when common rights are still in place. Retaining the character of common-edge settlements depends upon recognising the significance of the open common and undeveloped spaces between building groups, for example in conservation area designations and appraisals.

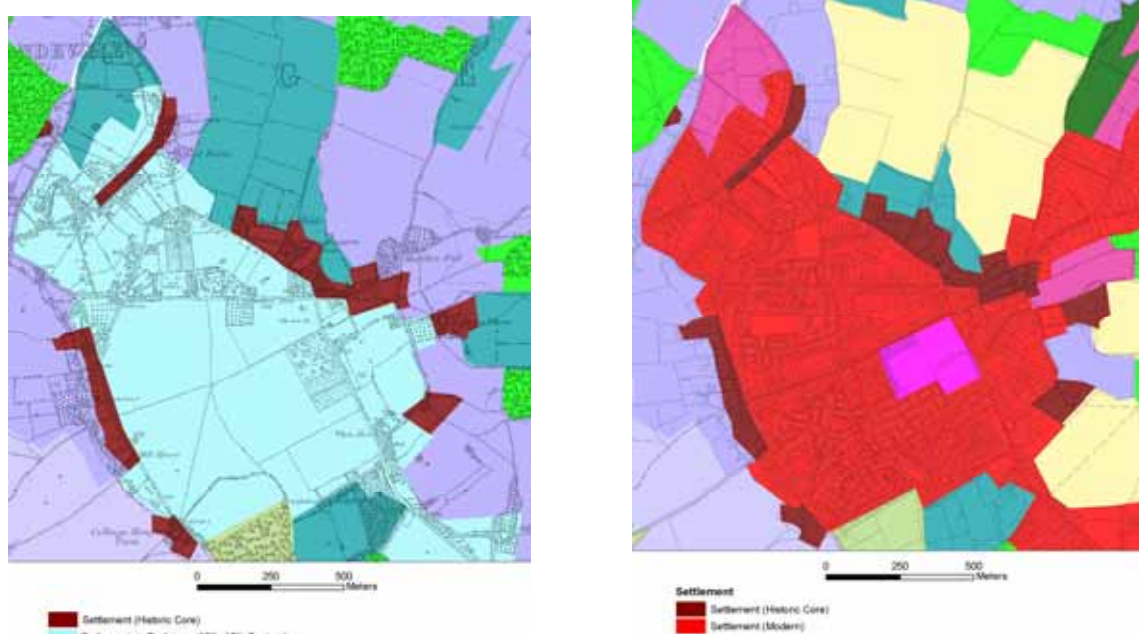


Figure. 58: The transformation of Prestwood Common. The left image shows Prestwood in the late 19th century when it was a common edge settlement set around a former common which had been enclosed in 1840. The right image shows its current form, with modern development filling the centre forming a large nucleated village, the surviving older elements clustered round its perimeter.

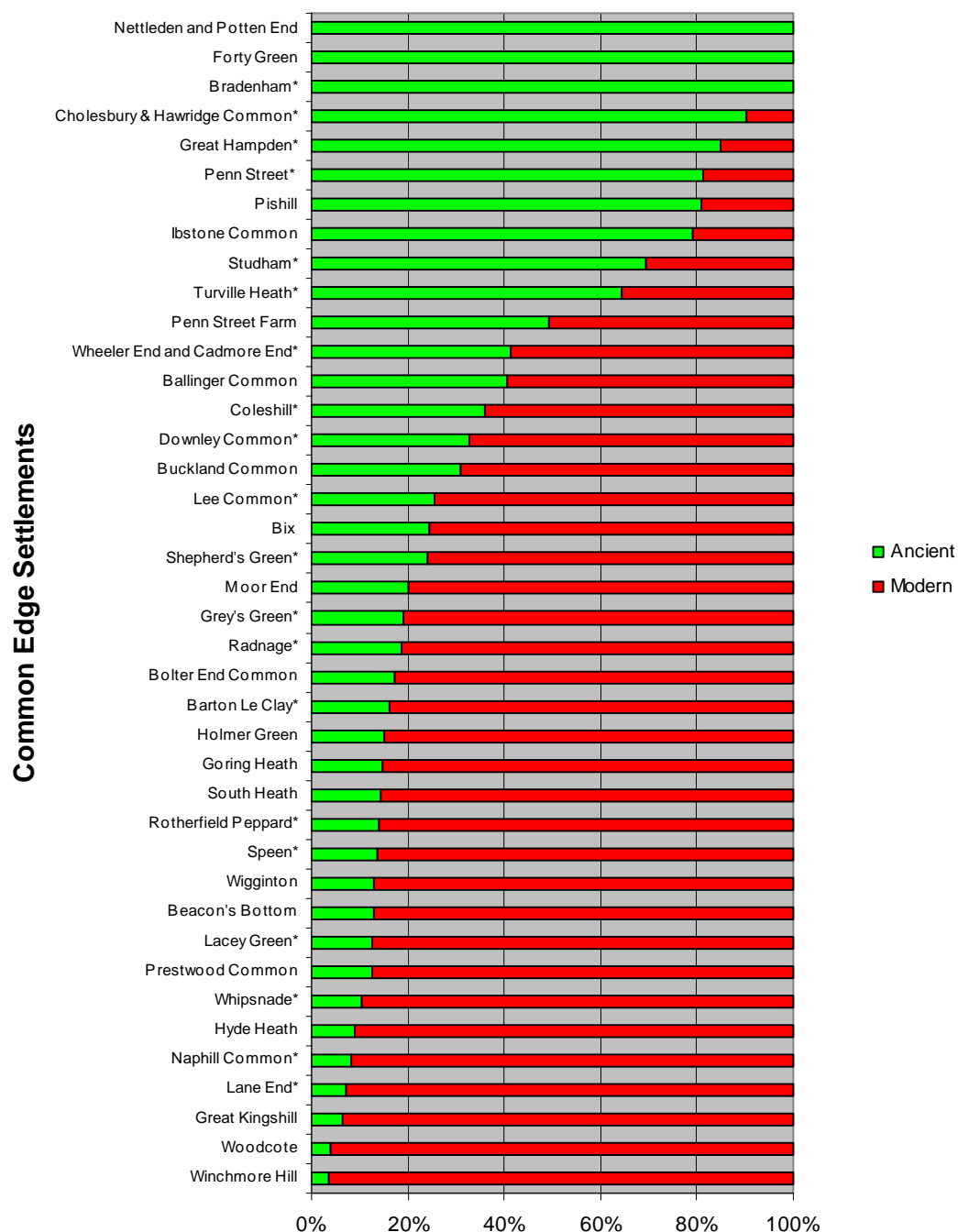


Figure 59: Table showing the composition of common edge settlement, historic cores versus subsequent 20th century development. Conservation areas are indicated by an asterisk.

The graph above shows the ratio of historic to modern development in common edge settlements and of settlement, the greater the ratio of historic settlement indicates a more preserved settlement, this should be seen in conjunction with the commons the future of common settlement – see section 4.5.

5.7.2. Loss of Interrupted Rows

Another area where settlement patterns have changed is the infilling of interrupted rows – these settlements in the 19th century and earlier were composed of a series of farmsteads strung along a road. (see Ancient Settlement and descriptions in Appendix 1 categories for reference) however this has made them a target for incremental infilling.

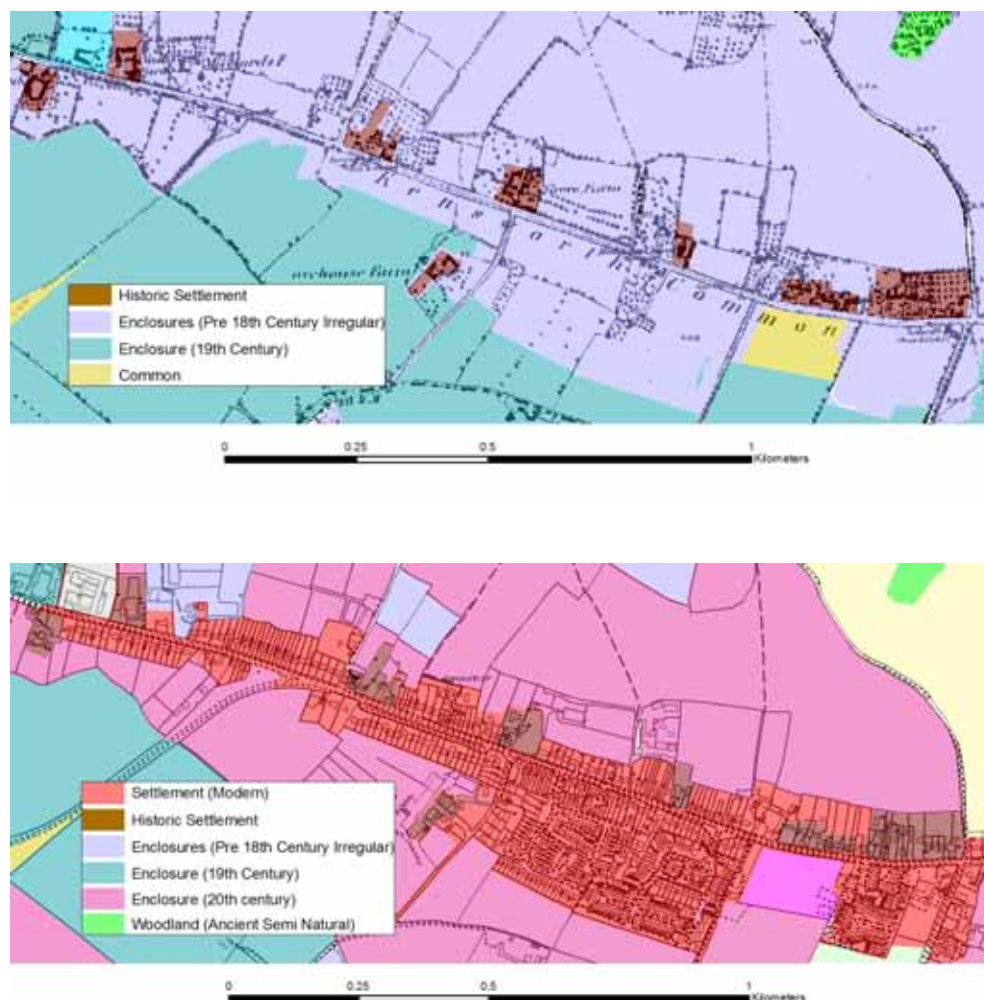


Figure 60 (top) shows the 'Interrupted Row' of Kensworth, Bedfordshire. By the 20th century Figure (below) the settlement has evolved into a nucleated row by settlement infilling.

It is noticeable that of the examples found in the Chilterns AONB over 70% of this settlement type has been developed to such an extent that their historic character has been compromised, changing to a nucleated row. Some of the biggest changes are to be found at Kensworth, (Bedfordshire) (figures 60) and Chartridge, (Bucks), which now form one of the urban tentacles of Chesham. The graph below, (figure 61) depicts the ratio of historic interrupted row settlements in the Chilterns AONB in hectares (blue) against subsequent development of modern housing in the 20th century red. Analysis shows that this phenomenon occurs predominantly in Bedfordshire, Buckinghamshire and Hertfordshire where most interrupted rows are located, it is also the area of the Chilterns that has seen the most development. By contrast, the interrupted rows that have good surviving plan forms (or only moderately affected by modern settlement accretion), are generally found in the western part of the Chilterns, e.g. those at Fawley, Potter Row (Bucks), Ipsden and Skirmett (Oxon). Retaining the character of interrupted rows depends upon recognising the significance of the undeveloped spaces between building groups, for example in conservation area designations and appraisals.

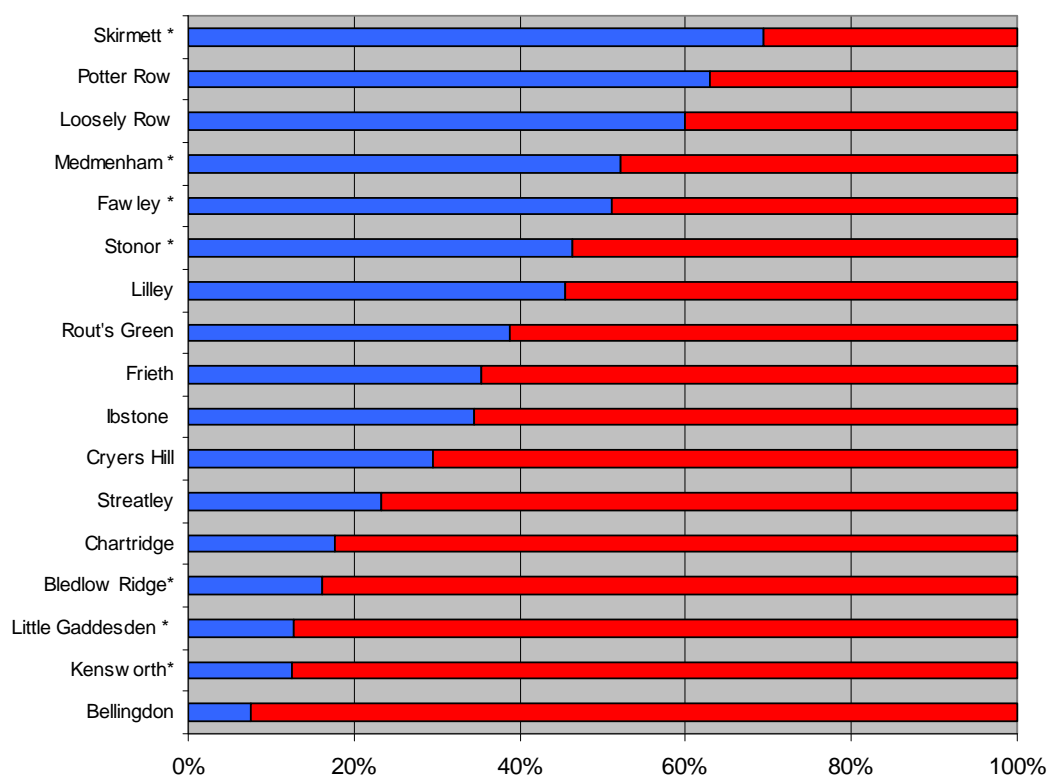


Figure 61: The ratio of historic to modern development for Interrupted Row settlements in the Chilterns AONB. Conservation areas are highlighted by an asterisk.

5.7.3. Nucleated Rows and Clusters

In contrast to dispersed settlement forms, nucleated settlements do not have this perceived loss of plan-form character, the majority of settlements of this nature have their historic cores protected by conservation area designation. However, the issues for these settlements types are their attraction for modern development, as they possess amenities absent from smaller settlement types. An example is the picturesque settlement of Aldbury, Hertfordshire, which has retained a nucleated form around a green despite subsequent growth since the 1st edition 6" map which has seen the village grow by over three times so that it is now a nucleated cluster. Further details of this particular settlement are found within the buildings module. The graph and map below highlights the main settlements that have been the focus for development in 20th century. Up to 90% of Nucleated Rows and 80 % of Nucleated clusters have 50% or more growth in settlement size.

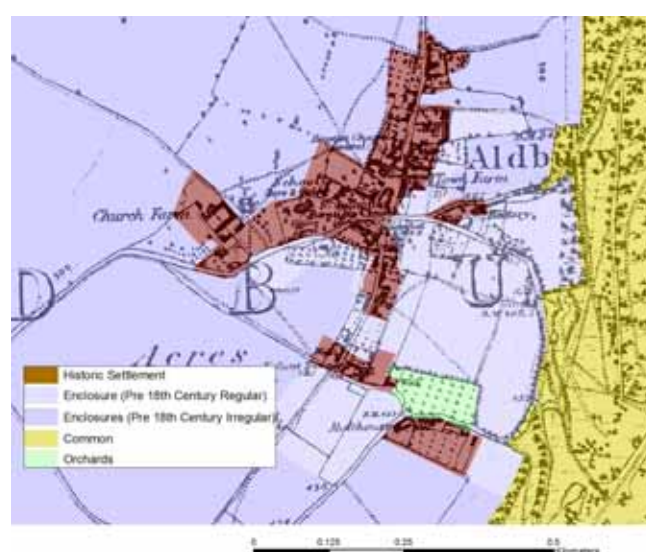
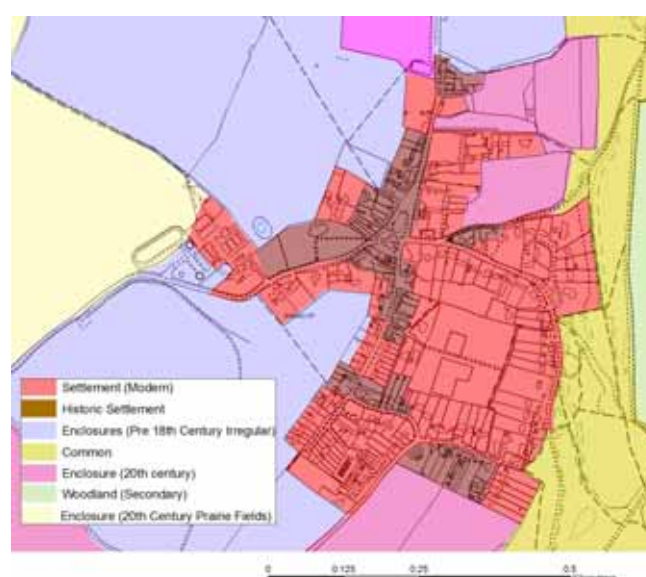


Figure 62: Above: The settlement of Aldbury in the late 19th to 20th centuries. Below: Growth by the twentieth century.



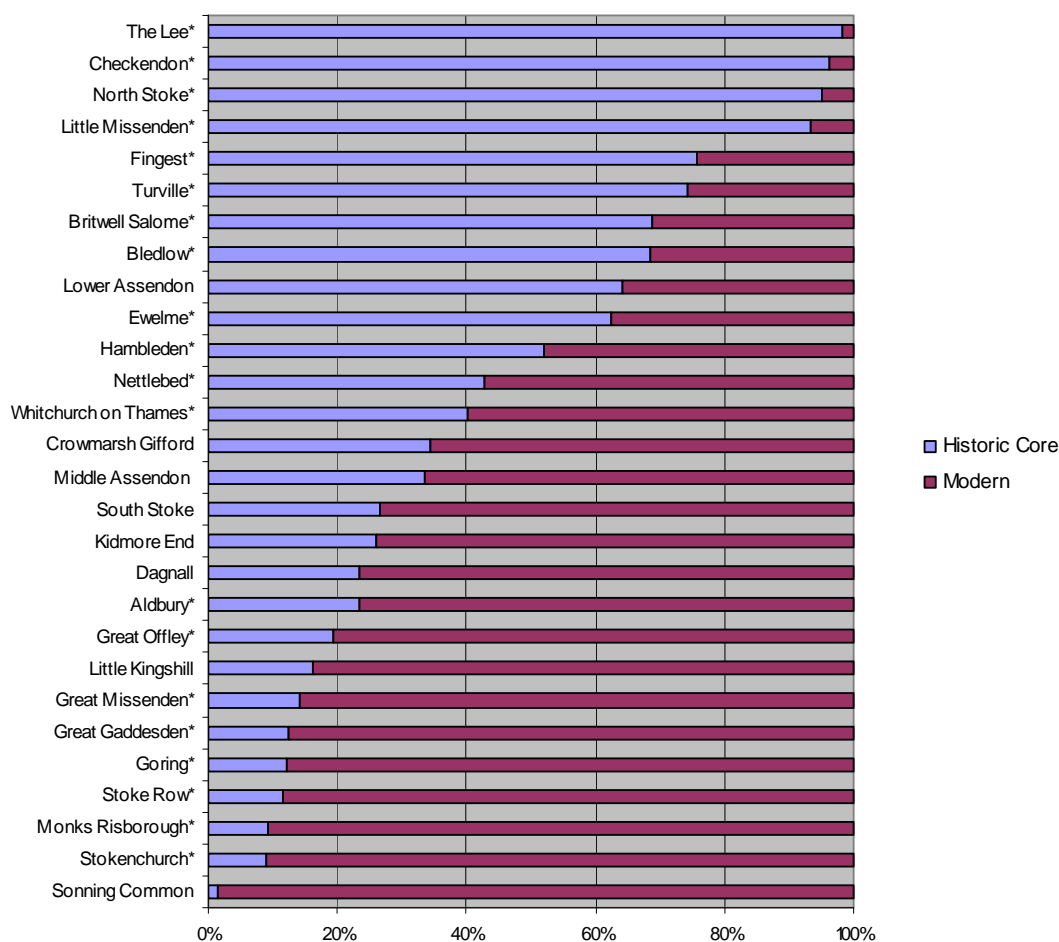


Figure 62: Composition of nucleated settlement in the Chilterns AONB historic core versus development in the late the twentieth century.

5.7.4. Protection of Historic Settlement: Conservation Areas (Buckinghamshire)

Generally the best preserved settlements cited in this report are already protected by conservation area status however there are many others that could benefit from protection from unsympathetic development. Using Buckinghamshire Chilterns as an example the following section outlines some examples where conservation area protection could be extended to accommodate smaller Chiltern settlements.

In the Buckinghamshire AONB there are 58 conservation areas. Comparing these conservation areas against the 19th century classification of settlement morphology shows that 16 are classified as by Nucleated Clusters, 5 Nucleated Rows, 7 Interrupted Rows, 21 Common Edge Settlements. This leaves almost 45% of historic settlements within the Buckinghamshire Chilterns without a conservation designation of these 15 are rated as being relatively unaffected by development and perhaps suitable for protection. It is recommended that a full review of settlements is undertaken to determine whether there are other places in the Chilterns that merit protection. A brief analysis of spatial data shows that Beamont End (Nucleated Settlement), Chartridge (Interrupted Row) and the common edge settlements of Ibstone and Bolter End may deserve some protection to maintain their historic morphology.

At the smaller end of historic settlement there are a number of subtle farm clusters that are virtually unchanged since the 19th century; settlements such as Colstrobe, north of Pheasants, in Hambleden and Town and Bennetts End at Radnage, Buckinghamshire, (Figure 63) this particular settlement is no more than a collection of farmsteads although it contains eight listed buildings and very little modern settlement.

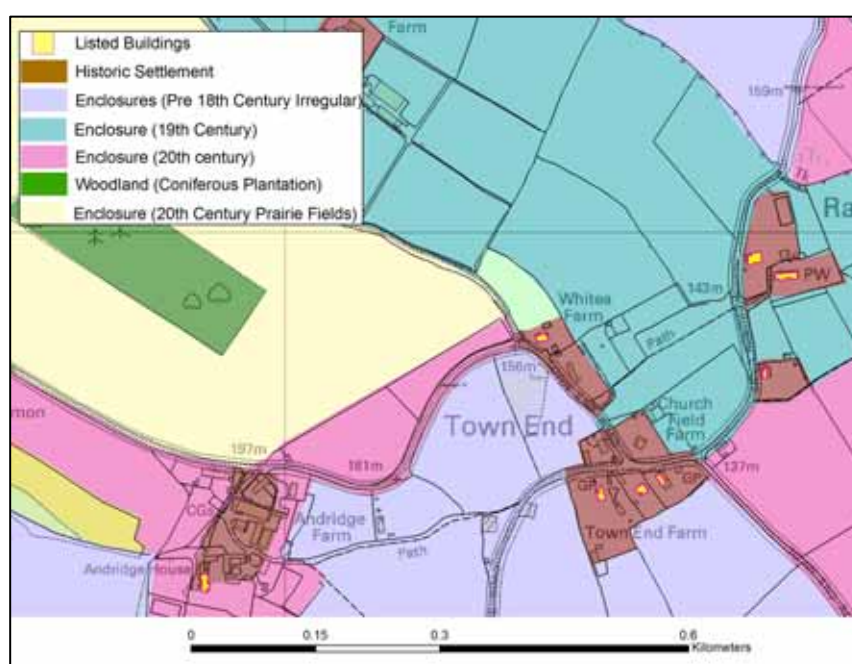


Figure 63: Town End, Radnage Bucks

Apart from examining new places for conservation area protection, the Chilterns HLC could also be used to review existing conservation designations. As an example, the village of Coleshill, Buckinghamshire, currently has a conservation area which covers only part of the village (Figure 64), the analysis of the HLC data shows that the extent of Coleshill's historic settlement stretches beyond this designation to the surrounding common in the south and the interrupted linear row at its northern end; these excluded areas also have a number of listed buildings within them. Consequently there could be an argument for enlarging the conservation area to accommodate these additional parts of Coleshill. However, it is acknowledged that designating some dispersed settlements could be problematical as unlike the nucleated settlement types which have tangible and easily defined cores, common edge and interrupted rows are very subtle and can appear diffuse at a ground level.

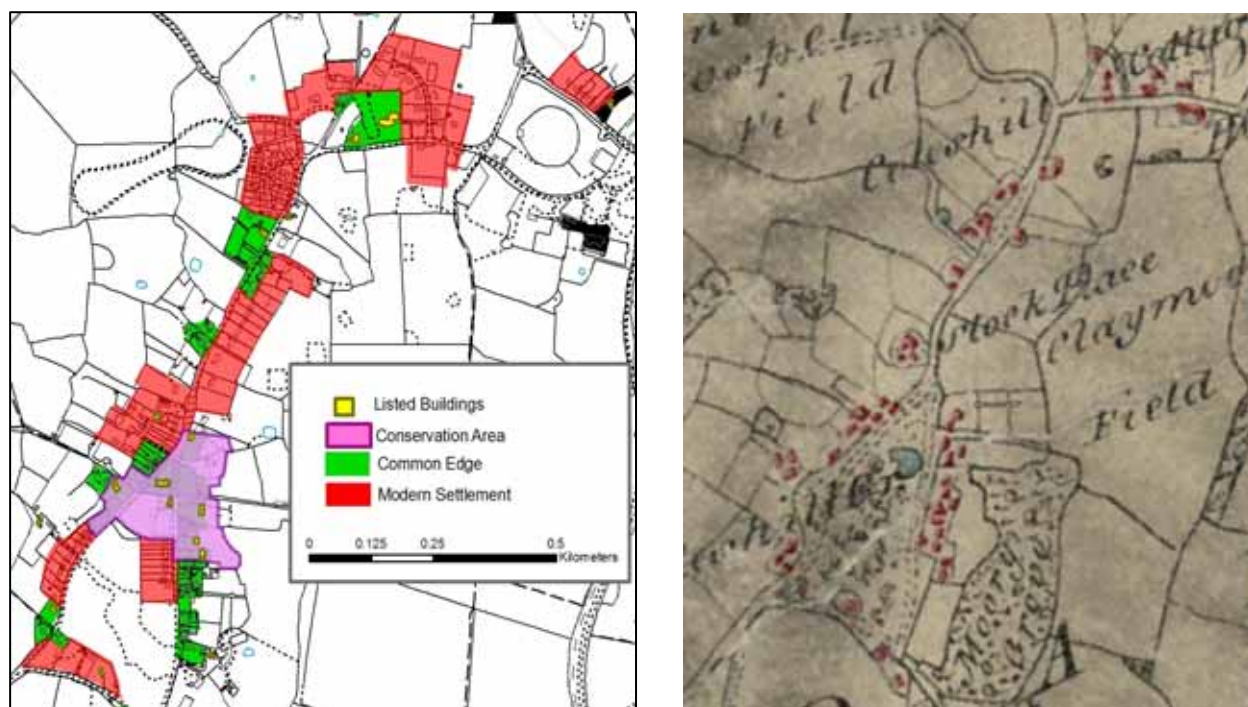


Figure 64: Coleshill, Buckinghamshire Present day extent and extract from Ordnance Survey 2" Surveyor's map 1810.

Latest guidance on conservation area appraisals (English Heritage 2006), has stated that many early conservation areas were originally 'too tightly drawn'; and that there should be circumstances where extension of the existing boundary should be considered, including the wider setting of the conservation area. Chilterns HLC can be used as an evidence base to justify these amendments.

5.8. Settlement Character Zones

By distilling the morphological information it is possible to discern distinct zones of historic settlement character found within the Chilterns. The result of this examination is the production of a historic settlement character map showing where these forms predominate (Figure 65). There are a total of 9 different settlement types and 30 different zones, each giving an approximation of the types of settlement in the project area. It is interesting to note that these settlement zones have some correlation with the topography and geology maps depicted in Figure 2.

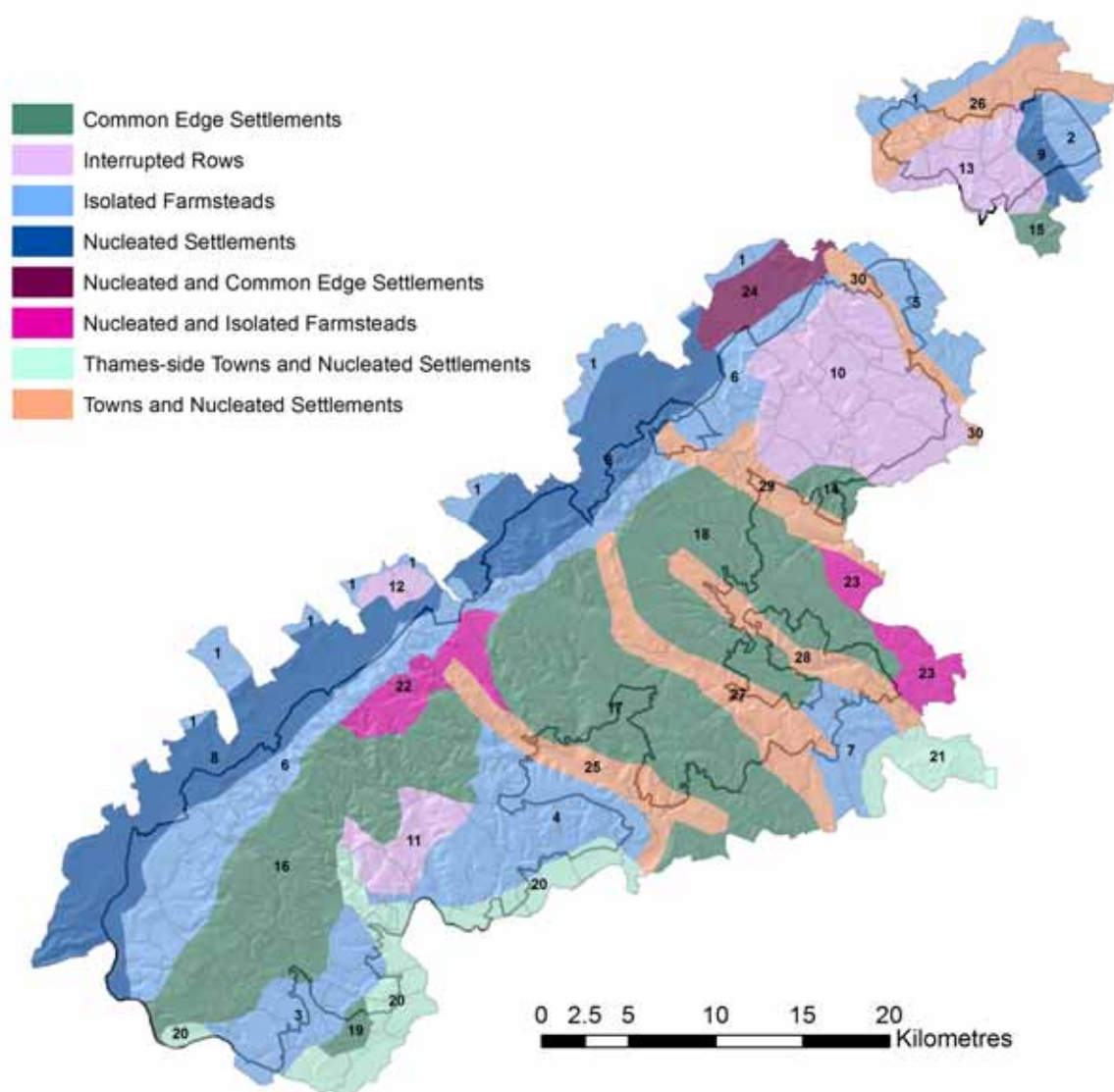


Figure 65: Chiltern Historic Settlement Character Zones

5.8.1. Isolated Farmsteads

Zone 1: Chiltern Foothills: This area is confined to the northern most fringe of the study area, and extends in a band from Pyrton to Hartington and Shellington in Bedfordshire. Settlement Density Rating: 0.01% (This calculation is based on the percentage of all settlement against the total area of the zone).

Zone 2: Offley Isolated Farmsteads: This is a relatively small settlement zone of isolated farmsteads found to the east of Offley and Pirton in Bedfordshire. The principal settlements are made up of farm clusters and isolated farms. Settlement Density Rating: 0.82%

Zone 3: Oxfordshire Farmsteads: This is a zone encompasses a band isolated farmsteads in the Oxfordshire Chilterns. The area includes other settlement types notably Sonning Common and Kidmore End this is typified by the dispersed settlements of Mapledurham, Harpsden, Crowsley. Settlement Density Rating: 0.80%

Zone 4: Hambleton and Marlow Isolated Farmsteads: This zone which extends from Wheeler End down to Medmenham and Marlow is defined by farms clusters and isolated farmsteads. The only exceptions to the historic settlement pattern in this zone are the more nucleated settlements of Hambleton and Pheasants Hill which is largely one of the more tranquil zones in the AONB. Settlement Density Rating: 0.80 %

Zone 5: Caddington Farmsteads: This zone extends in a band at the eastern end of the AONB incorporating the parishes of Caddington and Markyate and contains a cluster of farmsteads at Small Grove in Markayte. The only divergence in historic settlement type is the former common edge settlement of Caddington which by the 20th century has transformed into a larger nucleated settlement. Settlement density rating 1.48%

Zone 6: Chilterns Scarp Farmsteads: Sandwiched between the nucleated settlements on the Icknield belt and the common edge settlements of the Chilterns is a small strip of isolated farmsteads, running from Goring parish in the west to Eaton Bray in the East, the only interruptions to this pattern of settlement are the river valleys or 'bournes' containing the larger towns of the Chilterns: Tring and Dunstable. This area is also significant as it has very small amounts of modern settlement and represents one of the lowest settlement densities in the Chilterns. Settlement Density Rating: 0.78%

Zone 7: Chorleywood Isolated Farmsteads: This zone straddles the AONB and the wider study area, extending from the outskirts of Amersham in the north and bordering Chalfont St Peter to the West; it also encompasses a part of the western urban expansion of Chorleywood. Despite this seemingly suburbanised landscape, this zone's historic settlement character is largely dispersed, containing a number of isolated farmsteads and the small hamlet of Horn Hill, (Herts). The presence of later development in this zone means that the Settlement Density Rating is higher at 0.71%

5.8.2. Nucleated Rows and Clusters

Zone 8: Icknield Belt Nucleated Settlements: This zone is represented by a large band extending across A string of nucleated villages (both Rows and Clusters) north of the Chilterns scarp that form a chain that runs from the Thames in the west and continues along the Lower Icknield Way from Goring through Chinnor, Princes Risborough, Wendover, Tring to Totternhoe, (Beds). Most of these settlements coincide with the Lower Chalk formation Gault clays and Upper Greensand formation; which are capped by fertile soils. They occupy the boundary between the ancient/wooded and champion landscapes and were thus typically able to exploit the advantages of both enabling them to grow and in many cases develop markets and fairs. Consequently this has a significantly higher Settlement Density Rating at 2.45%

Zone 9: Offley Nucleated Settlement: This zone is somewhat of an oddity in that it covers only one nucleated settlement, that of Offley. This merits a zone in its own right as it abuts differing settlement character of the surrounding landscape. Settlement Density Rating: 2.90%

5.8.3. Interrupted Rows

Zone 10: Gaddesden & Kensworth Interrupted Rows: This is a distinct area in the Hertfordshire Chilterns that contains a more dispersed landscape Settlements are strung out along the ridge tops running north south. Examples of settlement types in this area are to be found at Great and Little Gaddesden, and Kensworth. Settlement Density Rating: 1.16%

Zone 11: Fawley & Skirmett: This zone incorporates the settlements in Fawley and Hambleden where a number of settlements are strung along main arterial routes running northwest along the Hamble Valley. Many have been the focus for much development and settlement infilling (see section 9) Settlement Density Rating: 1.37%

Zone 12: Henton Interrupted Row: This zone is north of the AONB consists of several villages in the interrupted row style: Henton, Skittle Green and Emington, they all lay on the north west axial routes running into the Chilterns. The zone also contains other settlement types including the common edge settlement of Holly and Pitch Green and a string of farmsteads in the area known as Forty Green. Settlement Density Rating: 2.31%

Zone 13: Streatley and Lilley Interrupted Rows: As its name suggests this zone comprises the settlements of Streatley and Lilley, which are, with the exception of some isolated farmsteads, the only villages in this area. The paucity of settlement is perhaps a reflection of landownership and tenure rather than physical conditions although further investigation needed. Settlement Density Rating: 0.08%

5.8.4. Chiltern Common Edge Settlements:

Zone 14: Potten End and Frithsden: This is a very small zone to the south west of Berkhamsted that straddles the AONB boundary. The area covers the historic common edge settlements of Frithsden, which once bordered Frithsden common and Potten End. The latter settlement has now lost its context with common as this area has now been infilled by modern development and could be classed as a nucleated cluster. Consequently this area is of greater settlement density. Settlement Density Rating: 1.00%

Zone 15: Tea and Mangrove Green: This is the small zone to the west of Luton in the parish of Offley is characteristic of 'Green edge' settlement rather than 'Common edge'. The forms of these settlements are subtle and unusually for an area so close to a large urban area it has experience with very little subsequent growth, preserving the settlement's historic morphology. Settlement Density Rating: 1.47%

Zone 16: Common Edge – Western Chilterns: This zone encompasses a large area of running from Goring Heath in the South west to Radnage in the north east. The zone is made up of a large number of common edge settlements, perched on the higher ground and salients. which is very little additional development the notable exceptions being It is this region that some of the best common edge types survive, this is due in part to the remote and more incised nature of the landscape which may make it unattractive for development. However the zone does have some modern settlement at its western and eastern ends, e.g. Woodcote, Nettlebed, in (Oxon) and Radnage, (Bucks). Settlement Density Rating: 1.57%

Zone 17: Common Edge – Central Chilterns: Hemmed in by the Wye river to the west and Misbourne river to the east, this zone is almost exclusively within the Buckinghamshire Chilterns. As with the other Common edge settlement zones, the physical characteristic of this area conforms to the same attributes with settlements on higher land capped with clay with flints. However, this zone differs from the others of its type as it is the one that has had its

historic settlement character changed the most by settlement growth over the last century. Many settlements (Naphill, Pestwood and Lacey Green) have transformed into more nucleated settlements largely as an extended expansion of High Wycombe and its proximity to road links to London (see discussion in section 5.7.4.). However, the area does contain some well preserved common edge forms example in Bradenham, Great and Little Hampden and Penn Street. Settlement Density Rating: 1.57%

Zone 18: Common Edge – Eastern Chilterns: This zone extends from Misbourne valley in the west to Bulbourne in the east. The zone also includes a detached area at Nettleden and Potten End that could not readily be incorporated into another zone. The character of the settlement is mixed with some well preserved and more developed forms such as Wiggington common. and some other as with the Common Edge – central Chilterns a feature of common edge settlements in this area is development, although not the same degree. Settlement Density Rating: 1.48%

Zone 19: Binfield Heath & Dunsden Green: This is a small zone of former common edge settlement located to the south of Sonning Common. The settlement of Binfield as the name implies once faced a heath, the extent of which has been lost to enclosure and secondary woodland. This has now removed the original context of settlement character changing Binfield to a series of farm clusters with some modest modern growth. The character of Dunsden has also been affected in a similar way. Settlement Density Rating: 3.98%

5.8.5. Thames-side Towns and Nucleated Settlements

Zone 20: West Thames-side Towns and Nucleated Settlements: This zone has its focus upon the river Thames, and incorporates the picturesque towns of, Henley, (Oxon), Marlow (Bucks). Most of the classification is outside the AONB It also a number of other nucleated rows including Shiplake and Whitchurch-on-Thames. Settlement Density Rating: 3.28%

Zone 21: East Thames-side Towns and Nucleated Settlements: This zone on the southern fringe of the AONB covers the towns of Rickmansworth and the settlement of West Hyde. The character of this end of the Thames has been the focus of much urbanisation and industry in the 20th century including the development of Maple Cross from a cluster of farms. Settlement Density Rating: 2.41%

5.8.6. Nucleated and Isolated Farmsteads

Zone 22: Stokenchurch: This area represents a mixture of settlement styles that cannot easily be characterised into one dominant form. It also coincides with diversity in topography and geology ranging from the top of river valleys to the beginning of the chalk escarpment. Settlement forms consists of the former common edge and nucleated row settlement of Stokenchurch, and the farm cluster of Radnage and Saunderton Lee plus a slew of isolated farmsteads, particularly in the western end nestling at the foot of the Chilterns scarp. With the exception of Stokenchurch the area has a low density of settlement. Settlement Density Rating: 1.24%

Zone 23: Commonwood, Sarratt: A mixed area of settlement types in a zone to the south of the AONB. It contains the interrupted row of Bucks Hill. The landscape has seen much piecemeal settlement and division of landscape into small enclosures and paddocks, particularly around Commonwood. As a consequence, the density of settlement is not as intense as housing estates found in other settlement zones, e.g. 16a but the effects are more extensive. Settlement Density Rating: 1.47%

5.8.7. Nucleated and Common Edge Settlements

Zone 24: Tattenhoe and Eaton Bray: This zone represents an area covered by nucleated and common edge settlement. Settlement Density Rating: 2.74%

5.8.8. River Valley Nucleated Settlements

Zones 25, 26, 27, 28, 29 and 30: These settlement zones are characterised by the principal towns and larger nucleated settlements of the Chilterns: Wycombe, Amersham, Chesham, (Bucks) and Berkhamsted, Tring (Herts) Markyate and Dunstable (Bedfordshire). The physical characteristics of the landscape are an important factor in the development, as they all have their focus along the Chilterns main river valleys of the Bulbourne, Chess, Misbourne, Ver and Wye; the valley topography is also important as a natural communication corridor through the Chilterns to London. Consequently these important settlements have been the focus of growth and expansion over the last century, particularly the towns of Wycombe, Chesham and Amersham, continue to encroach upon the protected landscape of the AONB.

Settlement Density Rating: 2.52%

6. Woodland Resource Assessment

Woodlands are one of the defining features of the Chilterns AONB, however, not much is known about their historic management or the archaeological and found within them. In order to redress this imbalance, this report sets out a model for recording additional information on the ecology and archaeology in woodlands. The objective is to create a broad character maps on the content of woodlands. The report evaluates the suitability/feasibility of different data to be integrated into the CHLC project; these include information from Environmental Record Centres (ERCs), Historic Environment Records (HERs) as well as detailed woodland surveys undertaken by the Natural Trust and the Chilterns Woodland Project. Selecting four pilot areas the across the Chilterns the results show that the ability to incorporate data into HLC was mixed; biodiversity data was problematical due to the vast majority of records focussing upon rare species of plants and fauna, while the commonplace species that make up much of Chilterns woodlands are not so well represented in a GIS format. However, the inclusion of HER data proved to be more successful although the results highlighted the dearth of known archaeology in Chilterns woodlands, reinforcing the need for more woodland surveys to be undertaken. The full report forms appendix 3 of this document.

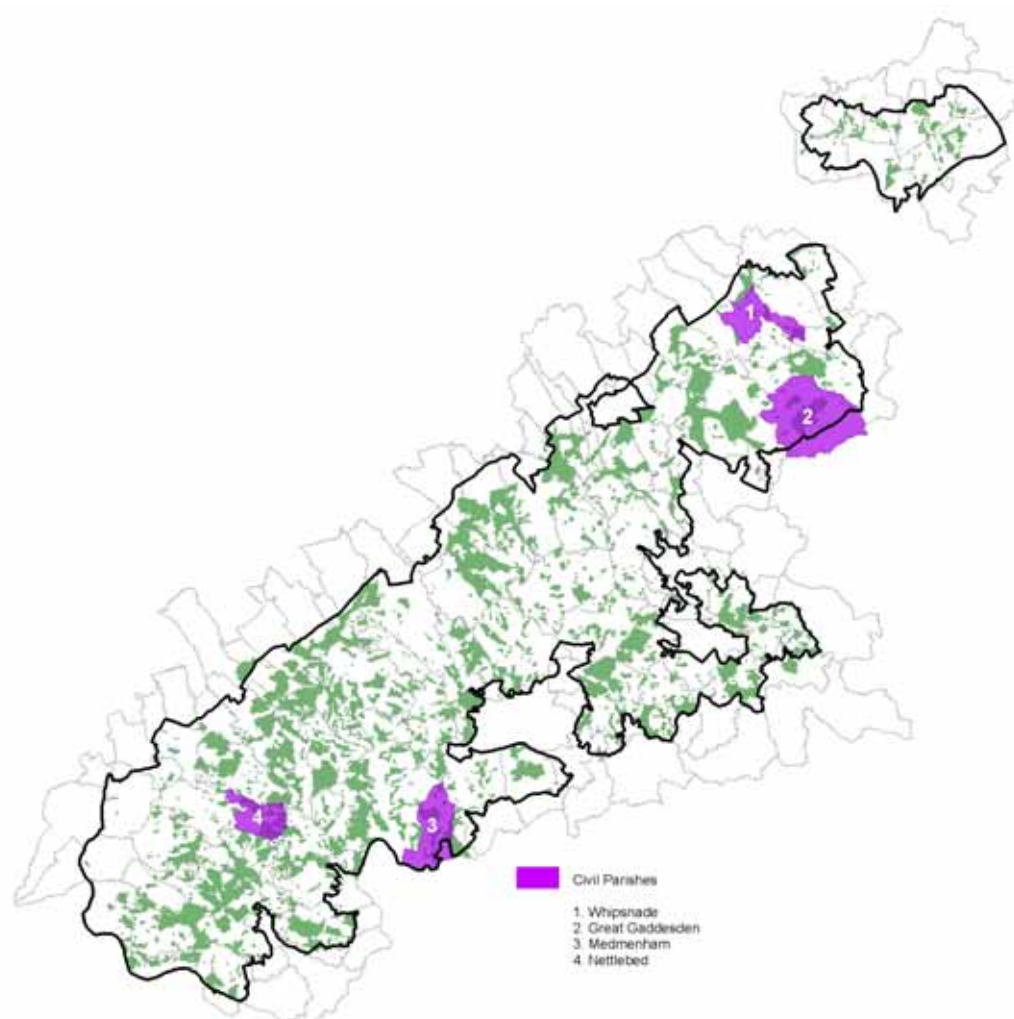


Figure 66: Map showing the extent of woodland in the Chilterns AONB and the location of pilot surveys.

7. Buildings characterisation

This report outlines the development of a methodology for characterising the built historic environment of the Chilterns based upon a study undertaken by CgMs consultants in 2006. A total of four pilot areas were surveyed; Mapledurham, (Oxon) Chartridge, (Bucks), Aldbury (Herts) and Whipsnade (Beds), each representing a geographical area of the Chilterns and a particular settlement type. The results of the original CgMs pilot areas are re-examined and a recording module is devised.

The paper also discusses how the data can be integrated back into the core methodology of the Chilterns Historic Landscape Characterisation and indicates further directions for study. In addition to the methodology and results, the paper also provides guidance for future surveyors and volunteers on how to characterise the historic built environment. The full report forms appendix 4 of this document

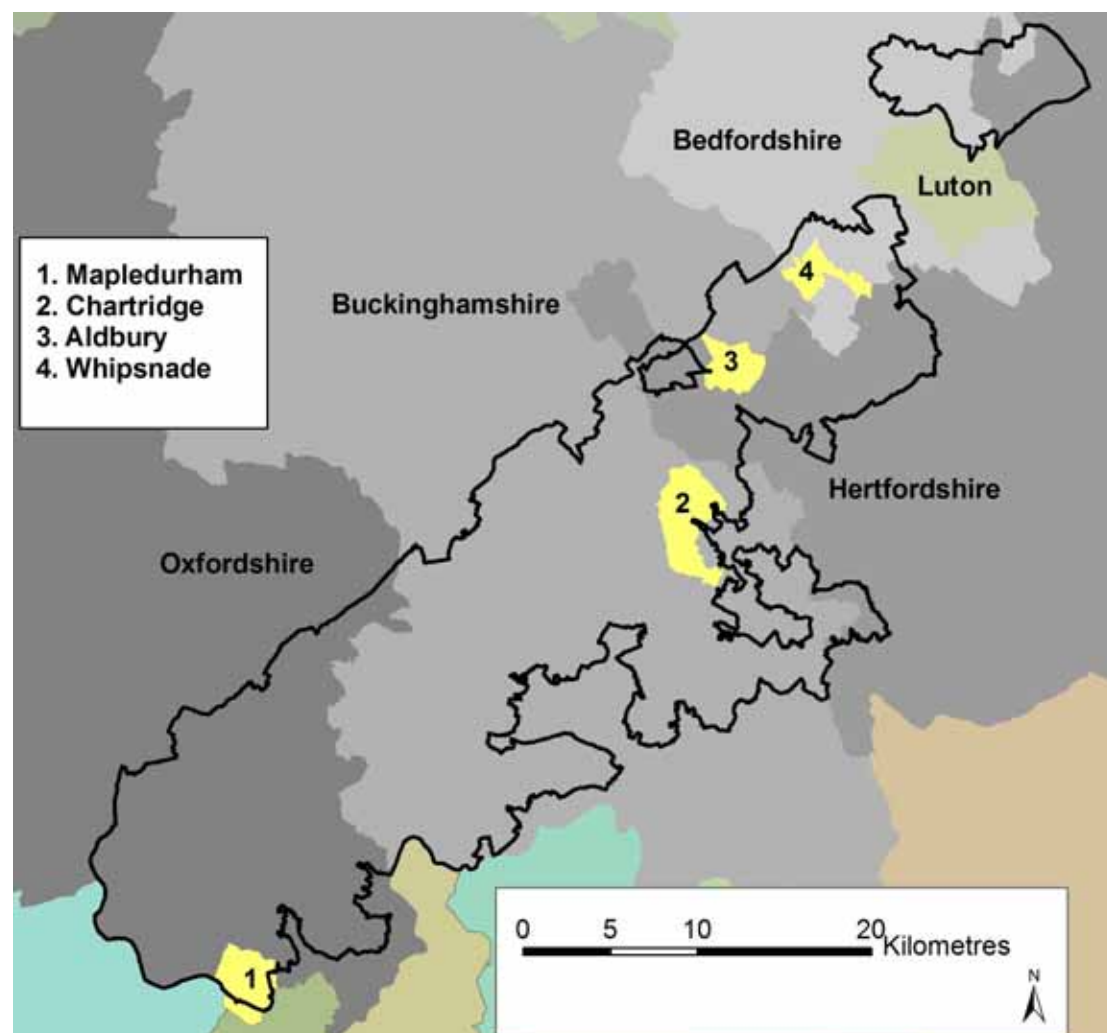


Figure 67: Map showing the location of pilot surveys for the buildings characterisation survey.

8. Roads and Trackways

A sample area of the Chilterns on the Buckinghamshire/Hertfordshire border was selected for a pilot study into methods for recording the historic character of roads and trackways. The survey mapped 384.4 km of routeways assigning each mapped segment to one of twelve 'historic routeway types' defined by reference to their chronology, form and function. The defining feature of the pilot study area is a network of 'axial droveways' interpreted as routes used to move animals between lowland and 'upland' grazing on commons and wood-pastures. This network is clearly related to the medieval parish structure, and its origins are tentatively dated to the first millennium BC. It is hoped that the study will inform the management and promotion of roads and rights of way in the Chilterns and encourage further research. The full report forms appendix 5 of this document.

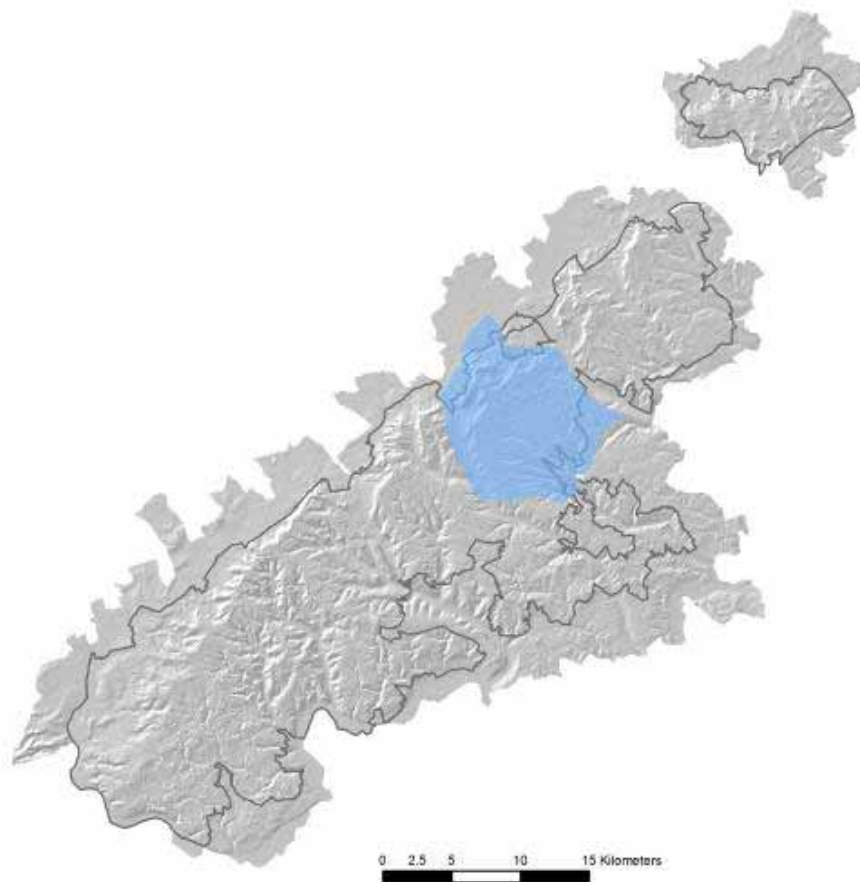


Figure 68: Map showing the extent of pilot survey for the Roads and Trackways Project.

9. Conclusions & Recommendations: Understanding and Managing Heritage Significance

9.1. Introduction

The value of the historic environment to defining the special character of the Chilterns AONB has been widely recognised since at least the early 1990s when it was persuasively articulated by Leslie Hepple and Alison Doggett in *The Chilterns* and subsequently taken up by successive versions of the Chiltern AONB Management Plan. The unique contribution of the Chiltern HLC project has been to generate a geographical database for analysing long-term historic land management trends across the entire AONB thus helping to better define those special historic characteristics, where they are found and how they have fared over the past two hundred years. This concluding chapter seeks to synthesise both the descriptive approach, as epitomised by Hepple and Doggett, and the analytical/quantitative approach of historic landscape characterisation to provide a heritage 'statement of significance' for the Chilterns and recommendations for future management.

9.2. Assessing Heritage Values and Significance

Methodologies and criteria for assessing the importance of archaeological remains, historic buildings and historic parks and gardens in the context of national systems of heritage designation are well established; albeit currently subject to comprehensive 'modernisation' in the context of Government's 'Heritage Protection Reform'. In contrast techniques for evaluating and attributing significance to the wider historic landscape are still in their infancy and yet are necessary to target practical action. The approach taken here is to assess 'heritage values' whilst also acknowledging that landscapes have many other values (e.g. economic, biodiversity etc). In recent years heritage values have been articulated in a number of ways but the definitions used here follow current best practice as set out in *English Heritage's Conservation Principles: Policy and Guidance for the Sustainable Management of the Historic Environment* (2008). The four 'heritage values' defined in *Conservation Principles* are:

- **Evidential value:** is the potential of a place to yield evidence about past human activity. This value equates most obviously to archaeological evidence in the form of earthworks, buried remains and built structures. However, it also encompasses landscape patterns and relationships ('landscape archaeology') and overlaps with the natural environment insofar as historic information can be derived from it – for example historic woodland management practices (coppices etc), the flora of hedgerows or environmental evidence for past landscapes preserved within wetlands etc.
- **Historical value:** derives from the ways in which past people, events and aspects of life can be connected through a place to the present. This can be through *illustrating* aspects of history or prehistory or through *association* with famous people, events or movements. In the Chilterns historic values might be displayed for example through illustration of historic woodland management practices (e.g. assarting, saw pits etc) or the association of designed landscapes with famous owners or landscape designers.
- **Aesthetic value:** derives from the ways in which people draw sensory and intellectual stimulation from a place. They can either reflect conscious *design* or the *fortuitous* outcome of the way a place has developed. Parks and gardens and polite architecture most obviously reflect design whilst the attractive combination of historic fields and woods or open vistas across downland owe more to fortuitous circumstance.
- **Communal value:** derives from the meaning of a place to people and can relate to commemorative, symbolic, social or spiritual values. Villages, community or religious buildings will tend to display strong communal values, as too may landscapes with good public access such as downs or commons.

In order to identify relative priorities at Chiltern-wide scale members of the Chilterns Historic Environment Group were asked to independently score each of 45 historic landscape types on a simple 1 to 3 point scale for each value and the total summed to give an overall

aggregate significance score from 4 to 12. With four values to score for each historic landscape type a total of 180 value judgments were made by each person. A total of 7 responses were obtained and the judgments divided into three categories: 1) those where there was unanimity over the preferred score (36% fell into this category); 2) those where an majority (i.e. at least 4) of the respondents agreed on the score but a minority differed (57% fell into this category); and 3) where there was no majority (7% fell into this category), in this case the most common (modal) score was accepted with minority opinion acting as a 'tie-breaker'. The combined scores were then reported back to the Chiltern Historic Environment Group for their endorsement.

Individual value scores:

1 = Low: Generally the historic landscape type demonstrates only limited or localised expressions of this value.

2 = Medium: The historic landscape type demonstrates this value to a significant degree and thereby contributes to the special character of the Chilterns.

3 = High: The type demonstrates this value to an outstanding degree contributing significantly to the special character of the Chilterns.

The overall significance scores were then converted to ratings as follows:

11-12 = High: The most significant historic landscape types which are of outstanding value to the Chilterns and worthy of conservation, enhancement, restoration and promotion.

9-10 = Medium/High: Significant historic landscape types which are of considerable value to the Chilterns and will normally be worthy of conservation, enhancement, restoration and promotion.

8 = Medium: Historic landscape types of value to the Chilterns and normally worthy of conservation.

6-7 = Low/Medium: Historic landscape types which make a limited contribution to the heritage value of the Chilterns; although some exemplars will be worthy of conservation other locations could absorb more change and/or may merit enhancement or restoration.

4-5 = Low: Historic landscape types which make at best a limited contribution to the heritage value of the Chilterns. Typically areas which can absorb more change and/or may merit enhancement or restoration.

The assessments for each historic landscape type are set out in appendix 1 and summarised in the table below.

It must be stressed that these are high-level strategic assessments submerged within which are a wealth of local variations and nuances - individual places and heritage assets must therefore be assessed on their own merits

9.3. Heritage value scores and significance

HLC Type	Evidential		Historic		Aesthetic		Communal		Summed Score	Significance
Government and Civic Offices	1	86%	2	71%	2	57%	3	43%	8	M
Hospitals, Schools & Universities	1	86%	2	71%	1	86%	3	71%	7	L/M
Utilities	1	71%	1	100%	1	100%	1	100%	4	L
Airfields (Civil)	2	57%	2	57%	1	100%	1	57%	6	L/M
Motorways & Canals	2		2		1		2		7	L/M
Assarts	2	71%	3	57%	3	43%	2	71%	10	M/H
Enclosure (19th Century)	2	86%	2	57%	2	43%	1	71%	7	L/M
Enclosure (20th Century Fields)	2	71%	1	57%	1	86%	1	71%	5	L
Enclosure (20th Century Prairie Field)	1	57%	1	86%	1	86%	1	100%	4	L
Enclosure (Coaxial Fields)	3	100%	3	86%	2	57%	1	57%	9	M/H
Enclosure (Crofts)	3	86%	3	71%	2	57%	2	71%	10	M/H
Enclosure (Parliamentary Enclosure)	2	71%	3	86%	2	100%	1	57%	8	M
Enclosure (Parliamentary Enclosure) Modified boundaries	2	86%	3	71%	2	100%	1	57%	8	M
Enclosure (Pre 18th Century Irregular Enclosure)	2	71%	2	71%	2	86%	2	57%	8	M
Enclosure (Pre 18th Century Regular Enclosure)	2	71%	2	71%	2	100%	1	57%	7	L/M
Enclosure (Pre 18th Century Sinuous)	2	71%	3	57%	3	57%	2	71%	10	M/H
Fossilised Strips	3	71%	3	86%	3	57%	2	71%	11	H
Meadows	3	86%	3	71%	3	86%	2	57%	11	H
Pony Paddocks	1	71%	1	100%	1	86%	1	86%	4	L
Industrial	2	71%	2	86%	1	100%	1	86%	6	L/M
Industrial (Mineral Extraction)	1	43%	1	86%	1	100%	1	100%	4	L
Industrial Disused Mineral Extraction	1	57%	1	86%	1	100%	1	100%	4	L
Allotments	2	43%	2	100%	2	43%	3	86%	9	M/H
Nurserys and Glasshouses	1	71%	1	57%	1	100%	1	86%	4	L
Unimproved Land	2	71%	1	71%	1	86%	2	57%	6	L/M
Water Meadow	3	71%	3	57%	3	57%	2	71%	11	H
Watercress Beds	3	43%	3	71%	3	57%	2	71%	11	H
Post Medieval Military	2	71%	3	57%	1	57%	2	57%	8	M
Mixed Origin	0		0		0		0		0	FALSE
Commons & Heaths	3	71%	3	71%	2	57%	3	100%	11	H
Downland	3	86%	3	71%	3	86%	3	71%	12	H
Relict Open Fields	3		3		2		0		8	M
Parks and Gardens	3	86%	3	100%	3	100%	3	57%	12	H
Recreation (19th Century recreational areas)	2	57%	2	57%	2	43%	3	71%	9	M/H
Recreation (20th Century recreational)	1	57%	1	71%	2	43%	3	71%	7	L/M

areas)									
Recreation (Golf Courses)	2	57%	1	71%	1	86%	2	43%	6 L/M
Caravan Parks	1	86%	1	100%	1	100%	1	71%	4 L
Settlement (20th Century)	1	57%	1	57%	2	86%	2	43%	6 L/M
Settlement (Historic Cores)	3	100%	3	86%	3	86%	3	86%	12 H
Riverine Landscape	3	57%	2	71%	3	71%	2	57%	10 M/H
Water (Reservoirs)	1	71%	1	57%	2	100%	2	57%	6 L/M
Woodland (19th/20th Century Coniferous Plantation)	1	57%	1	57%	2	57%	1	71%	5 L
Woodland (Ancient Semi-natural)	3	86%	3	71%	3	86%	3	71%	12 H
Woodland (Orchards)	2	86%	2	57%	3	57%	2	71%	9 M/H
Woodland (Replanted Ancient)	2	71%	2	100%	2	86%	2	71%	8 M
Woodland (Secondary Regeneration)	3	43%	1	57%	2	86%	2	43%	8 M
Woodland (Wood Pasture/Wood Common)	3	57%	3	86%	3	86%	3	57%	12 H
	94		95		90		85		

9.4. Mapping Heritage Values

The distribution of heritage values and overall significance can be mapped by reference to the historic landscape types. It must be stressed that this is a high level strategic assessment which must be tested and amended to suit local situations. High historic value is widely expressed across the AONB with only localised areas having low value. Evidential value is fairly evenly distributed with medium value most common but also with widespread medium value areas. Aesthetic value is medium/high across the central and south western parts of the AONB but a bit weaker to the northeast. Communal value is rather variable and patchy. With respect to aesthetic and communal values it is essential to recognise that this study only considers the heritage contribution to these values - it does not for example take account of topography and viewpoints.

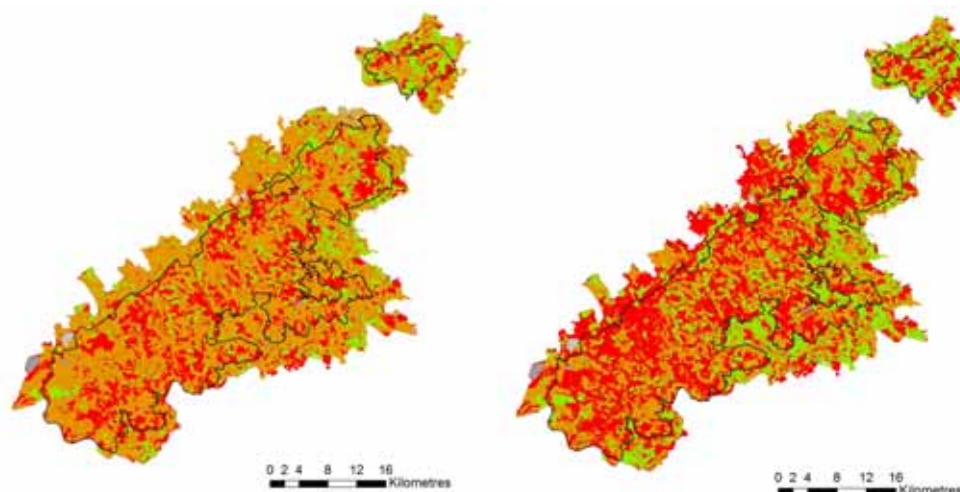


Figure 69: Evidential value map (left). Historic value map (right).

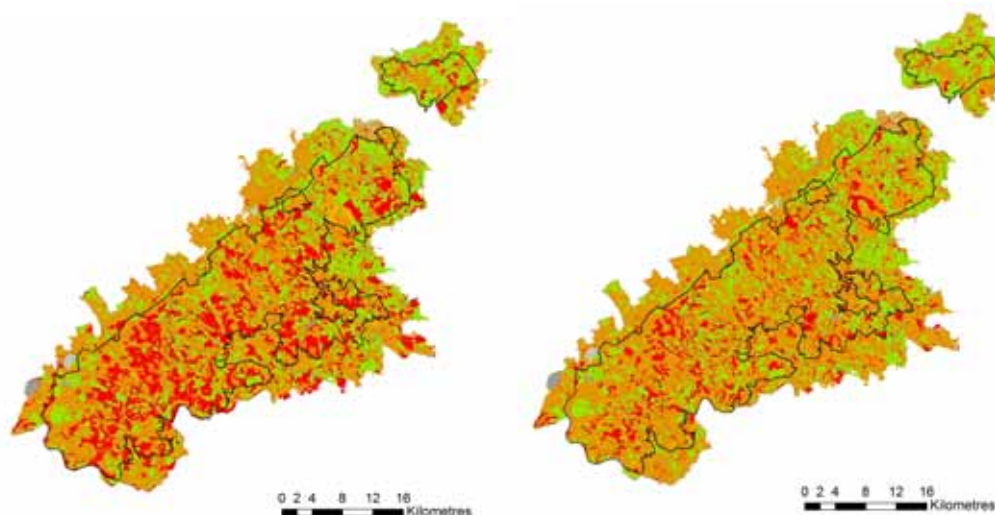


Figure 70: Aesthetic value map (left). Communal value map (right).

Red = high; orange = medium; green = low

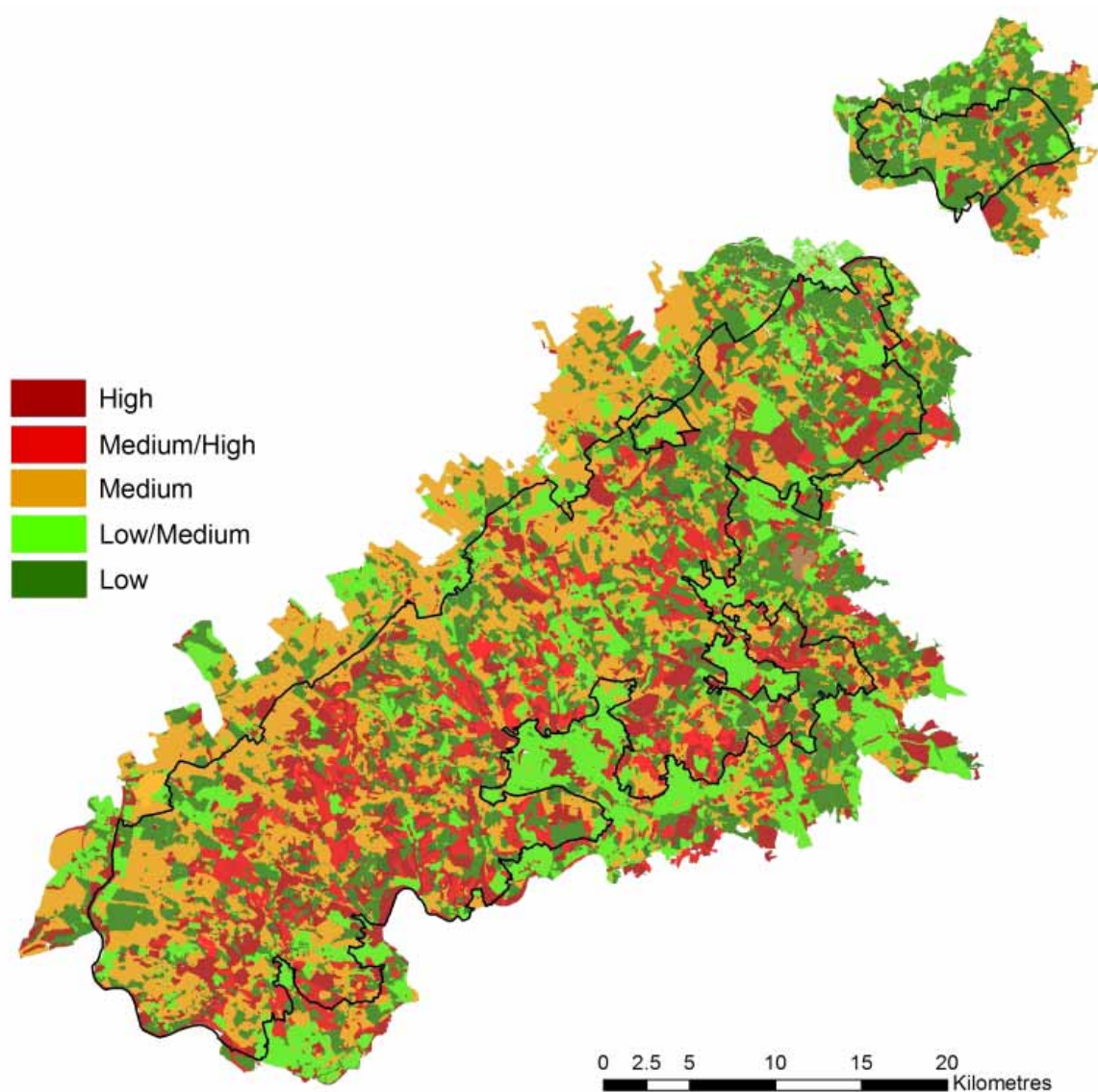


Figure 71: Heritage significance map.

10. Statement of Heritage Significance

The following statement endorsed by the Chilterns Historic Environment Group aims to briefly summarise the heritage values ascribed to the Chilterns AONB:

“The Chiltern’s historic environment reflects the relationship of man to this distinctive landscape over thousands of years. The Chilterns can justifiably be regarded as ‘ancient countryside’ because 45% of the AONB landscape retains the patterns of pre-18th century landscapes of historic settlements and parkland; ancient woodlands, downland and commons; and irregular or co-axial field patterns. These ancient landscapes display a wide range of heritage values and are considered to vary from medium to high significance. Evidential value (including the potential for new discoveries) is present in all these early landscapes embodied in historic buildings, archaeological remains, botanical data, survivors of traditional management practices and landscape patterns themselves. Ancient woodland and downland preserve regionally significant reserves of visible archaeological monuments. Historical value is widespread particularly through association with notable individuals responsible for country houses and designed landscapes and also generally through the illustration of historical processes such as the changing uses of woodland or agricultural land or developments in architecture. Aesthetic value is the heritage value most obviously aligned to the concept of ‘natural beauty’. Again it is widely evident in all pre-18th century landscapes in most cases reflecting a fortuitous organic development expressed through the relationship of historic features to the natural topography. In any particular locality the aesthetics of the whole landscape are likely to be more than the sum of its parts and understanding the interrelationships between historic features will be critical. Aesthetic values also derive from deliberate design as seen most obviously in historic parkland and polite architecture but also in some vernacular architecture. The setting of the Chiltern AONB is also important to its aesthetic heritage value whether in displaying the contrast between this ancient landscape and the planned or ‘champion’ landscapes to the north or the Thames corridor to the south. Communal values can also be imparted on pre-18th century landscapes in a number of ways. Historic settlements and commons often have a strong identity reflecting social values as do areas with public recreational access such as parks or downland or rights of way through fields. Spiritual values may be found both in rural churches and chapels and more generally in the tranquillity and contact with nature that goes with many of these early landscapes; ancient woodlands represent the most obvious example of this phenomenon. Thus the 45% of the Chiltern AONB landscape which survives from before the 18th century makes an outstanding contribution to the AONB’s special character and heritage value and should be given the highest priority for conservation, and where appropriate restoration.

The impact of the agricultural and industrial revolutions of the 18th and 19th centuries was significant in the Chilterns but nevertheless relatively muted and indirect by comparison with many other parts of England. Overall only 20% of the Chiltern AONB owes its essential character to this period, although much of this change occurred within the ‘grain’ of earlier landscapes. Landscape change is evident in the enclosure and loss of commons and the last of the old medieval open fields. There was a changeover from timber to brick as the Chilterns’ main building material whilst the economic function of Chiltern woods changed from the supply of wood fuel to London to the production of beech for furniture manufacture leading to the creation of distinctive beech woodlands. Although heavy industry is not a feature of the Chilterns small furniture factories, paper mills and horticultural enterprises (e.g. orchards and watercress beds) were established to serve the London market. Transportation was improved through canals, railways and turnpike roads. 18th and 19th century landscapes typically display low/medium to medium/high significance reflecting their historical connection with events of regional, national and even international importance. The historical illustrative value of parliamentary enclosure fields or historic industrial, commercial or transport structures is significant whilst parks and some other structures are associated with famous people. Evidential values in this period are typically more selective - some complex sites such as parks and gardens have significant potential whilst in many areas earlier landscape features and archaeological sites survived within the altered landscapes, for example secondary woodland has grown up over many much earlier archaeological monuments. Aesthetic and communal values tend to be moderate rather than outstanding, although there are exceptions such as the high communal value of allotments. Overall, the contribution of

the 18th and 19th centuries to the Chilterns is significant but not generally an outstanding nor defining characteristic of the AONB. Nevertheless, there is a need for selective conservation of the better examples of buildings, landscapes and archaeological sites from this period.

Despite being by far the shortest of the three time-periods used in historic landscape characterisation the 20th century is responsible for framing the character of 35% of the Chilterns AONB reflecting the increasing mechanisation of agriculture, and life in general, and the expansion of London 'overspill'. At a landscape scale the 20th century saw major built development (mostly prior to the designation of the AONB); the expansion of settlements; the loss or sub-division of historic fields and the decline of grazing leading to the growth of secondary woodland. Twentieth century landscapes have mostly been classed as low or low/medium sensitivity. This reflects generally lower heritage values across the board, although some modern buildings do have significant aesthetic and/or communal values whilst military sites have historical and communal values relating to defining events of modern history. It is important to recognise that historic features and archaeological remains from earlier eras do often survive within ostensibly modern landscapes. The heritage values for secondary and replanted woodland for example partly reflecting their connection to earlier heritage. Overall the contribution of the 20th century to the special character of the AONB is not positive as much more valued historic landscapes have been removed or degraded to make way for these new landscapes. In the wider Chiltern study area 45% of the landscape is of 20th century character indicating that there was unsurprisingly a tendency to exclude areas of modern change. Whilst it will be important to recognise and protect the best 20th century contributions to the Chilterns in some places it would be preferable to restore earlier landscape patterns, especially where 'relict' features survive from which to build."

10.1. Towards Strategies for Sustainable Management

Having defined the Chilterns' heritage values it remains to consider how well these have been sustained over the past century and what future priorities could be. The table below provides a summary of how the extent of each historic landscape type has changed over the past hundred years cross-indexed against the heritage significance of the type. It shows that whilst at a macro-scale some historic landscape types (historic settlement and parkland for example) have fared fairly well others (e.g. downland, meadows and co-axial fields) have suffered serious or critical losses. This analysis suggests that a 'do-nothing' approach would result in an unsustainable loss of historic significance over much of the Chilterns within a lifetime. Of course much of the change recorded here happened before the advent of modern controls such as the planning system, natural and historic heritage designations, the designation of the AONB, hedgerow regulations and agri-environment grant schemes so recent, current and projected future trajectories may be different to these long-term trends. Nevertheless at the very least it provides evidence as to why such controls are necessary to ensure development is 'sustainable' and some indication as to where they should be applied with full rigour. At a broad strategic scale it is suggested that the analysis can be used to propose four different management strategies:

Conserve and Restore: historic landscapes of medium to high significance which have declined rapidly or critically. Surviving examples of these landscapes need protection whilst opportunities and projects to restore significant lost sites would be desirable in most instances.

Conserve: historic landscapes of medium to high significance which are stable or declining slowly. Existing measures to protect these areas should be maintained; and where appropriate enhanced if the special character of an area is in danger or erosion through small-scale piecemeal change.

Selective Conservation: historic landscapes of low/medium significance or which are still increasing in extent. Conservation should focus on particular exemplars worthy of special attention to protect or enhance particular heritage values.

Mitigate or Restore: historic landscapes of low or low/medium significance where it would be desirable to mitigate negative impacts or restore lost landscape patterns. Can overlap with selective conservation.

10.2. Chilterns Historic Landscape Character: Table of Heritage Significance and Change

Heritage Significance	Trajectory of long-term change (from 1880s to 2000)				
	Increasing	Stable	Declining slowly	Declining rapidly	Declining critically
		Loss of < 5%	Loss of 5%- 20%	Loss of 20%- 50%	Loss of > 50%
High	Watercress beds	Water meadows Historic settlement Wood pasture	Parks & Gardens Ancient woodland	Meadows Commons & Heaths	Downland Fossilised strips
Medium/High		Crofts Riverine landscape		Allotments Assarts Coaxial fields Orchards	Pre-18 th century sinuous enclosure
Medium	Replanted ancient woodland Secondary woodland Government & Civic Military			Parliamentary enclosures	Pre-18 th century irregular enclosure
Low/Medium	Hospitals & Schools Industrial 20 th century recreation Golf courses Modern settlement Airfields	Unimproved land Reservoirs		Pre-18 th century regular enclosure 19 th century enclosure	
Low	Utilities Motorways Prairie fields Pony Paddocks Disused mineral extraction Caravan Parks 20 th century enclosure Coniferous plantation woodland	Nurseries & glasshouses			

Heritage Management Strategy						
	Mitigate or Restore		Selective conservation		Conserve	Conserve & Restore

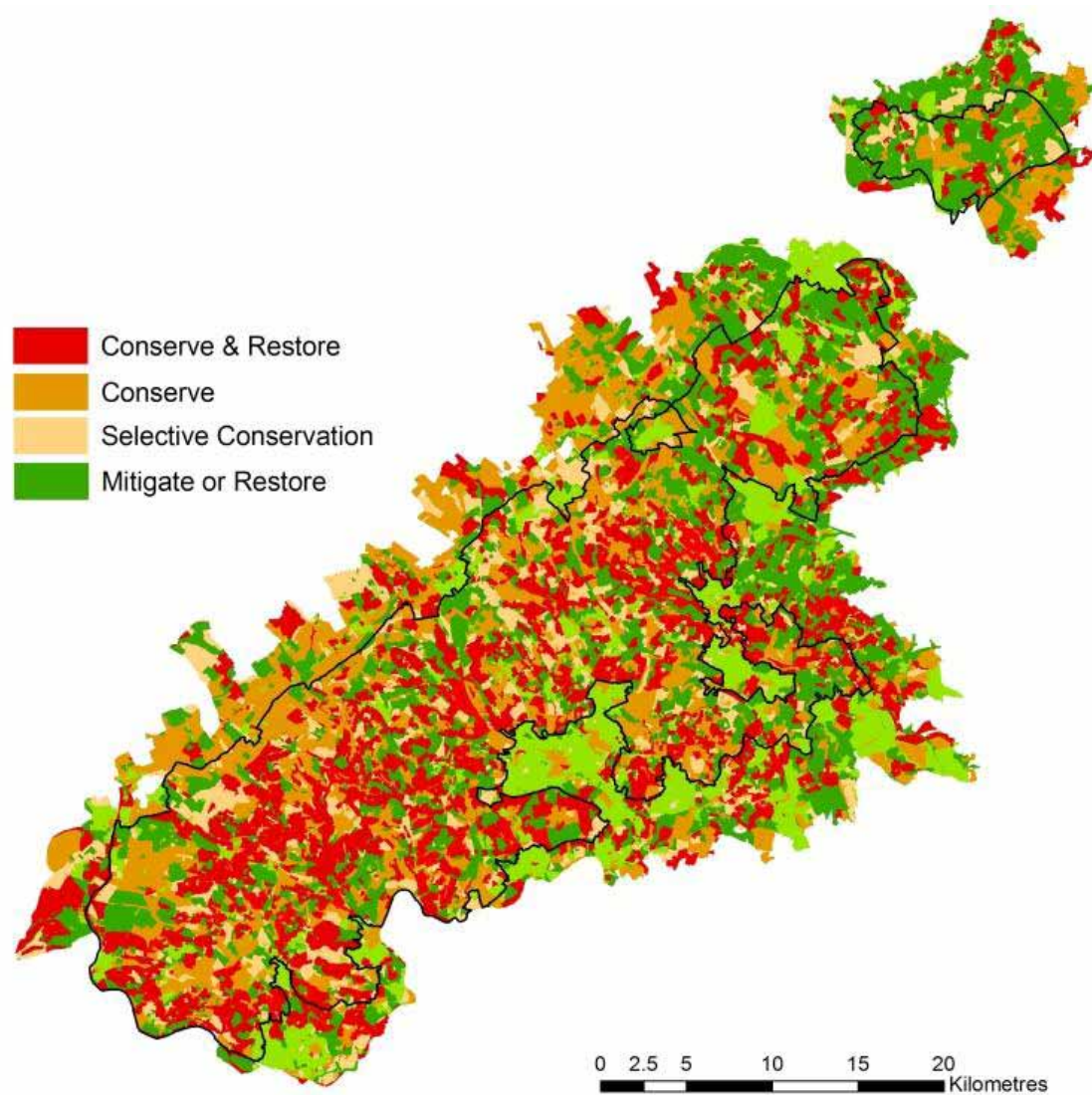


Figure 72: Heritage management strategy map

For each broad landscape type a series of specific recommendations have been drawn up:

Open land - Commons and Downland: Although today they only cover a small proportion of the Chilterns, commons and downland are among the most characteristic historic landscapes of the Chilterns Area of Outstanding Natural Beauty scoring highly on most heritage values. Commons have a long history in the community life of the Chilterns, many remain today as important green spaces. However, the study has shown that there has been a rapid loss of commons from a process of enclosure and urbanisation over the last hundred years, and even more was lost in the 19th century. Downland has also suffered critical losses over the last 100 years attributable to changes to agricultural practice with the removal of sheep grazing. The management strategy therefore is to conserve and restore these historic landscape types.

Recommendations:

- Support planning policy and land management proposals which help resist future loss of commons or downland
- Seek opportunities to restore former common or downland (e.g. where lost to invasive scrub and secondary woodland).
- Maintain grazing regimes on Chiltern commons and downland.
- Survey, conservation and interpretation of archaeological monuments on downland, and former downland which has reverted to secondary woodland.
- Encourage the inclusion of commons within Conservation Areas and emphasise their historic value in conservation areas appraisals.

Enclosed land - Field Systems: The Historic Landscape Characterisation has shown that the Chilterns contains a wide variety of field systems which cover two-thirds of the AONB. Historic fields comprise 67% of the total including coaxial fields, which may originate to the prehistoric period, medieval woodland assarts, irregular fields probably created piecemeal from medieval times through to the 17th/18th centuries, and parliamentary enclosures of the 18th and 19th centuries. The remainder (37%) are modern field patterns. Thus, although the Chilterns landscape contains well preserved fieldscapes, recent economic and social trends have had a major impact upon the character of enclosed fields in the AONB; the grubbing out of hedgerows in central and eastern Chilterns to create 'prairie' fields and the proliferation of modern sub-divided fields ('pony paddocks') across the region are the main manifestations of these trends. Historic field systems are mostly of medium or medium/high significance scoring medium or high on evidential, historic and aesthetic groups but typically lower on communal value due to the more limited access to private agricultural land. Historic field systems have declined rapidly or critically reflecting the lack of protection for hedgerows prior to the Hedgerow Regulations 1997. Modern field systems are considered of low significance. The management strategy is generally to conserve, and where appropriate restore, pre-20th century field systems.

Recommendations:

- Utilise the Hedgerow Regulations 1997 and the planning system to protect historically important hedgerows and field systems.
- Seek to target the restoration of historic field systems and meadows in key locations in agri-environment/stewardship schemes.

- Support the use of planning powers to restrict sub-division of significant historic fields and where new boundaries are introduced seek the use fencing materials consistent with the surrounding landscape.
- Encourage research into the origins of pre-18th century field systems and more joined up study of their historic and natural interests.

Settlement and Buildings: The HLC study has revealed that the Chilterns contains a variety of distinct historic settlement types of high heritage significance, some of which have which have retained their historic character rather better than others over the past century. Generally the extent of historic settlement has been stable but the study has broadly identified settlements which have undergone a change in character and others that have maintained their character but are at potential risk. The overall strategy for historic settlement is therefore to conserve the character of places. For modern settlement the challenge is to ensure new designs are sensitively located and more in keeping with their surroundings.

Recommendations:

- Undertake further targeted characterisation study using the Chiltern historic building characterisation methodology.
- Encourage review/ revision of conservation area designations to look particularly at more dispersed settlement types in the Chilterns, and associated open areas, and as far as possible taking into account archaeological and artistic interest as was proposed in the Draft Heritage Protection Act.
- Encourage the creation of up to date Conservation Area Appraisals.
- Encourage the establishment of local registers of historic assets.
- Integrate characterisation into the Chiltern Design Guide and continue to promote guidance on sensitive design and use of appropriate materials in new development.

Woodland: Woodland represents one of the defining characteristics of the Chilterns landscape covering over 21% of the AONB. Over half is classified as ancient woodland, which has been declining slowly over the past century. Ancient woodlands score highly on all heritage values reflecting their diversity of interest. Historic orchards are a rare type of high interest which is declining rapidly whilst wood pasture, an important medieval landscape, had almost disappeared by the end of the 19th century. Another woodland trend is the increase in secondary woodland cover to the detriment of downland, commons and enclosure. The strategic objective is to conserve ancient woodland and orchards but for secondary and replanted woodland restoration to previous forms may be desirable.

Recommendations:

- Continue to protect ancient woodland using planning powers.
- Support the clearance of secondary woodland where it is possible to restore earlier valued landscapes or better protect archaeological monuments.
- Support the Chiltern Woodland Project advice on the maintenance of historic woodland and related archaeological surveys.
- Seek to address the issue of archaeological monuments within woodland at risk from tree-throw and related damage.

- Encourage measures to recognise, conserve and restore historic orchards.
- Encourage measures to restore traditional grazing on former wood pasture.
- Enhance data in the Chilterns HLC with information derived from the surveys undertaken for the Chiltern Conservation Board's Special Trees and Woodland Project.

Historic Parks and Gardens: The most important Chiltern parks and gardens are recognised in English Heritages Register of Parks and Gardens of Special Historic Interest in England, which is a material planning consideration. These landscapes possess outstanding evidential, historic and aesthetic value and many are also important community resources. However considerable financial resources and expertise are required to secure effective informed conservation of these 'high maintenance' landscapes. In addition to the registered parks there are many undesignated parks and gardens which contribute to local character. Most parks and gardens have a wider visual setting which extends into the surrounding landscape.

Recommendations

- Challenge the out-dated intellectual fallacy that 'natural beauty' excludes consideration of designed landscapes.
- Seek to protect all nationally and locally significant historic parks and gardens, and their settings, using planning powers.
- Support the preparation and implementation of Conservation Management Plans.

Modern landscapes: Generally speaking modern landscapes in the Chilterns have more capacity to absorb change than earlier landscapes but each case must be treated on its own merits and further change should aim to enhance the character and appearance of the Chilterns by respecting its historic 'grain'.

Recommendations

- Proposals for new development or the restoration of damaged land should assess the historic land use of the site and its surroundings and aim to respect existing features of interest and reflect this character in new design. Where historic or archaeological features cannot be preserved an appropriate record should be made.

Roads and Paths: The routeways pilot study has provided a characterisation methodology which could help inform future management of the Chilterns rich historic network of lanes and footpaths.

Recommendations

- Seek to extend the routeways study across the Chilterns and embed it in the management of roads and rights of way.

Information and Dissemination: Chiltern HLC has potential to contribute to long-term sustainability monitoring but is at present a 'point in time' assessment of a dynamic landscape. It also has potential for much wider public use.

Recommendations

- Make the Chiltern HLC available on the AONB website.
- Produce a popular booklet on Chiltern HLC and its uses.

- Hold a seminar to promote awareness of Chiltern HLC and its uses.
- Aim to update the Chiltern HLC on a 10-year cycle, with the first review due in 2010.
- Consider using HLC in other popular publications, such as walks leaflets.
- Consider whether resources could be secured for an historic environment post based at the AONB office with maintaining and developing Chiltern HLC as part of their remit.

11. Bibliography

- Atlantic Consultants 1998 *South Oxfordshire Landscape Assessment* (South Oxfordshire District Council)
- Bannister, N. 1996 *Woodland Archaeology in Surrey: Its Recognition and Management* (Surrey County Council)
- Bedfordshire County Council, Heritage and Environment Section 2006 *Bedfordshire and Luton Extensive Urban Survey* (Bedfordshire County Council/English Heritage)
- Blackwell, C. 2004 *Oxfordshire Wildlife and Landscape Study* (Oxfordshire County Council)
- Bowden, M. 2002 *Greys Court Rotherfield Greys Oxfordshire: Level 1 Archaeological Survey* (English Heritage)
- Buchanan, J. 1987 *Chilterns Ancient Woodland Survey 1986-7*. NCC Report. (Forestry Commission /Nature Conservancy Council, South Region).
- Buckinghamshire County Council 1996 *Landscape Plan for Buckinghamshire Part 1* (Buckinghamshire County Council)
- Buckinghamshire County Museum Archaeological Service 1998 *Historic Parks and Gardens (Buckinghamshire) (Stage 1) Report 508* Buckinghamshire County Museum
- Bull, E.J. 1993 The Bi-Axial Landscape of Prehistoric Buckinghamshire *Records of Buckinghamshire* **35**
- Casselden, P. 1987 'Chartridge and Pednor Hedgerows: A Landscape Study Part II: Implications for Landscape History' *Records of Buckinghamshire Volume 29* pps.133-159
- Casselden, P. 1986 'Chartridge and Pednor Hedgerows: 'A Landscape Study Part I: The Hedges Surveyed' *Records of Buckinghamshire Volume 28* pps.182-214
- Chilterns Conservation Board 2001 *Chiltern Area of Outstanding Natural Beauty Management Plan: The Framework for Action 2002-2007* (Chilterns AONB)
- Countryside Commission 1992 *The Chilterns* (Countryside Commission)
- Defra 2007 *Consultation on the Protection of Common Land in England* (Commons Act 2006)
- Dyson Bruce, L. (forthcoming) *Bedfordshire Historic Landscape Characterisation Project* (Bedfordshire County Council/English Heritage)
- Dyson Bruce, L. (forthcoming) *Hertfordshire Historic Landscape Characterisation Project* (Hertfordshire County Council/English Heritage)
- English Heritage 2006 *Guidance on Conservation Area Appraisals* (English Heritage)
- English Nature 2002 *Landscape Character of the Chilterns* (English Nature & Oxford Brookes University)
- Giggins, B. Green, D. & Welch, C. 2006 *Solent Thames Historic Environment Research Frameworks Buckinghamshire; Post-Medieval Period* (Unpublished)
- Green, D. & Kidd, S. 2006 *Buckinghamshire Historic Landscape Characterisation Project* (Buckinghamshire County Council/English Heritage)
- Hepple, L. & Doggett, A. 1996 *The Chilterns* (Phillimore)

- HMSO 1997 *Hedgerow Regulations - Statutory Instrument 1997 No. 1160* (HMSO)
- Jacobs 2008 *Aylesbury Vale Landscape Character Assessment* (Jacobs, Aylesbury Vale District Council, Buckinghamshire County Council)
- Jenkins, J 1955 for 1946 (ed.). *The Missenden cartulary*, 2 (Buckinghamshire Record Society, 10). Jordans, Bucks
- Kain, R, Chapman, J. and Oliver R. 2006 *Enclosure Maps in England and Wales* (Cambridge University press)
- Kirby, K., Latham, J., Holl, K., Bryce, J., Corbett, P., and Watson, R. 2002. *Objective setting and condition monitoring within woodland Sites of Special Scientific Interest*. English Nature Research Reports No. 472, English Nature, Peterborough.
- Land Use Consultants 2004 *A Landscape Character Assessment of Bedfordshire* (Bedfordshire County Council)
- Leland, L. 1998 *John Leland's Itinerary: Travels in Tudor England 1571* (Sutton Publishing)
- Lewis, C. Mitchell-Fox, P. & Dyer, C. 2001 *Village Hamlet and Field: Changing Medieval Settlements in Central England* (Windgather Press)
- Mansfield, A. 1952 *The Historical Geography of the Woodlands of the Southern Chilterns 1600-1947* (Unpublished MSc thesis - University of London)
- Matthews, W.L. 1998 *National Trust Archaeological Survey: Pulpit Wood* (National Trust Thames and Chilterns Region) unpublished report.
- Matthews, W.L. & Wainwright, A. 1993 *The National Trust Archaeological Survey Hughenden Manor* (National Trust: Thames and Chilterns Region) unpublished report
- Matthews W.L. & Wainwright, A. 1990a *Bradenham* (National Trust Thames and Chilterns Region) unpublished report
- Matthews, W. & Wainwright, A. 1990b *Greys Court* (National Trust)
- Matthews, W.L. 1989 *The National Trust Archaeological Survey Aston Wood* (National Trust Thames and Chilterns Region) unpublished report
- Matthews, W.L. 1989 *The National Trust Archaeological Survey Coombe Hills and Low Scrubs* (National Trust Thames and Chilterns Region) unpublished report
- Matthews, W.L. 1989 *Watlington Park – Watlington Hill* (National Trust Thames and Chilterns Region)
- Matthews, W.L. 1989 *The National Trust Archaeological Survey: Coombe End Farm* (National Trust – Thames and Chilterns Region)
- Matthews, W.L. 1988 *The National Trust Archaeological Survey: Dunstable Downs and Whipsnade*
- Matthews, W.L. 1988 *The National Trust Archaeological Survey: Sharpenhoe Clappers* (National Trust Thames and Chilterns Region) unpublished report.
- Morris, J.K. 1999 *The Chilterns Woodlands Project History in Chiltern Woods A guide to identification and Management of Woodland Archaeological Features* (Sheffield)
- ODPM 2006 *Planning Policy Statement 7: Sustainable Development in Rural Areas* (HMSO)

- Rackham, O. 1986 *A History of the Countryside* (Dent)
- Roberts, B. & Wrathmell, S. 2000 *The English Heritage Settlement Atlas* (English Heritage)
- Roden, D. 1973 'Field Systems of the Chilterns and their Environs' in *English Field Systems* eds Butlin Ch. 8 (Cambridge University Press)
- Roden, D. 1970 'Changing Settlement in the Chiltern Hills Before 1850' *Folk Life* **8** 57-71
- Roden, D. 1965 *Studies in Chilterns Field Systems*: Unpublished PhD (University of London)
- Solik, M. (ed). 2003 *New Perspectives on Chiltern Landscapes* (Chiltern Conservation Board)
- Spencer J W & Kirby K J (1992) *An inventory of ancient woodland for England and Wales. Biological Conservation*, 62, 77-93
- Tate, W. E. 1978 *Domesday of English Enclosure Acts and Awards* (Reading)
- Thompson, I. 2005 *Hertfordshire Extensive Urban Survey* (Hertfordshire County Council/English Heritage)
- Wainwright, A. 1985 *Ashridge Archaeological Survey (Interim Report)* (National Trust unpublished report)
- Wainwright, A. 1989 *Ashridge Park Survey* (National Trust unpublished report)
- Wainwright, A. 1989 *Archaeological Survey* (National Trust unpublished report)
- Williamson, T. 2002 *Shaping Medieval Landscapes: Settlement, Society, Environment* (Windgather Press)
- Williamson, T. 1987 Coaxial Fields on the East Anglian Boulder Clays *Proceedings of the Prehistoric Society* **53** 419-31
- Wordie, J.R. 1983 'The Chronology of English Enclosure 1500 - 1914': *The Economic History Review* Vol. 36 No.4. pp. 483-505
- Yarnell, T. 1993, 'Archaeological Conservation in Woods and Forests', in Swain, H. (ed.) *Rescuing the Historic Environment: Archaeology, the green movement and conservation strategies for the British Landscape*, RESCUE, Hereford