North Wessex Downs Area of
Outstanding Natural Beauty

CHALK GRASSLAND STRATEGY REPORT

Report by
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1. Introduction

North Wessex Downs AONB Council of Partners awarded a contract to the Wiltshire & Swindon Biological Records Centre (WSBRC) in November 2004 to produce a Chalk Grassland Strategy for the AONB by March 2005.

The WSBRC staff involved in carrying out this study were:

Tom Cairns	WSBRC Manager
Purgle Linham	WSBRC Deputy Manager
Tony Coultiss	WSBRC GIS Data Officer

In fulfilling its contract, a key part of the WSBRC's approach has been to consult fully with the AONB's partners and others to ensure that the strategy not only meets the needs of the AONB's rich landscape, biodiversity and archaeological interests but that it is informed by the wealth of knowledge, skills and expertise in these areas.

The WSBRC gratefully acknowledges the support and assistance that it has received from many individuals and organisations including the AONB staff and managing partners, the Local Record Centres, local authority ecologists and archaeologists, English Nature, local Wildlife Trusts, the Farming and Wildlife Advisory Group (FWAG), the National Trust, the RSPB, Butterfly Conservation and Plantlife.

2. Aims of the strategy

2.1 Remit

The overall aims of the strategy as set out in our brief are:

- To build a clear picture of the extent, status and condition of chalk grassland within the AONB and to set a clear strategy for its management.

- To identify the potential for chalk grassland restoration/creation, focussing upon expanding, buffering and linking existing chalk grassland sites and associated habitats.

- To identify focus areas/missing pieces in the jigsaw in order to maximise the impact of restoration work and make best use of limited resources.

2.2 Losses of chalk grassland within the AONB

The chalk downland provides the essential defining character of the AONB's landscape, a landscape that is of great antiquity and cultural significance. Although the history of arable cultivation is as old as the landscape itself, what has dramatically changed is the extent of the intensively cropped arable areas compared to that managed as chalk grassland.

Chalk grassland, both nationally and within the AONB, was almost certainly at its greatest extent during the 16th century when the wool trade formed a major component of the downland economy. Arable cultivation provided grain for bread making and benefited from the fertilising effect of numbers of sheep folded on the arable areas overnight.

This balance between grazing and arable was irreparably lost during World War Two when large tracts of downland were lost in the drive to increase arable productivity. The greatest losses however occurred from the mid-1960s onwards as the Common Agricultural Policy (CAP) provided the major economic driver for agricultural intensification. Today, much of the remaining remnant areas of chalk grassland are confined to the steep slopes where cultivation is less economic.

Nationally, it has been estimated that the area of chalk grassland declined by 30% between 1966-80 alone and within the AONB this trend has been matched by a reported decline in the area of all grassland of 32% between 1968-98.

Map 1: North Wessex AONB Location

2.3 Importance of chalk grassland to the AONB

Although arable cultivation has always formed a component of the downland landscape together with chalk grassland, the huge declines of the latter has had a dramatic effect on the overall landscape character of the AONB. Allied to the loss of a well-loved landscape feature has been the loss of potential public access together with the informal recreational activities associated with it.

The very considerable archaeological interest of the AONB is and continues to be threatened by changes of land use. This has two aspects. Firstly, the context and setting of the many standing archaeological features can be lost, particularly where there is an association between a number of different monuments in the same area. Here again, there is a knock on effect of reduced public access and the consequent loss of public awareness and appreciation of the archaeology. Secondly, modern deep ploughing can potentially damage the important below-ground archaeological interest which, in some cases, can be more important than the visible monument.

Last but not least, the declines of chalk grassland threaten the rich biodiversity interest of the AONB. Chalk grassland is one of the most biologically rich and diverse habitats in the UK with over 40 species of flowering plants recorded from a single square metre of the best quality turf. The AONB's chalk grassland supports

important populations of the Early Gentian, a scheduled protected species and one of Britain's few endemic plants. Unimproved chalk grassland is also important for the survival of many scarce invertebrate species such as the Wart-biter Cricket and the internationally threatened Marsh Fritillary Butterfly. Other scarce chalk grassland butterflies include the Adonis Blue, Chalkhill Blue and Small Blue whilst bird species include the Skylark.

2.4 Management Plan context

The need for a Chalk Grassland Strategy for the North Wessex Downs AONB is identified as a specific action (**A17)** in Book 3 of its Management Plan. This links directly to a Policy (**IU9)** relating to *Improving Understanding* in the AONB that calls for "the development of a robust information base on the extent, condition and potential expansion of the main semi-natural habitats of the AONB and use of this knowledge to inform habitat management, creation and linkage with ongoing identification of trends over time."

In turn, this policy provides a delivery mechanism for a number of key objectives that are set out in Book 1 of the AONB's Management Plan, particularly those relating to *Theme 4: Increasing Biodiversity* (**Objectives 12-15**), but also those relating to *Theme 1: Conserving and Enhancing Landscape Character and Diversity* (**Objectives 1-4**) and *Theme 2:Celebrating the Past* (**Objectives 5-7**). In this context, the latter was seen as primarily referring to the archaeological rather than the more recent historical past.

2.5 Partnership context

Partnership lies at the core of the AONB's way of working and active consultation with key stakeholders was an explicit requirement of our brief. This consultation has provided us with an invaluable avenue for receiving feedback on our work and a wealth of expertise, contacts and local knowledge that was critical in helping to identify opportunities for restoring and re-creating chalk grassland at a local level.

3. AONB Strategic context

This strategy will operate within a framework of international, national, regional and local policies, regulation and legislation that act as drivers for many of the key management decisions that will either promote or constrain the development and implementation of a chalk grassland strategy. Success will to a large extent be dependent upon the extent to which the potential benefits of some policies such as CAP reform can be capitalised upon whilst also mitigating the potential constraints of others such as the access provisions under the CRoW Act.

3.1 UN Convention on Biological Diversity

In 1992, the UK was one of the first countries to sign the Convention on Biological Diversity at the United Nations Conference on Environment and development ('The Earth Summit') in Rio de Janeiro. This convention explicitly required all countries to develop national strategies and action plans for the conservation of biological diversity and the sustainable use of biological resources. Without this international imperative, it is far from certain that a UK Biodiversity Action Plan would have been drawn up or that the whole impetus for producing Local Biodiversity Action Plans would ever have got off the ground.

3.2 European Habitats Directive

In 1992, the European Union (EU) adopted the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, more generally referred to as the EC Habitats Directive. The provisions of the Directive require member states, including the UK, to introduce a range of measures aimed at protecting 189 priority habitats (Annex 1) and 788 priority species Annex 2) by establishing a network of sites of European importance.

One of the priority habitats listed under the EC Habitats Directive is 'Dry Grasslands and Scrublands on Limestone' (*includes Chalk).* All member states are required to propose a list of candidate sites for eventual designation as Special Areas of Conservation (SACs). Together with similarly designated Special Protection Areas under the EC Birds Directive, these outstanding sites are intended to form a network of protected European areas known as Natura 2000. Currently, within the North Wessex Downs AONB, there are seven candidate Special Areas of Conservation (cSACs). In addition to this there are 29 Sites of Special Scientific Interest (SSSIs) present that contain important areas of chalk grassland.

3.3 UK Biodiversity Action Plan (BAP)

To meet its commitment to the UN Convention, the UK government published the UK BAP in 1994. This was aimed at conserving and enhancing biological diversity in the UK and contributing to the conservation of global biodiversity. In December 1995, a UK Biodiversity Steering Group, led by the Department of the Environment (now DEFRA), published a follow-up document entitled 'Meeting the Rio Challenge'. This set out detailed draft BAPs for a first tranche of key habitats and species. By 1999, 45 UK priority Habitat Action Plans (HAPs) and 391 UK priority Species Action Plans (SAPs) had been published. Amongst these was a Lowland Calcareous Habitat Action Plan.

The key targets set out in the UK Lowland Calcareous Habitat Action Plan are:

- Arrest the depletion of lowland calcareous grassland throughout the UK.
- Within SSSIs, initiate rehabilitation management for all significant stands of lowland calcareous grassland in unfavourable condition by 2005.
- Achieve favourable status for all significant stands of lowland calcareous grassland within SSSIs by 2010.
- For stands outside SSSIs, secure favourable condition over 30% of the resource by 2005.
- For stands outside SSSIs, secure favourable condition over as near to 100% as is practicable by 2015.
- Attempt to re-establish 1,000 ha of lowland calcareous grassland of wildlife value by 2010.

The three objectives that underlie these targets - halt the further loss of chalk grassland, restore the condition of existing chalk grassland and re-creation of chalk grassland - are all fundamental to the production of a chalk grassland strategy for the North Wessex Downs AONB.

3.4 South West Biodiversity Action Plan

The South West was the first region to establish a Regional Biodiversity Partnership and a South West BAP was published in 1997. This set out a series of objectives, targets and action for the whole region and was based upon an audit of the biological resource in the region, 'The Biodiversity of the South-West', that was published in 1996. A total of 18 South West Regional Habitat Action Plans were produced and included one for 'Calcareous Grassland'.

A major problem that was identified at an early stage in the production of the South-West BAP was the lack of consistency across the region not only in the way Local BAP objectives and targets were drawn up but also in terms of the sourcing and validity of the supporting data. These are issues that have had to be addressed in drawing up this strategy for the AONB.

3.5 South West Biodiversity Implementation Plan

Due to the early production of the SW BAP, before a number of UK priority habitats had been defined, it was not well aligned to the UK BAP. To redress this, a South West Implementation Plan was published in July 2004. This also provided the opportunity to identify how best to achieve implementation of the agreed actions and targets in the BAP, given the problems of inconsistency in target setting and use and validation of supporting data.

Three key delivery mechanisms were adopted in order to address these issues. The first involved making use of accurately mapped datasets that had already been 'harmonised' as part of the National Biodiversity Network's South-West regional pilot project. The second involved the use of the NBN data in the

production of a Regional Nature Map that identified the key clusters of biodiversity interest across the region. The third involved the adoption of the rebuilding biodiversity methodology in order to target potential areas for landscape-scale habitat restoration.

In drawing up a chalk grassland strategy for the North Wessex Downs AONB, use has been made of some features of all of these including the use of mapped calcareous grassland polygons from the NBN data for Wiltshire to the identification of clusters of biodiversity across the AONB and the use of rebuilding biodiversity criteria in the opportunities mapping exercise.

3.6 Biodiversity in the South East Region

Although a SE BAP has not been produced, DEFRA has identified 11 habitats of SE regional significance that are also UK priority Habitats. These include one for Lowland Calcareous Grassland that equates to that adopted for the South-West.

3.7 Regional Nature Map

A regional nature map provides strategic guidance on the distribution of major concentrations of biodiversity interest to land use planners and organisations operating at a regional level. The map is intended to inform regional strategies and provide a spatial framework with which to facilitate action around priority areas for habitat restoration and re-creation. As described in 3.5, development of the South West Nature Map was informed by the availability of harmonised NBN mapped habitat data. This in turn informed rebuilding biodiversity approach to landscape scale habitat restoration. Within the development of this strategy, the equivalent process was the identification of key clusters of chalk grassland.

3.8 Rebuilding Biodiversity

Rebuilding Biodiversity is a strategic and integrated approach to the restoration of self-sustaining natural habitats at a landscape scale. The approach borrows concepts from the original technique pioneered by the United States Nature Conservancy but has been approached rather differently in the UK. A methodology has been developed by the Wildlife Trusts in the South West and is now being developed further in partnership with other environmental organisations for application to the SW Nature Map. The approach uses the best available scientific data, including the requirements of area-limited species (where known), to estimate minimum areas for key habitat types at a landscape scale. The methodology assumes that at a landscape scale habitats exist within a dynamic mosaic with other closely associated habitats, and the minimum area figures take this into account.

Whilst any Rebuilding Biodiversity exercise has to be informed also by local knowledge and land management experience, its essential rationale is data driven and ecologically informed. It is interesting to note however that the concept of a minimum area to ensure ecological viability is closely matched by a similar economic concept expressed in the stakeholders' consultations for this strategy that suggests it is only possible to secure long-term management of many chalk grassland areas if their existing areas were expanded.

3.9 Local Biodiversity Action Plans (LBAPs)

Biodiversity is ultimately lost or conserved at the local level. The UK BAP specifically identified LBAPs as the means by which national and regional strategy is translated into effective action at the local level. This is because they provide the opportunity to take into account the values of local people as well as local conditions and distinctiveness. No less than six different LBAPs cover parts of the North Wessex Downs AONB to varying extents, these being for Berkshire, Hampshire, Oxfordshire, Swindon Borough, Test Valley Borough and Wiltshire. The relevant HAPs for each are:
Berkshire Lowland Unimproved Grassland HAP
Hampshire Lowland Calcareous Grassland HAP
Oxfordshire Chalk & Limestone HAP
Swindon Borough Downland HAP
Test Valley Borough Lowland Calcareous Grassland HAP
Wiltshire Calcareous Grassland HAP

Land Use Consultants' synthesis of the targets set out within these different LBAPs for their landscape study for the AONB demonstrates that not only were the definitions of the habitat resource different within different LBAPs but also their targets for restoration and re-creation of the resource differed to a gross extent although some simply adopted the UK BAP targets. This proved to be very relevant to the discussions on targeting at the second stakeholders' consultation where a strong consensus urged us to adopt a spatial targeting approach rather use numerical targets based on ad hoc judgement or theoretical propositions.

3.10 Countryside and Rights of Way (CRoW) Act 2000

As well as strengthening the protection afforded to SSSIs and clarifying the position in relation to rights of way, two key provisions in the CRoW Act relate directly to the production of a chalk grassland strategy. At the more strategic level, the Act clarifies the procedure and purpose of designating AONBs and requires local authorities in whose areas AONBs are located to prepare and publish a management plan for each area. This relates back to the management plan context for the chalk grassland strategy as set out under its Aims.

The second relevant provision is the new right of public access on foot ('right to roam') to specified types of 'open land' that includes 'downland'. Any strategy that has, as an objective, the extension and re-creation of areas of chalk grassland, has the potential for opening up to public access land that has hitherto remained private. For some private landowners, this could be viewed as a serious disincentive to allowing such work to take place in the first place. There was plenty of anecdotal evidence given at the stakeholders' consultations to suggest that such landowner concerns were likely to apply within the North Wessex Downs AONB.

3.11 Environmental Impact Assessment (EIA) Regulations 2002

Environmental Impact Assessment (EIA) is a procedure for considering the potential environmental impacts of land-use change. EIA helps to inform decision-making and enables decisions on land use change to be taken with knowledge of the likely environmental consequences. Legal requirements to carry out EIAs already apply to projects/developments that fall within the Town and Country Planning system but this has recently been extended through new Regulations to cover the "use of uncultivated or semi-natural areas for intensive agricultural purposes." Although the Regulations do not define "uncultivated and semi-natural areas", such land is typically held to include "downland or other open or enclosed grassland". The potential implication for landowners in the AONB is that, once new areas of chalk grassland have been created, the option to revert to intensive arable production might be severely curtailed. To what extent this might affect landowner attitudes towards a chalk grassland strategy for the North Wessex Downs AONB is not known at this stage.

3.12 Reform of the Common Agricultural Policy (CAP)

The long awaited changes in the structure of the CAP's payments system to farmers, involves a switch from area based subsidies to a Single Farm Payment, which will provide a financial incentive to revert the more marginal arable land to grassland. This has considerable implications for the North Wessex Downs AONB that has a high percentage of intensive arable production within its boundaries, and provides a definite opportunity for delivering this strategy. In particular since arable land on the scarp slopes, usually above or below semi-natural chalk grassland, has thinner less productive soils than on land the chalk plains or in the vales, it is possible that these areas may be more economic to revert to grassland than maintain in arable production. This is of course dependent on the market value of the present crop and additionally whether the farmer already has stock and the infrastructure for grazing. These issues notwithstanding, there is great potential at this time to expand and link existing areas of semi-natural grassland.

4. Methodology

A detailed description of the methodology is provided in Appendices 2 - 5. However the process used in summarised in the table below.

Table 1: Summary of the Process

Stage	Activity	Section Discussed
1	Data gathering	This section & Appendix 1
2	Analysis of quality and usefulness of datasets	This section & Appendix 2
3	Workshop 1: identifying strategic priorities and criteria for targeting	Section 6
4	Identification of focus areas	Section 7 & Appendices 3-6
5	Workshop 2: identifying opportunities and constraints within priority focus areas	Section 7
6	Mapping and prioritising core areas	Section 7
7	Production of final opportunities maps for chosen focus areas.	Section 7

4.1 General principles

The following principles were agreed in discussions with the Project Steering Group to underpin the methodology used in the production of this strategy:

- The strategy will be data-led i.e. it will be based upon the data that is available to us during the period of production.
- Wherever possible, methodologies will be used that have already been adopted at a national, regional or local level.
- All assumptions, extrapolations and inferences will be explicitly recorded i.e. there will be transparency in all methodological decisions.
- Reliability of different datasets will be recorded wherever this is known e.g. through reference to different confidence levels.
- Gaps in the availability of key datasets will be recorded where these gaps cannot be filled in the time-frame available or data does not exist.
- The chalk grassland resource will be considered in relation to its value to landscape and archaeology as well as to its biodiversity interest.
- Stakeholder consultation will form a key element of the methodology, both in setting management objectives, priorities and targets, and in identifying constraints and opportunities for restoration and re-creation.

4.2 Selecting and collating appropriate datasets

As a data-led study, securing as many appropriate datasets as possible within the available time frame was important. In practice, this meant relying on existing datasets held by a variety of different organisations and did not provide the opportunity for carrying out new survey work.

The primary data sources were the AONB Service, the local authorities and Local Record Centres in Hampshire, Oxfordshire, West Berkshire and Wiltshire. Other data was obtained from FWAG, Plantlife, the RSPB and the Wiltshire branch of Butterfly Conservation.

The most important datasets relate to the distribution of the chalk grassland resource within the AONB and the capability of the land within the AONB for supporting chalk grassland as the difference between the two provides a measure of the maximum theoretical area available for restoration/re-creation.

Whilst appropriate datasets for the latter included soils mapping and Land Use Classification mapping, comprehensive datasets on the distribution of mapped chalk grassland within the AONB do not exist. For this reason, it was necessary to draw on a combination of data from designated sites, both SSSIs and County Wildlife Sites, known to contain chalk grassland (but where the precise amount of chalk grassland within many of the sites was not known) as well as mapped habitat surveys carried out at a county level (where some of the data overlaps with that from designated sites). These datasets included the lowland calcareous grassland data for Wiltshire that was mapped for the National Biodiversity Network's South West pilot project.

An annotated metadata list is provided as Appendix 1. This is a record of all the datasets obtained together with notes on their reliability and usefulness. A more detailed description of the methodology used to address any differences and inconsistencies in the various datasets follows this in Appendix 2.

One of the fundamental principles underlying the strategy is to identify the opportunities that chalk grassland restoration can also create for both the landscape and the archaeological interest of the AONB. For this reason, datasets on landscape character created for the AONB by Land Use Consultants (LUC) and the distribution of Scheduled Ancient Monuments (SAMs) were also secured. These datasets proved particularly useful in the second stage of the strategy, which was to identify key focus area where concentrations of biodiversity, landscape and archaeological interest coincided.

Other datasets that proved impracticable to use at an AONB scale were found to be of great value in the third stage of the project after three focus areas had already been identified and where the need was to identify opportunities for chalk grassland restoration/re-creation. These included GIS datasets relating to slope,

aspect and aerial photography as well as information relating to non-chalk grassland habitats. Such datasets allowed the easier identification of potential 'quick-win' situations.

Given the focus of AONB designation is natural beauty, it was agreed that landscape units would be most appropriate for mapping the range of environmental resources. Use was made of the Landscape Character Assessment work already carried out by LUC for the AONB. A more detailed description of the methodology used to define the spatial mapping structure that was adopted using LCAs is given in Appendix 3.

4.3 Gaps in existing data

Far more significant than any problems relating to the supply or use of existing datasets is the fact that datasets for a number of key features that are relevant to the production of this strategy do not exist in the first place.

The most significant of these is data relating to chalk grassland that has never been mapped or recorded because it is degraded, occurs as a lesser element within another habitat type, occurs as a mosaic or because it falls below a minimum size threshold for survey or designation purposes. This major gap in our knowledge is not confined to the North Wessex Downs AONB as no estimate exists of the unmapped chalk grassland resource exists at a national level. Whilst the national LandCover project was intended to provide this basic resource data, few would choose to rely on it to do so.

Were an enhanced Phase 1 survey to be carried out for the whole AONB, not only would this basic data become available for chalk grassland but for all major habitat types that the AONB might wish to strategically target in the future. Initially, this could be achieved using good aerial photographs and supplemented by targeted ground surveys. Whilst this would be a major task, we believe that its potential value to the AONB would be enormous.

The other significant gap in available data, which partly follows from the above, relates to the condition of the chalk grassland resource. This information is available in a standardised form for SSSIs down to management compartment level. For County Wildlife Sites such information may be collected whilst surveys are undertaken but the information is frequently recorded in a subjective, non-standard format. The information has not always been collated or captured digitally, indeed none was held within the CWS GIS layers received from each Local Records Centre. However, some analysis of condition information has been done previously for Oxfordshire and Wiltshire, and this was provided for use in this project.

As for the unknown extent of unmapped chalk grassland in the AONB, the only inference that could be made on condition would be from Countryside

Stewardship Scheme areas although the data available on the MAGIC database was not sufficiently detailed to do this.

A simplified version of the site condition assessment form and procedure used by English Nature for SSSIs has been suggested for County Wildlife Sites but its wholesale adoption is limited by the fact that these non-statutory sites are subject to different management regimes and resourcing in different counties. It is entirely conceivable however that this could be made the subject of a trial project that was specifically targeted at County Wildlife Sites within the AONB. Again the benefits could be applied to all habitats and not just chalk grassland.

5. Significance of the resource

5.1 Definition of the resource

For the purposes of this strategy, we have adopted the established definition of chalk grassland as used by the National Biodiversity Network in its habitat inventories. This includes all unimproved chalk grassland (CG) and degraded chalk grassland only where it occurs as a mosaic with unimproved neutral grassland (MG5b). This is the same definition that is applied to the national chalk grassland resource.

5.2 International and national context

Although calcareous rocks are common throughout large areas of the world, derived as they are from marine deposits, the shallow lime-rich soils that support calcareous grassland are surprisingly and remarkably rare on a global scale with half the world resource estimated to occur in Europe. In turn, half the remaining resource of calcareous grassland in Europe is to be found in the United Kingdom with much of the limestone resource occurring in North Yorkshire and Cumbria and most of the chalk resource occurring in Wiltshire. Within the southern half of the UK, chalk grassland forms part of a national priority habitat type described as lowland calcareous grassland in the NBN habitat inventory.

A definitive figure for the total UK resource does not and never has been given. The UK BAP's habitat statement for all calcareous grassland in the UK offers an estimate of between 40,000 - 50,000 ha whilst current estimates (Jefferson & Robertson - EN/JNCC) for lowland calcareous grassland quote an estimated range of between 33,000 - 41,000 ha of which over 60% occurs in Wiltshire.

The UK estimate is derived from a wide variety of different datasets of different vintages and with the same kinds of limitations and qualifications that apply to the data on chalk grassland within the AONB, hence the need to quote an estimated range. Like the AONB data, most of the UK data is sourced from known sites and

thus likely to refer to the more species rich habitat. No figure for the UK resource of degraded calcareous grassland habitat exists.

5.3 Status of chalk grassland within the AONB

Within the AONB, there are seven candidate Special Areas of Conservation (SACs), part of the internationally important network of European Natura 2000 sites. Both Pewsey Downs cSAC and Fyfield Downs SSSI are also National Nature Reserves with an outstanding chalk grassland flora and fauna that includes nationally important populations of rare species including the endemic Early Gentian. These form part of a wider suite of 66 SSSIs of which 29 have a chalk component (see Appendix 4) amounting to 1,421 ha or 0.8% of the AONB area.

In addition, there are a total of 249 County Wildlife Sites that have a chalk grassland component (see Appendix 4). The total area of these sites amounts to 2,163 ha or 1.3% of the AONB area. Unfortunately the absolute figure for chalk grassland within CWS could not be calculated, as this information was not available.

5.4 Extent of chalk grassland within the AONB

The total area of mapped chalk grassland polygons within the AONB is 2,270 ha. This equates to 1.3 % of the total area of the AONB. The total area of designated sites (SSSIs and CWS) with a known chalk component is 3,585 ha. This equates to 2.1% of the total area of the AONB, but as stated in 5.3 does not reflect an absolute figure for chalk grassland within CWS. Therefore, it is likely that the true figure for the total chalk grassland resource lies between these two figures.

That the UK's estimated range of 33 - 41,000 ha of lowland calcareous grassland is based upon a similar mix of data sources with varying degrees of reliability and detail suggests that it is legitimate to directly compare the area of chalk grassland mapped in the AONB with the UK estimate. On this basis, the AONB holds 7.1 – 8.9 % of the UK resource.

This suggests that the chalk grassland resource in the AONB is significant in a national context. Moreover, most of the national figure is accounted for by a relatively small number of large sites such as Stamford Training Area in Cambridgeshire and Salisbury Plain in Wiltshire/Hampshire. Indeed 60 - 70% of the estimated UK resource occurs in Wiltshire alone with most of that being accounted for by Salisbury Plain and Porton Down. If it were possible to remove these large areas from the UK estimate, then the chalk grassland within the AONB does make an even greater contribution to the distribution of this scarce resource. By comparison, the mapped chalk grassland resource within the South Downs has been estimated as representing only about 2 - 3% of the UK resource.

If, at some point in the future, it proves possible to survey the areas of unmapped and possibly degraded areas of chalk grassland within the AONB, then it is possible that the importance of the AONB's resource in a national context will be considerably even greater. However in the absence of a comparable figure for the national resource, this must remain conjecture.

Whilst no direct data exists for unmapped and degraded chalk grassland in the AONB, there exists indirect data to suggest that such areas may be greater than previously thought. For example, the area of land within the AONB covered by existing Countryside Stewardship Schemes with a chalk/limestone component amounts to 17,800 ha or 10.3% of the AONB area (see Appendix 5). How much of this area is actually chalk grassland managed according to CSS prescriptions is not available from the MAGIC source however, and may in fact only make up a small proportion of this total.

5.5 Condition of chalk grassland within the AONB

Only for the 1,421 ha of chalk grassland within the SSSIs is condition assessment information systematically recorded and here it is available down to a management unit level (see Table 2). Given the Public Service Agreement target that requires English Nature to bring 95% of all statutory sites into favourable or unfavourable recovering condition by 2010, it is not unreasonable to assume that the SSSIs in the AONB would be in a better condition than that of County Wildlife Sites.

Table 2: Condition Assessment Information for Chalk Grassland SSSIs

BRC ID	Name	Total Area of SSSI	Total Chalk Grassland Area (Ha)	% Area Meeting PSA Target
14	Hackpen, Warren & Gramp's Hill Downs	74.31	74.31	100
14	Whitehorse Hill	99.31	88.26	39.4
14	The Coombs, Hinton Parva	16.00	16	100
16	Old Burghclere Lime Quarry	4.52	4.52	100
16	West Woodhay Down	1.34	1.34	100
16	Burghclere Beacon	80.67	80.67	100
16	Ladle Hill	10.50	10.50	0
16	Ham Hill	1.57	1.57	100
16	Botley Down	12.71	12.71	0
16	Inkpen & Walbury Hills	86.84	68.37	46.04
25	Holies Down	5.62	5.62	100
26	Hogs Hole	23.65	23.65	100
26	Rushmore & Conholt Downs	111.49	110.58	0.82
27	Streatley Warren	31.25	31.25	100
27	Lardon Chase	14.71	14.71	100
27	Moulsford Downs	13.91	13.91	100
27	Aston Upthorpe Downs	38.51	38.51	100
32	Seven Barrows	3.77	3.77	100

32	Croker's Hole	4.44	4.44	100
32	White Shute	1.94	1.94	100
36	Pewsey Downs	301.52	291.28	96.6
36	Morgan's Hill	12.29	12.29	100
36	Calstone & Cherhill Downs	128.22	128.22	47.85
36	King's Play Hill	28.79	28.79	100
36	Roundway Down & Covert	84.30	54.93	0
37	Silbury Hill	2.14	2.14	100
38	Fyfield Down	327.36	278.30	100
41	Westfield Farm Chalk Bank	14.08	14.08	100
41	Cleeve Hill	4.72	4.72	100

Information on habitat condition and management regime for CWS is recorded in a less systematic way as discussed in 4.3 above. Information for West Berkshire was not available. That which exists for Hampshire covers a total of 28 sites with management assessment information (seven of which are SSSI) and eight sites with condition assessment information (all of which are SSSI). The information has not been captured digitally, so sites statuses could not be analysed in the timescale of the project.

Information provided from Oxfordshire showed that within the Vale of the White Horse there are 23 Lowland Calcareous Grassland CWS covering an area of 313.4 Ha. Of these a total of 15 (65%) were recorded as being in favourable condition with two thirds (43.5% of the total number of sites) considered also as being in favourable management condition. In terms of area, this equates to 164.8 Ha or just over half (52.6%) of the total area of sites being in favourable condition. The ten sites also under favourable management cover an area of 125.4 Ha (76% of the area deemed in favourable condition).

The analysis for Wiltshire indicated that of the 135 Calcareous Grassland CWS - covering an area of 2,268 Ha – that are within the AONB boundary, 66 (50% of the total number) sites covering an area of 1,094 Ha (48% of the total area) were being grazed appropriately.

Although the figures for Oxfordshire and Wiltshire have been derived differently they do appear to indicate that at least half of the chalk grassland sites are receiving the appropriate management to ensure they are in favourable condition. This may prove to be the case for sites within the other two counties, meaning that for the AONB as a whole more than 50% of non-statutory chalk grassland sites are in favourable condition. However, without this extra information for Hampshire and West Berkshire - and whilst even the extent of degraded chalk grassland outside of designated sites is not known - conclusions about the overall condition of the chalk grassland resource within the AONB can only be speculative.

6. Management objectives and targets

At an early stage in the development of the strategy, stakeholders were invited to participate in a consultation event aimed at agreeing and prioritising the strategic management objectives for the Chalk Grassland Strategy and also to identify criteria that could be used to target chalk grassland re-creation and restoration.

6.1 Management objectives

As the brief for carrying out the strategy follows directly from the AONB's Management Plan and its objectives and actions, it was felt appropriate that the consultation exercise should take as its starting point the AONB Management Plan Objectives set out in Book 1 of the Plan. Given our remit to encompass biodiversity, landscape and archaeology, we used the objectives set out under Theme 1: Increasing Biodiversity (Objectives 1-4), Theme 2: Celebrating the Past (Objectives 5-7) and Theme 4: Increasing Biodiversity (Objectives 12-15). These were abbreviated for ease of use and split where the printed objective had two parts. Participants were asked to prioritise the objectives individually and then to further prioritise the top six as a group and for each group to justify their decisions in a plenary discussion session.

The six prioritised management objectives were:

1. Protect, maintain and restore all remaining areas of chalk grassland that still exist in the AONB.

2. Influence land managers to maintain and enhance the AONB's landscape.

3. Increase the extent of semi-natural chalk grassland in the AONB by expanding and linking up existing areas.

4. Maintain and increase populations of key species that are both important to and characteristic of the AONB.

5. Maintain and enhance local variety and character in the AONB landscape.

6. Ensure that restoration and re-creation of one habitat does not involve the loss of another that is of value.

6.2 Management targets

In the discussion that followed the morning session of this stakeholders' consultation, the view was expressed that the AONB's existing chalk grassland resource should be restored to good management condition before any re-creation or expansion took place. At the second stakeholders' consultation where

detailed maps of focus areas were used to identify management opportunities, the view was expressed that in certain cases it would not be possible to improve the management of the existing resource without expanding and linking up fragmented areas. A major barrier to improving site condition was seen as the small and fragmented nature of many chalk grassland area which were neither economically nor practicably viable for grazing. There was general agreement that both were inter-linked and could not be addressed in isolation.

In the afternoon session of the first stakeholders' consultation, participants were split into three groups and asked to explore one of three different aspects of targeting as a means by which the agreed management objectives could be translated into:

- what our goals are - numeric targeting
- where they should be applied - spatial targeting
- how they should be applied

Each group was asked to report back to a plenary session where the conclusions were discussed. The principal conclusions were:

- Targets should be factually based and meaningful rather than based upon theoretical propositions and ad hoc judgements.
- Targets should serve as a guide rather than a prescriptive 'straightjacket'.
- Targets for focus areas should not preclude some activity outside them.
- Numeric targets should not be set until spatial targets had already been agreed - numeric targets 'plucked from thin air' are of no value.
- Focus areas need to be large enough to be both ecologically and economically viable, and also to include some non-chalk areas.
- Landowners and their advisors need to be provided with support and information from the AONB so that they are kept fully aware of what is required of them in relation to this strategy, and why it is important.
- The advice given to landowners from different advisors needs to be co-ordinated and consistent so as to avoid confusion, duplication of effort, wastage of resources and irritation to landowners.
- Resources that need to be made available to landowners and managers include financial incentives, practical advice as well as the availability of services and specialist contractors.
- The resources available to landowners and managers in the AONB need to be identified, promoted and easily accessible.
- Owners and managers of designated chalk grassland sites can and should play a key role in influencing others by leading through example and providing practical, working demonstrations of the possible solutions.
- Some large datasets e.g. aerial photographs are impracticable to use at an AONB wide level but will be useful when focus areas are agreed.
- When looking at targeting specific parcels of land, it would be useful to identify those that are in public or philanthropic ownership.

7. Targeting opportunities

7.1 Restoration versus expansion

The first Stakeholders' Consultation identified the appropriate criteria to be used to identify target areas where multiple benefits might be gained from chalk grassland restoration and re-creation. A strong view emerged that existing areas of chalk grassland should be restored to good management before embarking upon re-creation or expansion of the resource.

The second Stakeholders' Consultation event was convened with the aim of agreeing and beginning to identify some of the opportunities for restoration and expansion within priority focus areas. At this event, there was a recognition expressed that an improvement in the management of the existing resource could, in certain circumstances, only occur if there was an expansion of the existing chalk grassland area to a size that it was viable to manage. One major management problem associated with much of the existing areas of remnant habitat is that they are fragmented and largely confined to steep scarp slopes, a situation that neither attracts graziers nor a grazing economy.

The view that restoration of the existing resource cannot be separated from some expansion of the resource is also supported on the grounds of ecological viability. A fundamental principle of the rebuilding biodiversity approach is that for any given habitat type and situation, there is a minimum size that applies in order to ensure long term ecological viability in the face of external environmental pressures from other surrounding land uses and from major environmental changes such as climate change.

7.2 Identification of core habitat areas

Another fundamental principle that underlines both ecological and economic experience is that any kind of habitat restoration, re-creation and expansion is most effectively achieved when it can build out from core areas of high quality habitat. An essential precursor to the identification of the strategy focus areas was the mapping of all designated sites - cSACs, SSSIs and County Wildlife Sites as previously described. Other areas of biodiversity interest such as from the NBN habitat inventory were also mapped. From this it was possible to identify where the major clusters of biodiversity interest were located.

7.3 Identification of strategy focus areas

Having collated and analysed all additional relevant datasets as could be secured within the available time frame, the next stage of the study involved the identification of focus areas within the AONB where resources could be most effectively deployed to secure chalk grassland restoration and re-creation. This involved identifying where there was the greatest overlapping concentration of biodiversity, landscape and archaeological interest so that multiple benefits can be achieved.

In consultation with the Project Steering Group, a selection of the datasets found to be most useful in identifying and characterising the resource were selected. Apart from the Landscape Character Areas themselves, these were:

- Mapped chalk grassland areas in Hampshire, Oxfordshire, West Berkshire and Wiltshire (see Appendix 4). Differences in the derivation of these are recorded in Section 5: Significance of the Resource.
- SSSIs within the AONB that contained CG chalk grassland components as recorded in English Nature's management unit information for each (see Section 5 and Appendix 4).
- County Wildlife Sites within the AONB that contained chalk grassland (see Appendix 4). Differences in the derivation of these are similarly recorded in Section 5.
- Scheduled Ancient Monuments (SAMs) provided as point data such that their density could be mapped (see Appendix 5).
- Countryside Stewardship Scheme (CSS) areas that are recorded as 'chalk and limestone category' schemes where the areas mapped represent the total area entered into the scheme and not the precise area of chalk grassland that is being managed, restored or re-created (see Appendix 5).

A lack of comprehensive data on the distribution of chalk grassland per se within the AONB necessitated the use of datasets for mapped chalk grassland areas as well as datasets for SSSIs and County Wildlife Sites that contained chalk grassland in order to provide an estimate of the distribution of the mapped chalk grassland biodiversity resource as described earlier and in Appendix 4. Most mapped chalk grassland in the AONB relates only to designated sites, and this is a situation that mirrors the national picture.

The Scheduled Ancient Monuments (SAMs) data-set provides a representation of the central location of sites with this national designation. Additional information on non-designated archaeological sites was unavailable, so the estimate of the distribution of the archaeological resource across the AONB is restricted solely to the Scheduled Ancient Monuments data. Not only does the restoration and re-creation of chalk grassland help to re-establish the landscape setting and context for standing archaeology but it serves to prevent the potential damage to below-ground archaeology that modern deep ploughing can easily bring about. By using

archaeological data to help identify the focus areas, it was possible to identify areas where multiple environmental benefits could be achieved.

Countryside Stewardship Scheme (CSS) areas indicate where there is already a known interest in promoting habitat restoration and re-creation. The opportunities for chalk grassland restoration and recreation are potentially greater in areas close to or adjoining existing CSS areas that are listed under the chalk grassland option, however this cannot be guaranteed.

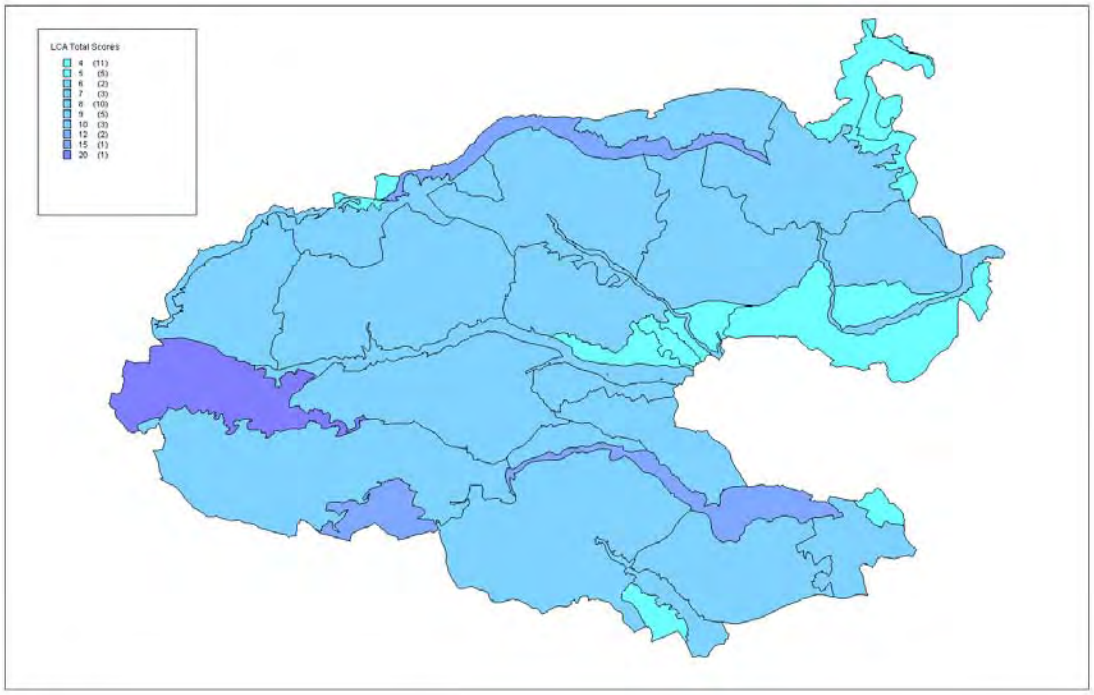
The concentration of these key resources were then recorded for each LCA and scored from 1 - 5 where 5 represented the greatest area/number of sites of interest and 1 the lowest, the resource figures being split into quartiles to ensure that scoring was both objective and accurate.

As some of the LCAs were significantly larger than others, it was necessary to weight them mathematically so that the differences in size were equalled. The weighted factor was then used to calculate the relative abundance of each resource in an area. This gave a truer picture of the amount of resource in each area without the bias of a large or small LCA size.

A downside to using this process was for those LCAs where there was a split between an area of high resource interest and an area of low resource interest. In these cases an artificially 'averaged' scoring resulted after the weighting was applied. Although our calculations suggest that this did not affect the identification of the highest scoring focus area, it did depress the overall scoring for the Marlborough Downs area with its mix of intensive arable and rich chalk grassland. Had finer grained landscape mapping units been available for the AONB, it is almost certain that such apparent anomalies could have been avoided.

The final weighted scores (see Appendix 6) for all the LCAs were then used to provide a thematic colour coded GIS map to pictorially illustrate the results, shown below. Its purpose is to show where the greatest concentrations of *overlapping* environmental interest occur. From this exercise priority focus areas were chosen on the basis of their scores and these were used in the opportunities mapping exercise (see Section 7).

Map 2: Landscape Character Area (LCA) Scores



Four potential focus areas were identified by this process:

- Horton Downs Landscape Character Area.
- Liddington – Letcomb Open Scarp Landscape Character Area.
- Walbury Hill – Watership Down Open Scarp Landscape Character Area.
- Salisbury Plain High Chalk Plain Landscape Character Area.

The Salisbury Plain LCA was not included in the second workshop exercise for two reasons: firstly, it is subject to a European LIFE project (see Appendix 8) whereby priority areas for both reintroduction of management regimes for chalk grassland and habitat restoration work were identified and are now taking place; secondly, with the number of attendees present at the workshop, their areas of knowledge and the time available it seemed most beneficial to undertake the exercise with three geographically separate areas.

7.4 Description of the three selected focus areas

Liddington - Letcomb Open Scarp Landscape Character Area (5F, BRC ID 14) – scored 12/20. Area 3,066 hectares.

A long sinuous scarp of 3,066 hectares arising out of the Vale of the White Horse. Unimproved chalk grassland survives in fragment along the scarp and combes. Archaeological sites pepper the ridgeline in prominent locations along the scarp edge. The Ridgeway follows the top of the scarp.

Walbury Hill – Watership Down Open Scarp Landscape Character Area (2D, BRC ID 16) – scored 15/20. Area 3,672 hectares.
A long scarp of downland and woodland made famous by Richard Adams' book and film. Bounded to the North by Newbury and the Vale of Kennet. Extant chalk grassland is scattered fairly evenly along the length of the scarp and interspersed with Beech and other woodland. Archaeological sites are found predominantly to the South Eastern and Western sections.

Horton Downs Landscape Character Area (1C, BRC ID 36) – scored 20/20. Area 7,099 hectares.
A large area of open downland bordered to the south by the Vale of Pewsey and to the North by the Avebury World Heritage Site. This area also contains the site of the English Civil War Battle of Roundway Down. Existing chalk grassland is located predominantly along the scarp edge bordering the vale and forming the North Western edge of the Wiltshire Chalk, these areas being linked by the Wansdyke and containing numerous barrows and other archaeological sites. The majority falls within Kennet District and large areas are farmed for cereal crops.

Table 3: Resource Information for Focus Areas

NAME	**Liddington**		**Walbury**		**Horton**	
Resource	No. Sites	Area Ha	No. Sites	Area Ha	No. Sites	Area Ha
SACs	1	35.8	-	-	1	153
NNRs	-	-	-	-	1	167
SSSIs	3	189.6	8	182	5	555
CWS/SINCs	6	24.22	38	490	45	680.5
SAMs	23	-	28	-	169	-
CSS	4	172	2	301	13	3370

7.5 Identifying opportunities

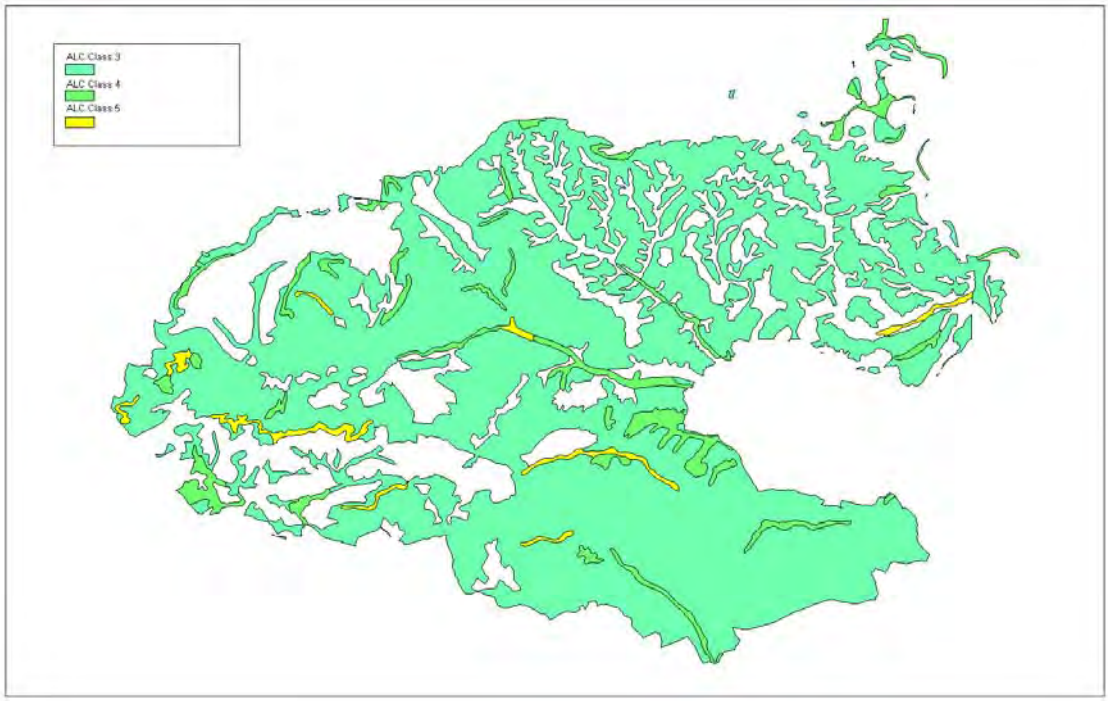
Having identified several strategic focus areas our next task was to look in more detail at these areas to try to identify likely opportunities for restoration and re-creation of chalk grassland within them.

In the office, a range of data-sets were applied to the focus areas including:

- Soils
- Contours
- Aerial Photography
- Agricultural Landscape Classification
- Existing Designations
- Countryside Stewardship Scheme Agreements
- Other semi-natural habitat

Analysis of contour data allowed the steeper gradients to be identified by eye despite the lack of quantifiable slope information. The assumption behind this identification was that landowners were more likely to entertain proposals for restoring and/or expanding chalk grassland on the steeper slopes where arable use was likely to be both less economic and less practicable.

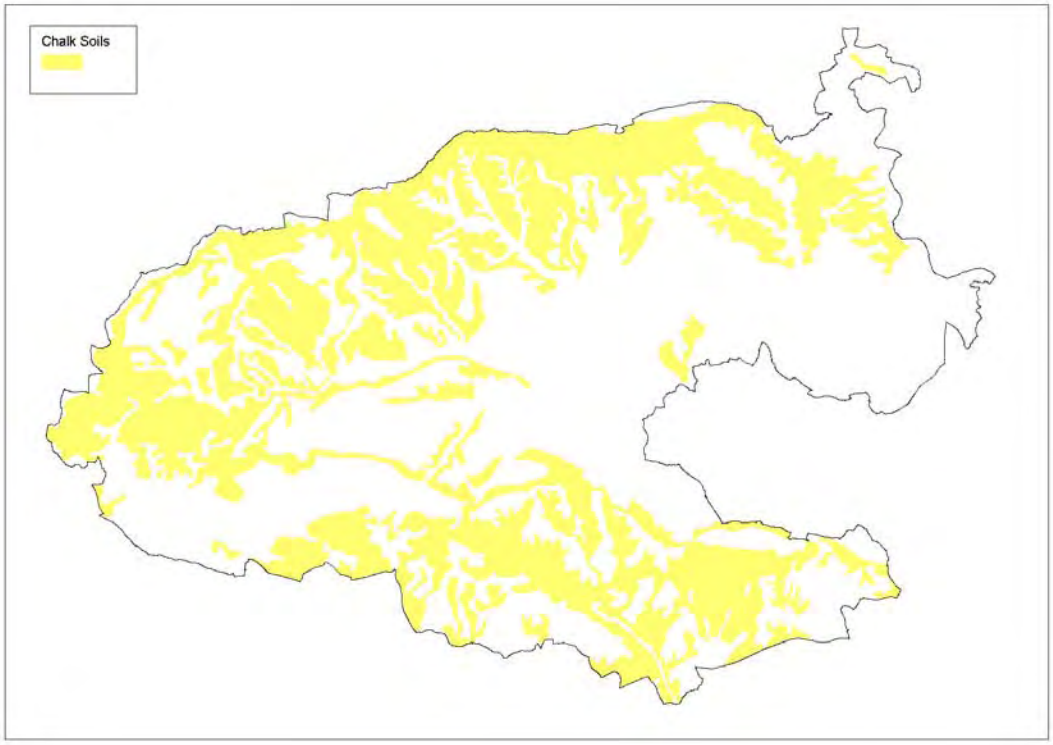
Map 3: Agricultural Land Classification Low Quality Land



A similar assumption underlay our mapping of the Agricultural Land Classification (ALC) data (see Map 3) and the highlighting of 2,044 ha of Grade 5 land in the AONB. Being classified as being of very poor quality agriculturally, landowners might similarly be amenable to this becoming the focus of restoration and/or re-creation activity.

At the other end of the scale, mapping of the shallow calcareous soil type that supports chalk grassland (see Map 4) provided an indication of the maximum possible area of opportunity. This covered some 108,663 ha or 63% of the area of the AONB, but does not take into account obvious constraints such as present land use. However, given the calculation that mapped chalk grassland accounts for only around 2% of the total AONB area, the potential area for restoration and expansion may be quite considerable.

Map 4: Location of Calcareous Soils



These data helped identify practical and physical constraints and opportunities to take into account when drawing up focus areas. In addition, data on archaeology, access, landscape interests, agri-environment scheme areas and biodiversity were overlain once more to show those areas where multiple benefits might be gained.

This desk study was tested at the second workshop where participants were shown the data and our own analysis and encouraged to add in their own local knowledge and professional judgement. Rather than provide mapping of calcareous soils (as shown in Map 4 above) that covered much of the focus areas in question, the decision was taken to show non-calcareous soils as this provided a more discriminatory and effective constraining feature.

Participants divided up into three groups - each for a different potential focus area - and were left free to mark up the maps according to their best judgement. Whilst making group decisions as to where linkages could restore the integrity of fragmented sites or buffer or extend vulnerable areas, participants were encouraged to discuss both the opportunities and the constraints that dictated their choices and to share both their local knowledge and their thinking with the whole groups.

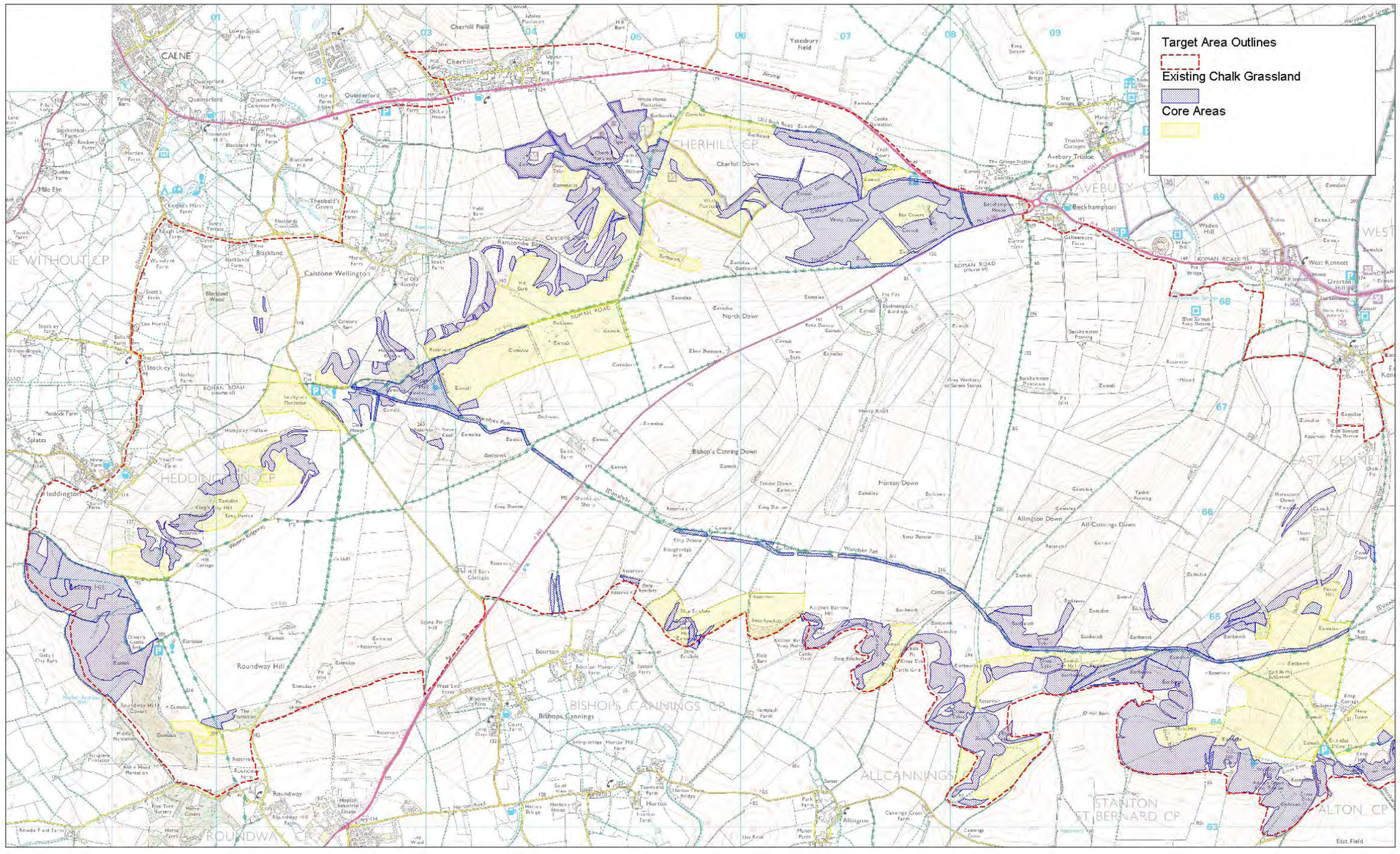
Participants were encouraged to expand outwards from the existing core habitat areas and fill in gaps (bridge) between fragmented areas of existing grassland and to buffer and extend existing small areas. In some instances this meant going beyond the focus areas where their boundaries were felt to exclude either key areas of existing resource or areas with great potential. This highlighted a limitation of using the Landscape Character areas as the framework for identifying the focus areas.

Another set of opportunities involved the linking up of biodiversity, archaeological and landscape interests where they were presently separated. An example of this was the presence of the linear archaeological feature of the Wansdyke and its potential as a spine along which areas of chalk grassland could be 'attached' to the benefit of archaeology, biodiversity and landscape. Rights of way information was also made available from two counties to assist this process.

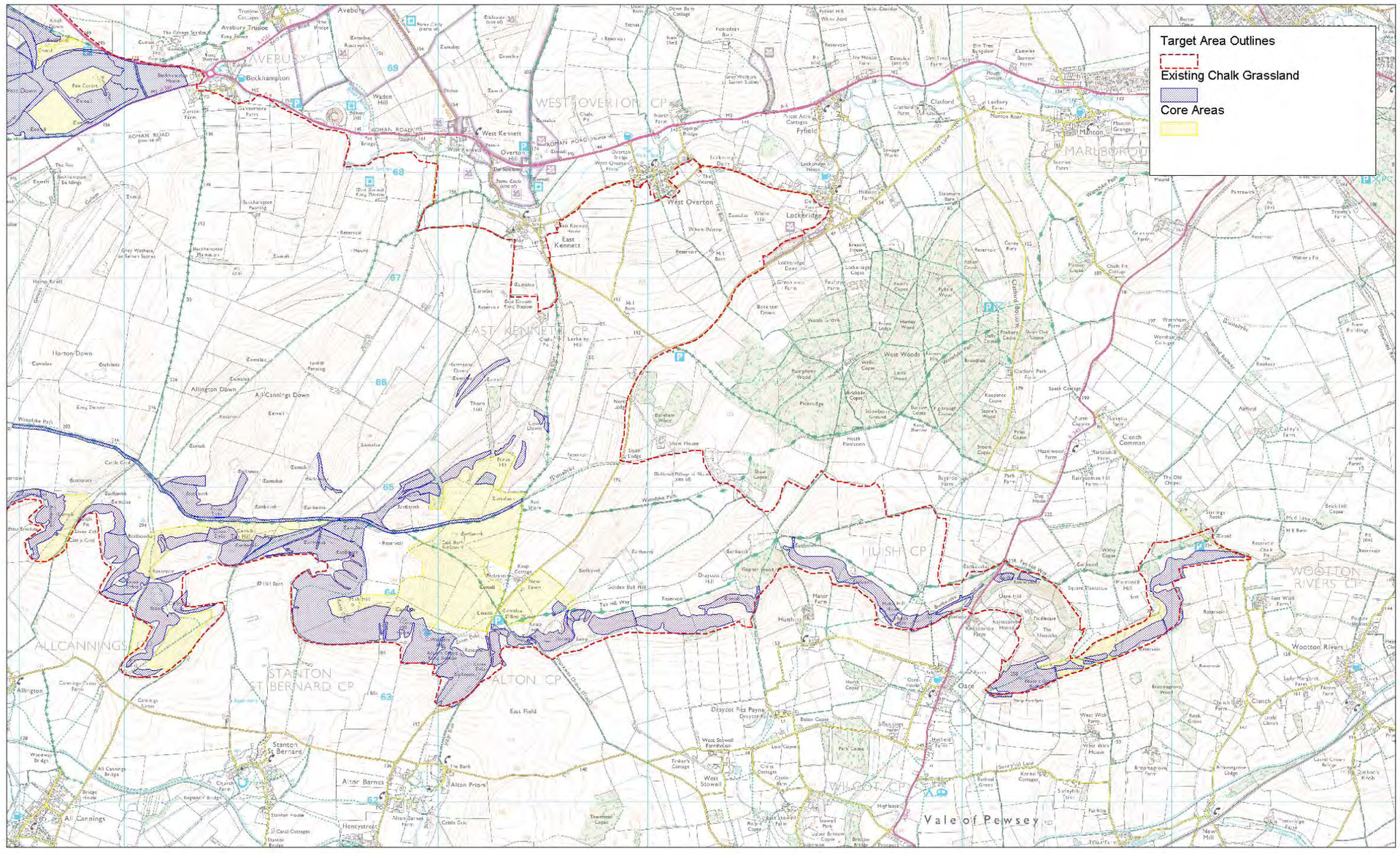
The results from the workshop were then digitally mapped and assessed using aerial photographs together with an analysis of other relevant data. This was used to produce a GIS based 'Opportunities Map' layer, which indicates where maximum multiple benefits can be achieved. It is not a blueprint, but rather acts as an expression of opportunities based on current knowledge and can be refined as new information becomes available.

Parcels within each of the areas were assigned a status depending on assessment of aerial photographs and other available information. Parcels with constraints such as incompatible land-use or presence of other valued habitat such as woodland were also identified and assigned a status (see Appendix 7 for full dataset attribute information).

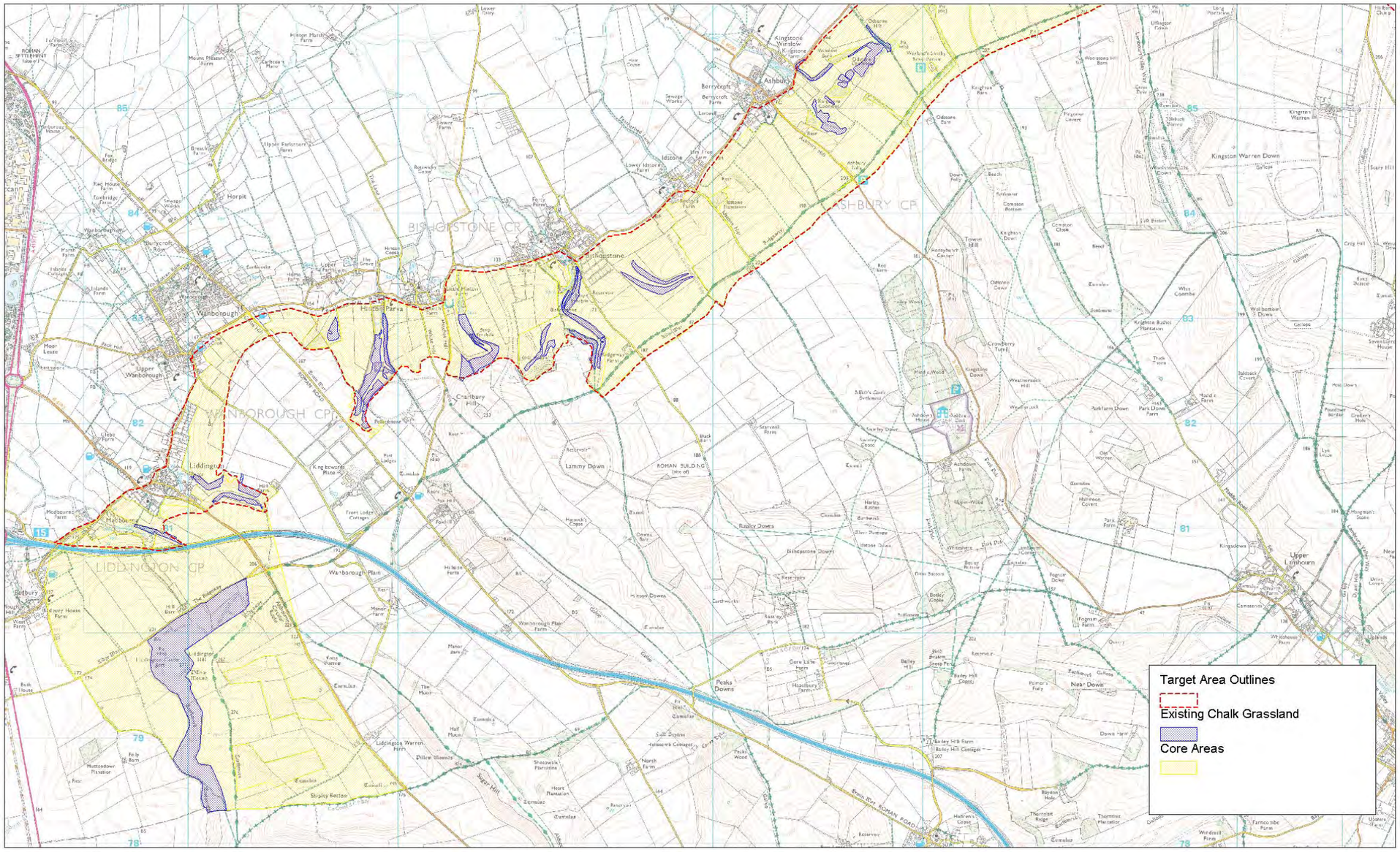
The Opportunities Maps below (HI to W2) show the areas of opportunity as described above. The existing chalk grassland (blue shading) is shown along with the areas of potential expansion via chalk grassland restoration or arable reversion as identified by the workshop participants (yellow shading). The detailed status information for each parcel is available on the accompanying GIS file.



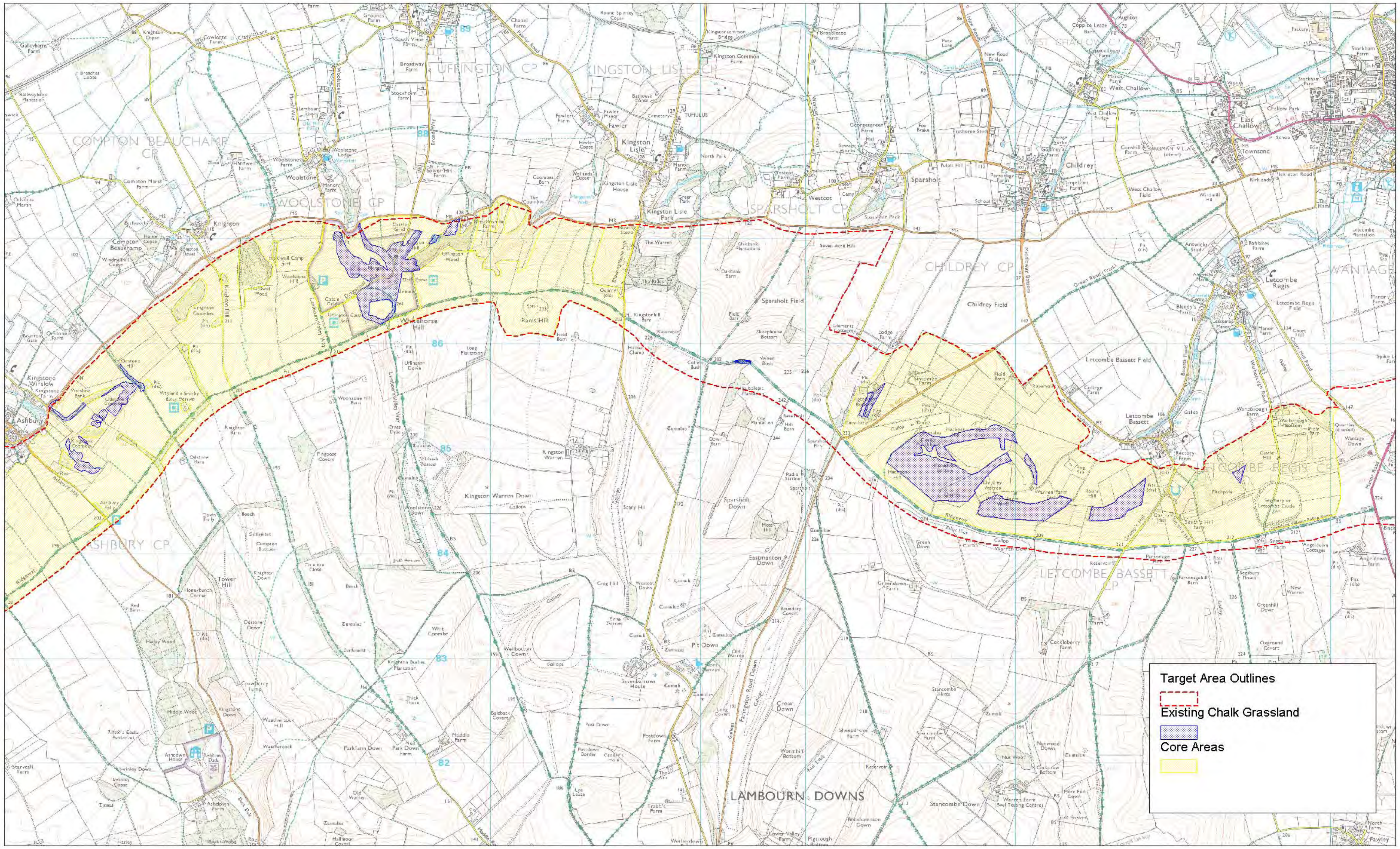
MAP H1. Horton Down Target Area, Western Section



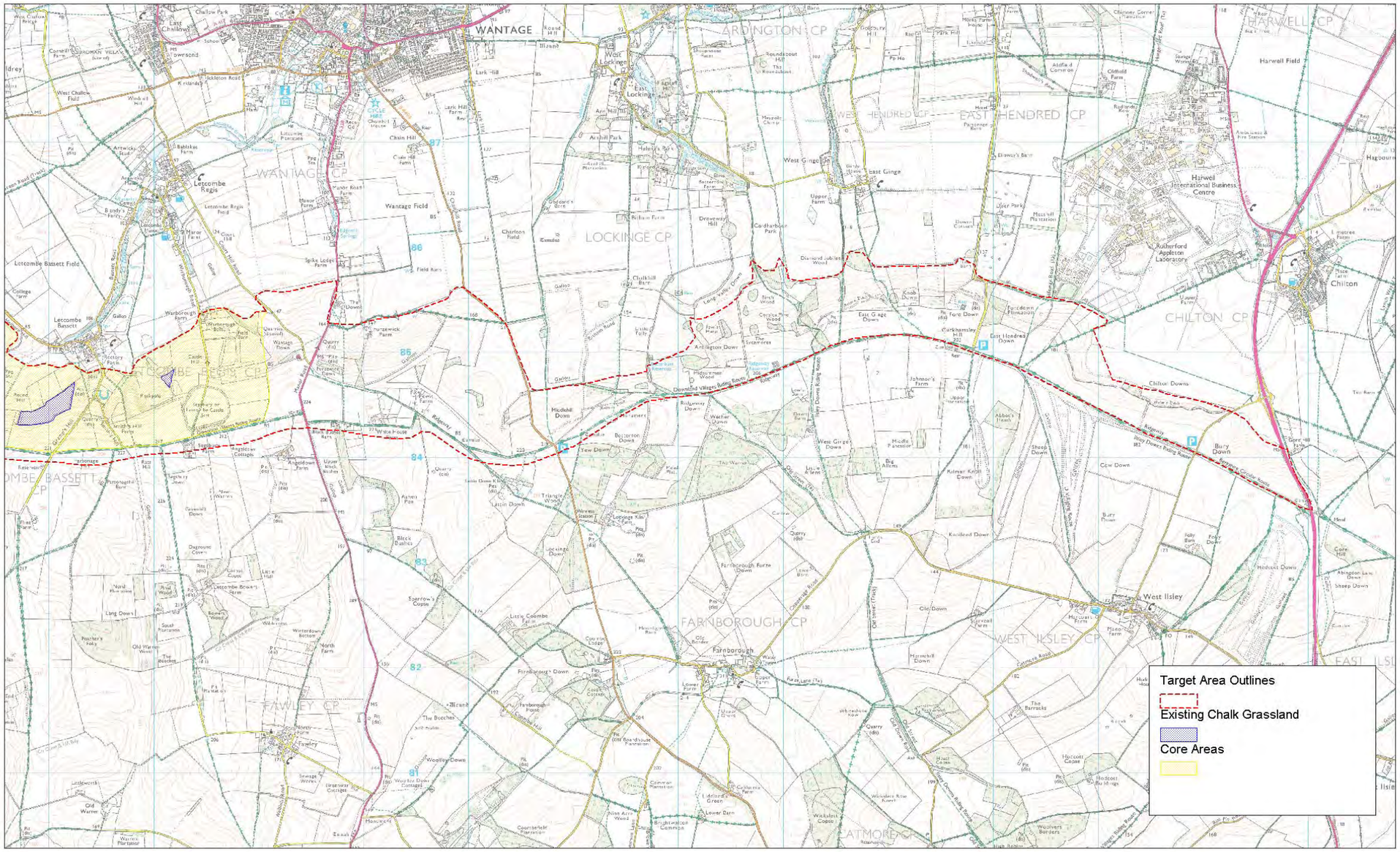
MAP H2. Horton Down Target Area, Eastern Section



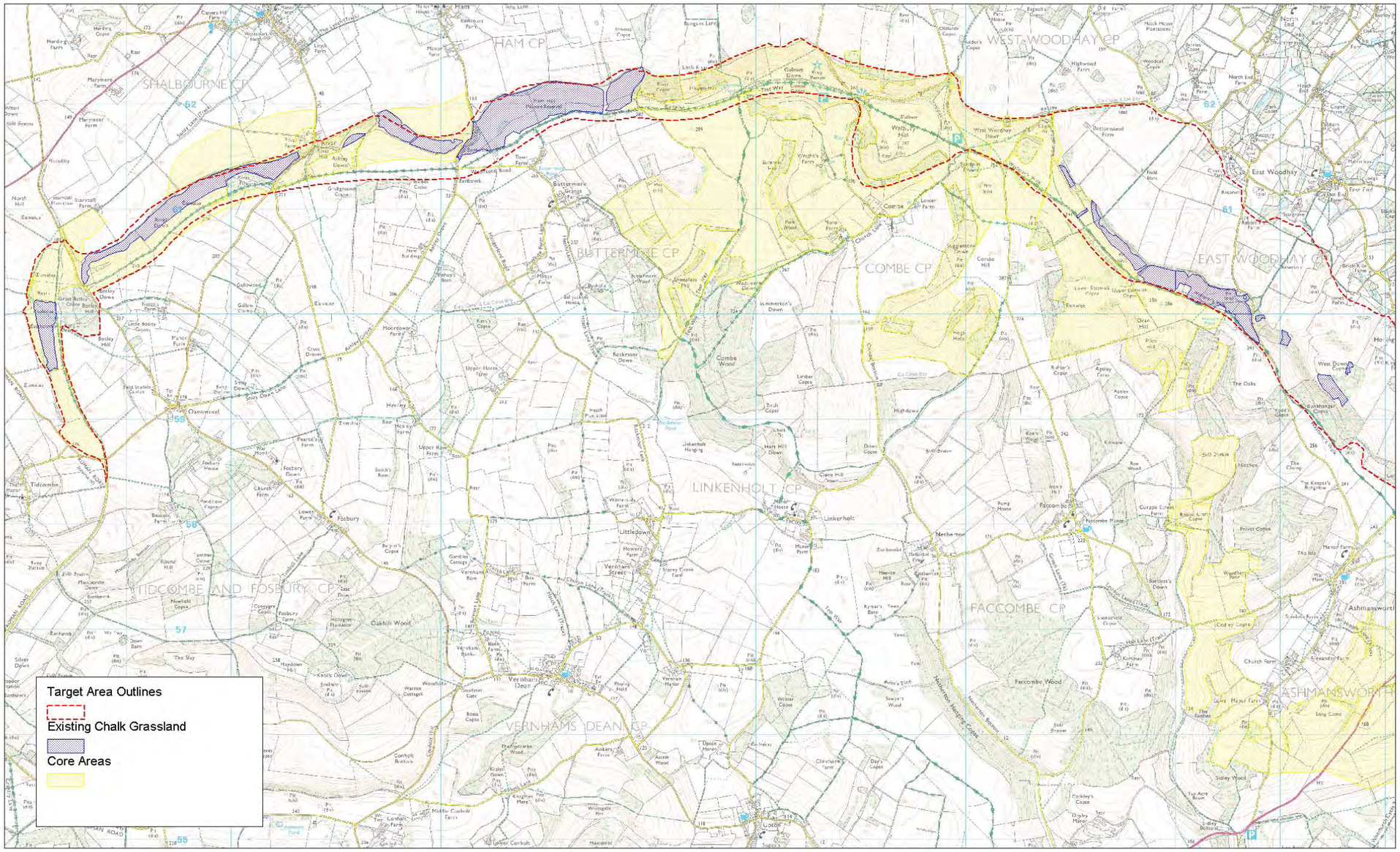
MAP L1. Liddington - Letcombe Open Scarp Target Area, Western Section



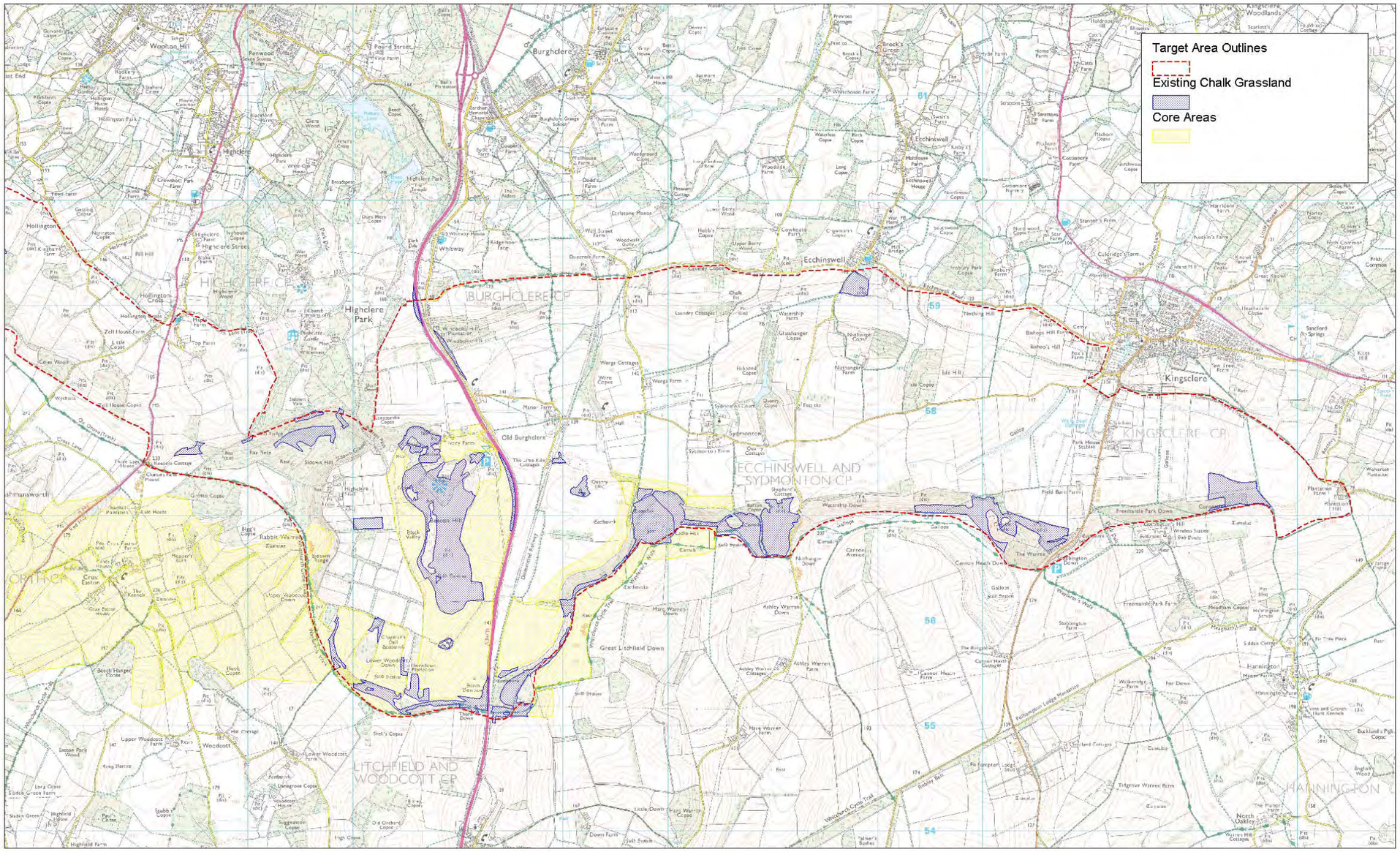
MAP L2. Liddington - Letcombe Open Scarp Target Area, Central Section



MAP L3. Liddington - Letcombe Open Scarp Target Area, Eastern Section



MAPW1. Walbury Hill - Watership Down Target Area, Western Section



MAPW2. Walbury Hill - Watership Down Target Area, Eastern Section

8. Constraints

8.1 Identification of constraints: stakeholder consultation

Both stakeholder consultation events stimulated a great deal of well-informed discussion that included the perceived barriers to implementing a chalk grassland strategy on the ground. At the second consultation event that focussed on 'opportunities mapping', each of the three focus area groups was encouraged not only to mark up opportunities for chalk grassland restoration and re-creation on a map but also to consider the barriers to implementing such action on the ground. The outcomes from these two consultations are summarised in 8.2 – 8.6.

This added to the many discussions, formal and informal, that arose from meetings with AONB partner organisations and the Project Steering Group. For convenience, we have grouped these perceived constraints into gaps in the availability of data, communication issues, landowner attitudes, grazing issues and economic factors although in practice all of these inter-relate.

In addition to these generic constraints that were seen as applying to each of the focus areas, each of the three groups at the second stakeholder consultation identified a number of physical constraints that were particular to each local area. These included roads, golf clubs, stables and other commercial activities.

8.2 Constraints - gaps in the availability in data

- The lack of data on the extent and distribution of chalk grassland outside known or designated sites in the AONB area is a potentially serious barrier to identifying opportunities for chalk grassland restoration and may possibly reflect a larger gap in the availability of data on non-designated habitats.

- A lack of information on the management condition of non-statutory chalk grassland sites, variously known as County Wildlife Sites, Sites of Nature Conservation Interest (SNCIs), Sites of Importance for Nature Conservation (SINCs) and Wildlife Heritage Sites, represents a potentially serious barrier to restoring existing chalk grassland as these sites account for the bulk of the AONB's designated chalk grassland.

- It is not clear whether our inability to access more than a small amount of data relating to local distributions of key bird and butterfly species reflects a reluctance on the part of local interest groups to release sensitive data or whether there is a lack of up-to-date and comprehensive local data on these key species within the AONB area. The lack of it makes it potentially difficult to avoid sensitive sites when targeting restoration/re-creation work.

8.3 Constraints - communication issues

- Landowners frequently express frustration and annoyance at what they see as the mixed messages being delivered by advisors from different organisations with the consequence that advice may not be taken up.

- Landowners and managers may not always know what specialist conservation skills or services are available locally to assist them.

8.4 Constraints - landowner issues

- Many landowners have expressed concern that undertaking arable reversion will open their land up to public access under the CRoW Act.

- The traditional conservatism of some landowners and a weariness with what is perceived to be a constantly changing government approach to rural policies and initiatives may discourage some to take up 'new ideas'.

- Farming culture in the UK has been very individualistic with little tradition of co-operating on joint projects and initiatives.

8.5 Constraints - grazing issues

- There is a lack of appropriate stock and graziers which means many existing sites are not being managed properly. This problem would be exacerbated by additional conservation grazing schemes

- Many arable farmers lack the stock and machinery to switch easily to a grazing regime. A lack of suitable infrastructure - water supply, stock access, fencing and livestock processing – is an additional concern, but one that can be overcome with access to grants for these works.

- Some areas of remaining chalk grassland are no longer easily accessible to stock as they have become very isolated or because arable farming and other rural enterprises may now control the only access to them.

8.6 Constraints - economic factors

- There is still uncertainty within the farming community as to the effects of CAP reform and a reluctance to make changes until the effects of these changes are clearer.

- Financial incentives for promoting habitat management/restoration are not always viewed as sufficiently attractive. It is only under the recently introduced Environmental Stewardship Scheme (ESS) that funding for the management of existing chalk grassland been brought anywhere close to the level of payment for arable reversion

8.7 Experience gained through other chalk grassland initiatives

It has been instructive to draw on the experience gained by others in developing and carrying out other chalk grassland related initiatives in the AONB area and its surrounds. Whilst grazing issues emerge as one of the most important factors in almost all these initiatives, this has not simply been a matter of unattractive economics. Lack of experienced stockmen, access problems in moving stock, difficulty in securing appropriate grazing stock and the absence of grazing infrastructure such as watering facilities are amongst the many practical problems that were reported.

In some cases, it has been as much the perception of the problem as the actuality that has been the constraint and there is a general consensus that better co-ordination in the provision of advice is also critical to success.

Landowner attitudes were also seen as critical to the success of these initiatives and we have no reason to suppose that they will not be equally important to the successful development of this strategy. The need to engage not only the support but the wholehearted involvement of the farming and landowning community is indicated very strongly.

Last but not least, these initiatives demonstrate the enormous benefits to be gained from meeting the needs of multiple interests, whether it be landscape, recreation, wildlife, archaeology, local tourism and local employment. It is interesting to note, in this regard, that the Oxfordshire Wildlife and Landscape Study (OWLS) identified the same Lidington-Letcomb focus area that has been identified in this study.

A summary of other chalk grassland related initiatives in the AONB is provided in Appendix 8.

9. The way forward - targets and actions

We propose a list of clear actions that are designed both to capitalise on the opportunities that have been identified for restoring and re-creating chalk grassland as described in Section 7 and in overcoming the identified constraints

as set out in Section 8. These fall naturally into five target groups that represent the key delivery mechanisms available to the AONB partnership for successfully implementing a chalk grassland strategy as identified at the first Stakeholders' Consultation. Some of these actions also have a wider applicability. In each case, the link back to the original data is described briefly.

Target 1: Fill gaps in the availability of critical data

As already described in some detail, the limited availability of data relating to the distribution of the chalk grassland resource outside designated sites, the management condition of the known chalk grassland resource and up-to-date data on the distribution of a number of key species were apparent to us at an early stage in our work. The following actions are suggested to remedy these gaps in the availability of key supporting data and are in line with delivery mechanism target IU in Book 2 of the AONB Management Plan. This requires future action in the AONB area to be based on a clear understanding of its resources and states that "A better information base is essential to inform future decisions and actions". A key element in our brief was to identify gaps in the availability of key data and to suggest ways of filling them.

Actions:

1.1 Carry out an enhanced Phase I survey of the whole AONB area to identify and record all major land use/habitat types including areas of degraded and other unmapped chalk grassland. This need not be a hugely expensive exercise and could be initiated with aerial photographs and supplemented by targeted ground surveys where needed. Although the known chalk grassland in the AONB area is of national significance, there is strong circumstantial and anecdotal evidence to indicate that the true area of chalk grassland, albeit of a lesser quality may be much larger than previously thought.

1.2 Encourage local CWS managers to begin monitoring and reporting on change over time by carrying out a standardised basic condition assessment survey of all CWS (including chalk grassland sites) located in the focus areas. This could serve as a pilot for the proposed national adoption of a simplified version of EN's Site Condition Assessment for all non-statutory wildlife sites. These CWS sites account for the bulk of known chalk grassland sites within the AONB yet little is known of their condition in many cases. As non-statutory sites, they are not subject to English Nature's Public Service Agreement (PSA) targets for the improving site-condition of SSSIs.

1.3 Encourage local volunteer-based recording groups that cover the AONB area to carry out targeted surveys of key species on the lines of the FWAG Arable Weeds Survey. Even though information on key species exists,

the absence of much information that is both comprehensive and up-to-date must inevitably create a potential risk to local populations of such species when targeting specific areas for chalk grassland restoration and recreation.

Target 2: Promote an integrated approach to advisory services

The range and complexity of different legislative requirements, regulations, grants and other policies that impinge upon farmers and landowners in the AONB area is suggested in Section 3. Given these different aspects of the policy framework are administered by a range of different agencies, local authorities and other public bodies, it is not surprising that a consistent theme has emerged in the Stakeholder Consultations and in discussions with practitioners involved in other chalk grassland related initiatives to the effect that a more integrated 'one stop shop' approach to the provision of advisory services is needed. That the AONB should take the lead in this area is already highlighted as delivery mechanism target IA: Providing Integrated Advice in Book Two of the AONB Management Plan. This states that "Within the North Wessex Downs, emphasis will be placed on the delivery of integrated advice to land managers, both those who manage land for commercial and for amenity purposes". The following actions are suggested to achieve this target.

Actions:

2.1 Identify gaps in the existing provision of conservation management advice to landowners and managers within the AONB area and determine the extent and nature of the resources needed to fill them. An opportunity exists for the AONB partnership to facilitate this process by bringing existing advisors together to undertake this task. This should also provide an opportunity to refocus the existing resources available to support advisors within a more permanent and coherent advisory structure.

2.2 Co-ordinate the operation and provision of conservation management advice by advisors working in the AONB area and encourage agricultural colleges and other training providers to promote a co-ordinated approach to their training on conservation matters. Evidence from stakeholders and other management practitioners suggests that that the existing multiplicity of advisory services to landowners is at best an irritant and at worst confusing and a disincentive to act on that advice.

2.3 Encourage DEFRA to ensure that there is an exchange of information with Local Records Centres when habitat and species surveys are carried out for new chalk grassland agri-environment schemes in the AONB area. The availability of 'before and after' data on habitat condition and species would provide invaluable monitoring information on the effectiveness of different management regimes and financial incentives.

Target 3: Actively engage the support of landowners and managers in implementing the strategy

One of the strongest 'messages' to emerge from the stakeholder consultations was the need to fully engage farmers and landowners and to raise their awareness of the key role that they can play. This is highlighted as delivery mechanism target AW: Awareness Raising in Book Two of the AONB's Management Plan. As the primary agents through which chalk grassland either will or will not be restored and re-created, this target represents an absolute necessity in the successful implementation of the strategy. From an ecological standpoint, management by grazing represents the only means by which large areas of chalk grassland can be sustained, not least because this was how much of this semi-natural habitat originated in the first place. However, in seeking to engage landowners and managers in this process, there is a need for actions that address both the environmental benefits and the business needs of the farmer. In doing so, we propose the following actions.

Actions:

3.1 Hold consultation events in each of the identified focus areas to engage the support, interest and co-operation of landowners and managers in the implementation of a chalk grassland strategy for the AONB. Wherever possible, use should be made of existing consultation opportunities with the emphasis placed upon the key role played by the landowner/manager in the overall process and the tangible benefits that can accrue to participants. There should also be an honest recognition of the real disincentives that are may discourage involvement and how these may be addressed.

3.2 Identify the pattern of land ownership in the focus areas and any examples of demonstration projects aimed at restoring and re-creating chalk grassland in a normal farming operation. The experience of practitioners who have been involved in other initiatives has clearly indicated that farmers are more likely to be influenced positively by their peers than by the example of a conservation organisation who may not be perceived as 'living in the real world'.

3.3 Prepare a well-supported factual case, aimed at landowners, that sets out both the importance of chalk grassland to landscape, biodiversity and archaeology as well as the benefits to the landowner in adopting a grazing regime. This should include a rigorous financial demonstration that chalk grassland can 'pay' and case studies from other 'real farm situations'.

3.4 Work with AONB partners to ensure that any negative impacts that may

arise from conflicts with other access related land uses eg. disturbance to stock, trespass, fly-tipping etc are minimised. There is strong anecdotal evidence from practitioners that the perceived negative impacts of new public access rights to open downland in particular could deter landowner interest in chalk grassland restoration. If some of these negative impacts can be minimised, then a greater involvement by landowners is likely.

3.5 Develop links with the Regional Nature Map. Links between areas of opportunity identified within the Strategy with those identified through the Nature Map process will enable recognition and possible funding from regional decision makers.

Target 4: Promote local initiatives that increase landowners' access to grazing stock, labour and infrastructure

It is frequently suggested in the press that a decline in traditional grazing is purely a matter of low financial returns compared to arable farming. Whilst the crude economic factor should not be downplayed, there was a strong view expressed by those attending the second stakeholders' consultation and in discussion with other stakeholders that a number of other practical constraints mitigated to make life increasingly difficult for anyone wishing to take up the grazing option. These were many and varied and not all applied to all farmers but some of the most frequently cited difficulties related to access to the right type of grazing stock, the availability of labour with animal husbandry skills, lack of grazing infrastructure such as watering facilities and fencing, and a lack of awareness as where to access specialist conservation management skills, services and advice. This is in line with delivery mechanism target SRE: Encouraging a Sustainable Rural Economy in Book Two of the AONB's Management Plan and recognises the value of providing support for the development of small-scale infrastructure (SRE3). The following actions are suggested to achieve this target.

Actions:

4.1 Work with local landowners, managers and graziers in each focus area to ensure that there is access to appropriate grazing stock, graziers and infrastructure. Continue to work with the existing Wiltshire GAP but also support more local grazing networks where these are more appropriate.

4.2 Take advantage of existing initiatives to establish a local seed project within the AONB area to promote access to and use of chalk grassland seed stock of local provenance. The presence of several large species-rich areas of unimproved chalk grassland within the AONB area provides the opportunity for re-creating areas of chalk grassland that are ecologically suited to local conditions and maintain the local genetic integrity.

4.3 Commission an updatable Directory for grazing landowners and managers that identifies the specialist conservation skills, services and sources of contract labour that are available in the AONB area. This could be produced in a loose-leaf binder format or as an online facility or both.

4.4 Work with local agricultural colleges and other training establishments to set up placements for young people interested in stock management. There is perceived to be a need for practical experience to complement existing formal training.

Target 5: Assist landowners and managers to access both new and existing financial incentives

Until recently agricultural decisions have been heavily influenced by the production payments received under CAP. Post CAP-reform support has been decoupled from production and moved towards single, area based payments. The AONB partnership has a key role to provide the support needed to encourage an entrepreneurial approach to both new and existing funding opportunities. This is highlighted in Book 2 of the AONB's Management Plan as delivery mechanism target ISM: Providing incentives for sustainable land-management where particular attention is paid to the role of agri-environment schemes (ISM2). The following actions are suggested to achieve this target.

5.1 Take advantage of all existing consultation events and activities to better inform arable landowners and managers how the introduction of the single farm payment and other CAP reforms assist grazing. It is not realistically expected that this will happen overnight as many may wish to wait and see how the changes pan out with other people.

5.2 Encourage DEFRA and other key agencies and authorities to support the Chalk Grassland Strategy by using the opportunities mapping to inform their prioritisation of funding for chalk grasslands within the AONB. This would provide a direct financial incentive for farmers and landowners to become involved.

5.3 Encourage landowners and farmers to work together to develop larger, area based bids for funding for downland management and restoration. DEFRA have indicated that they would look favourable at such larger joint ownership schemes.

5.4 Encourage landowners and farmers to co-operate in establishing local producer networks to promote, distribute and market local products, and give them support in taking up marketing opportunities. Despite a strong individualistic tradition in the UK rural economy, there is a growing interest in co-operative approaches to local farm production.

5.5 Assist landowners and farmers to access grants such as the Rural Enterprise Scheme for developing, marketing and delivering added value services. These might be related to access and educational opportunities, producing local provenance seeds and other environmental initiatives.

10. Delivery mechanisms

The North Wessex Downs AONB partnership is uniquely placed to ensure the delivery of the five objectives and 20 actions proposed by virtue of its ability as a partnership to act with the consensus of a wide range of stakeholder interests.

10.1 Implementation strategy

In doing so, the chalk grassland strategy must be regarded as the first step in the process by which effective action on the ground is achieved. The approach to implementing this strategy must be an integrated one which addresses the environmental, social and economic factors affecting the habitat. For the Horton Downs focus area this is already being addressed to some degree through the Downland Heritage Initiative. A similar approach could be taken to engage key land managers in the other two focus areas.

10.2 Financial incentives

As well as encouraging DEFRA to target the strategy's focus areas for the new higher tier agri-environment payment, all agri-environment scheme incentives should be actively promoted as a mechanism for delivering both chalk grassland restoration and arable reversion. In addition landowners, land managers and their advisors should be made aware of the opportunities in these areas to assist their prioritisation decisions. Existing grant regimes should continue to be promoted to owners of designated chalk grassland sites to encourage favourable management of the existing resource. The role of the AONB partnership should be to provide the framework within which effective site management can occur. This is set out in the AONB's Policy for Delivery Ref. ISM: Providing incentives for sustainable land management.

10.3 Land management support

Providing effective conservation management support for graziers is likely to prove one of the most effective delivery mechanisms for achieving the objectives of the strategy. This should include assistance in setting up and co-ordinating local grazing networks and GAP projects as well as seeking resources to assist new graziers to make the necessary investments in stock, fencing, water-supplies and other grazing infrastructure. This is set out in the AONB's Policy for Delivery SLM: Implementing Sustainable Land Management.

10.4 Communication, advice and education

A key role for the AONB's partnership will be to disseminate information on the availability of grants, grazing resources, specialist rural skills and contract labour. Promoting co-ordination in the existing delivery of conservation management advice might require additional resourcing as would the provision of any additional advisory personnel. Another key aspect of this role would be the promotion of demonstration chalk grassland grazing projects by sympathetic landowners. In all these activities, there will be an ongoing need to engage the support, interest and active involvement of landowners and managers. This needs to begin before an Implementation Strategy is even drawn up and is set out in the AONB's Policy for Delivery AW: Awareness-Raising.

10.5 Partnership activity

The focus areas identified within the AONB entail targeted action within three different local authority areas and the emphasis upon delivering multi-interest gains for landscape, archaeology and biodiversity will similarly entail the active involvement of a wide range of different organisations. Partnership activity is central to the successful delivery of the targets and actions proposed and lies at the heart of the AONB partnership's ethos and is set out in the AONB's Policy for Delivery SLM: Implementing Sustainable Land Management

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APPENDICES

Appendix 1: Metadata

Title	Dataset Originator	Data	Data Location	Comments
10K OS Raster Maps NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\10Kraster	Some B&W, some colour. Used in production of maps for consultation exercise.
MasterMap NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Mastermap\Mastermaps Mapinfo	Area, Boundary, Point and symbols. Very large datasets.
Battlefield Areas NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers	Only one Polygon - Roundway Down
Character Areas NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers	Of limited use - areas too large
Countryside Stewardship Areas NWD AONB	MAGIC	Mapinfo	Server GISDATA\AONB\From Magic\MAGcssagNWD	
Countryside Stewardship Areas NWD AONB Calc. Grass Subset	MAGIC	Mapinfo	Server GISDATA\AONB\From Magic\CSS_Chalk	Derived from above datset and very useful in providing a baseline of areas for existing and potential restoration.
Countryside Stewardship Areas NWD AONB 2000	NWD AONB	Mapinfo (Outlines)	Server GISDATA\AONB\Otherlayers	Not used
Countryside Stewardship Areas NWD AONB 2001	NWD AONB	Mapinfo (Outlines)	Server GISDATA\AONB\Otherlayers	Not used
Countryside Stewardship Areas NWD AONB 92 - 98	NWD AONB	Mapinfo (Outlines)	Server GISDATA\AONB\Otherlayers	Not used
Countryside Stewardship Areas NWD AONB 99	NWD AONB	Mapinfo (Outlines)	Server GISDATA\AONB\Otherlayers	Not used
Countryside Stewardship Areas NWD AONB Mgt Area Data 91-98 and 00-01(excludes Wiltshire)	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers	
County Outlines NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\County	Very useful for putting other maps into perspective.

District Outlines NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Districts	as above
ESAs NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\environmentally_sensitive_areas	Also see From Magic\MAGesas
Dowland Heritage Project NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers	One area covering Horton Downs/Avebury
Forestry Commission Sites NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Forestry commission land	
Landscape Character Assessments NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Landscape Character Assessment	Note LandscapeCharacterAssessment layer covers Savernake Plateau Only
HLC Project Area NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\HLC_proj_area	Not used
Lowland Meadows NBN Data NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers	
Lowland Calcareous Grassland NBN Data NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Lowland calcareous grassland_v1_2	Basis of mapping existing CG resource for Wiltshire and part of Oxfordshire
National Trust Sites NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\National Trust	Limited use in terms of this project
Parks & Gardens NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Parks_Gardens	as above
Parish Boundaries NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Parish	as above
Rights of Way Berkshire NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\ROW WEST BERKSHIRE	Useful in highlighting access possibilities.Note Oxford ROW not available
Rights of Way Hampshire NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\ROW HAMPSHIRE	Useful in highlighting access possibilities
Rights of Way Wiltshire NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\ROW WILTSHIRE	Useful in highlighting access possibilities
RSPB Reserves NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\RSPB Reserves	Limited use in terms of this project
Scheduled Ancient Monuments NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Sam_aonb	Also Scheduled Ancient Monuments AONB layer (copy)

SBC NWS AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\SBC_SAMS	Swindon Borough Only - limited use
Woodland Trust Sites NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Woodland Trust Sites	Limited use in terms of this project
World Heritage Sites NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\World_Heritage_sites	Only one in AONB - Avebury
National Nature Reserves ST	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
National Nature Reserves SU	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
SPA's ST	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
SPA's SU	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
SSSIs ST	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
SSSIs SU	EN	Mapinfo	Server GISDATA\AONB\From EN	Used for Target Area identification
Natural Areas NWD AONB	MAGIC	Mapinfo	Server GISDATA\AONB\From Magic	Used for Target Area identification
Local Nature Reserves	MAGIC	Mapinfo	Server GISDATA\AONB\From Magic	Used for Target Area identification
Landcover maps		Mapinfo	Server GISDATA\AONB\Landcover	
Soils Data NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Soils\Soils	Soil Types in NWD Area - see EXCEL File SoilsKey for code interpretation
Soils Data NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Soils\342Stuff_revised	Subset of Soils database with Chalk soil types with shallow overlay only
Soils Data NWD AONB	NWD AONB	Mapinfo	Server GISDATA\AONB\Soils\Excludes342	Subset of Soils database EXCLUDING Chalk soil types with shallow overlay
NWD AONB Maps (various)	NWD AONB	JPEGS	On CD	Background information only
HCC Land Use NWD AONB	HBIC	Mapinfo	Server GISDATA\AONB\From HBIC	Used in lieu of Aerial Photos (data based on APs originally)
HWT Reserves	HBIC	Mapinfo	Server GISDATA\AONB\From HBIC	
Hampshire SINCS	HBIC	Mapinfo	Server GISDATA\AONB\From HBIC	Source of Hants CWS
Hampshire Biosites	HBIC	Mapinfo	Server GISDATA\AONB\From HBIC	
Berkshire Chalk	Phillipa Burrell	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\Berkshire WHS	
Berkshire County WHS 2004 with Natural Areas	Phillipa Burrell	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\Berkshire WHS	

Grassland WHS on Chalk in NWD AONB	Phillipa Burrell	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\Berkshire WHS	Basis of mapping existing CG resource for Berkshire
WHS Berkshire	Phillipa Burrell	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\Berkshire WHS	Source of Berks CWS
Oxford NWD Beech Yew Woodland	Oxford BRC	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\From Oxford\NWD Beech Yew Wood	Not used in project
Oxford NWD Chalk Grassland	Oxford BRC	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\From Oxford\NWD Chalk grassland	Basis of mapping existing CG resource for Oxfordshire
Oxford NWD CWS	Oxford BRC	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\From Oxford\NWD CWS	Source of Oxon CWS
Oxford NWD Mixed Dec Woodland	Oxford BRC	Mapinfo	Server GISDATA\AONB\Otherlayers\NWD AONB\From Oxford\NWD Mixed Dec Wood	Not used in project
Aerial Photographs NWD AONB Berkshire	NWD AONB	Mr Sid Format - Mapinfo compatible but unregistered	Server GISDATA\AONB\Otherlayers\Berkshire AP	Not registered for use in MAPINFO. One tile registered manually for target area habitat identification.
Aerial Photographs NWD AONB Hampshire	NWD AONB	ECW Format - Mapinfo compatible but unregistered	Server GISDATA\AONB\Otherlayers\Hampshire AP	Not registered for MAPINFO. Phase 1 map layer used instead (see above)
Aerial Photographs NWD AONB Oxfordshire	NWD AONB	Mapinfo	Server GISDATA\AONB\Otherlayers\Oxfordshire AP	Used for target area habitat identification
NWD AONB Contour data	NWD AONB	Mapinfo	Server GISDATA\AONB\Contours	No slope information. Used to identify steep slopes 'by eye'
NWD Woodlands	NWD AONB	Mapinfo	Server GISDATA\AONB\Mastermap\Mastermaps Mapinfo\IFT_MM_AW_WGS_G86_union	Extracted from Mastermap by AONB

Appendix 2: Data collation and synthesis

Differences and inconsistencies in the manner in which data for a given interest was collected and held by the different sources within the AONB were resolved to provide a synthesis that could be applied to the whole AONB. For example, some Local Records Centres use ArcView for their GIS and others use MapInfo, a data translation exercise being required. Inevitably, some datasets derived in different ways cannot be 'translated' and have had to be combined.

Some datasets proved impracticable to use at a gross AONB scale but have proved much more useful when looking in more detail at more local areas. For example, the contour data-set didn't provide a numerical indication of slope and was visually meaningless at a gross scale but could be used to highlight detailed areas of steeper slopes within the focus area 'by eye'. A requirement to register large numbers of aerial photography tiles (there are thousands within the AONB) before they could be accessed has limited its use again to more detailed focus areas, with the added complication in Berkshire that the photographs initially lacked the necessary numerical reference to register them.

Other datasets had limitations in terms of use as in the case of open access data that was not yet available to GIS or in terms of the level of detail available as with the otherwise very useful Countryside Stewardship Scheme (CSS) data that was available on the MAGIC website.

A few datasets were not available to us at all. In the case of geology this has not proved problematic as soils data is generally more relevant to the chalk grassland resource. For example, a calcareous geology is overlain in parts of the AONB by neutral alluvium and clays that would not support chalk grassland.

In general, where datasets have existed, they have been made available to us freely and without restriction for the purposes of the project. Only in relation to key species data for the AONB has access to that data proved difficult. Apart from limited data from Wiltshire, localised data for key butterfly and bird species has not been made available to us to date and that held by the LRCs is generally neither comprehensive nor up-to-date. As a consequence, there is insufficient key species data available to make any real contribution to the production of the strategy.

The process of assessing each data-set for its usefulness in trying to identify and characterise the resource did however identify a number that were extremely useful. These included datasets relating to the mapped chalk grassland resource, SSSIs and County Wildlife Sites (non-statutory sites, also know as SNCIs, SINCs and WHSs), soils, Scheduled Ancient Monuments (SAMs) and Countryside Stewardship Scheme areas

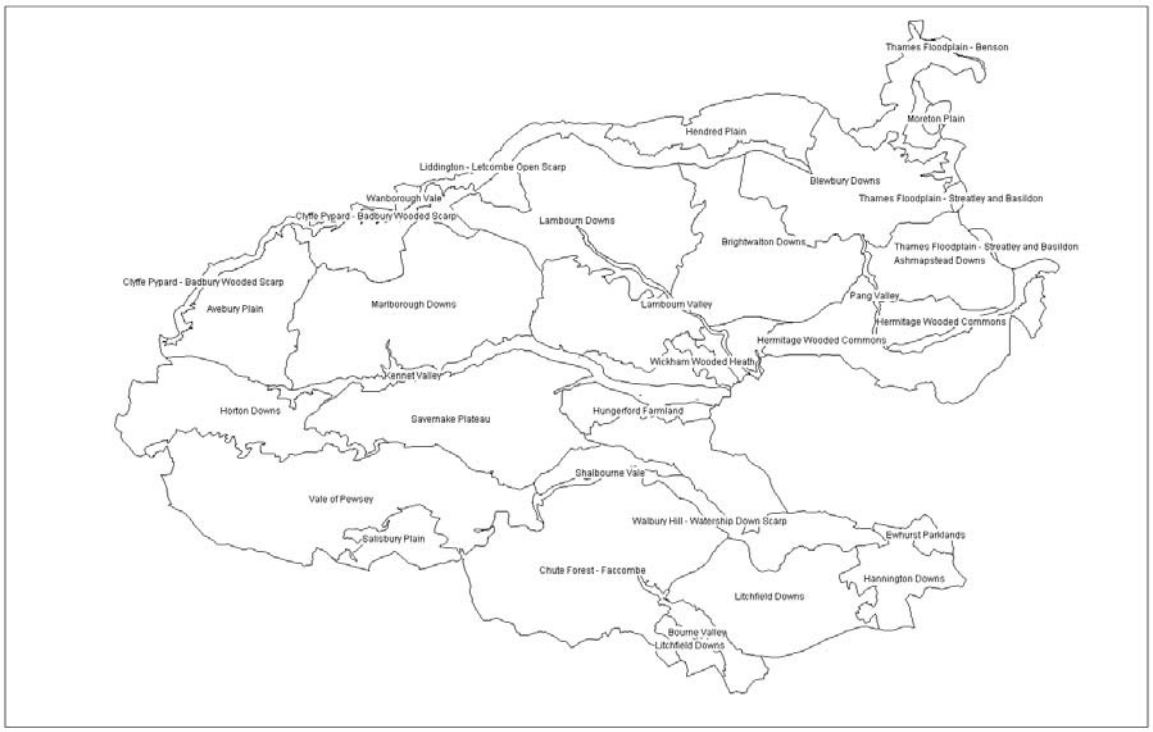
Appendix 3: Spatial mapping structure

Given the fact that the AONB is a landscape designation, it was agreed that a landscape unit structure would be most appropriate for mapping the resource. A

number of different typologies have been developed for this purpose. Natural Areas have the advantage that they combine both ecological and landscape characterisation but are far too large to be useful in this context.

Second Tier Landscape Description Units (LDU2s) would have provided the ideal unit size for this strategy but were not available for the AONB whilst first tier LDUs were also too large. The 'best fit' available were the Landscape Character Areas (LCA) developed by Land Use Consultants in their Landscape Assessment of the AONB. Whilst these were effective in helping to identify two areas for targeting action, a few of the larger areas clearly exhibited sharply differing biodiversity and landscape features within their boundaries. This had the inevitable consequence of producing an artificial 'average' when the interest in each LCA was scored. An example of this applies to the Marlborough Downs LCA which contains both large areas of 'low-scoring' intensively arable land as well as large areas of 'high-scoring' chalk grassland.

Map 5: Landscape Character Areas



Appendix 4: Derivation of the source data for chalk grassland

In mapping all the available data relating to the extent of the chalk grassland resource in the AONB, the following differences apply to the way in which the component data was derived in different counties:

- Hampshire - the GL2 classification mapped polygons were derived from Hampshire's Habitat and Land Use Classification.

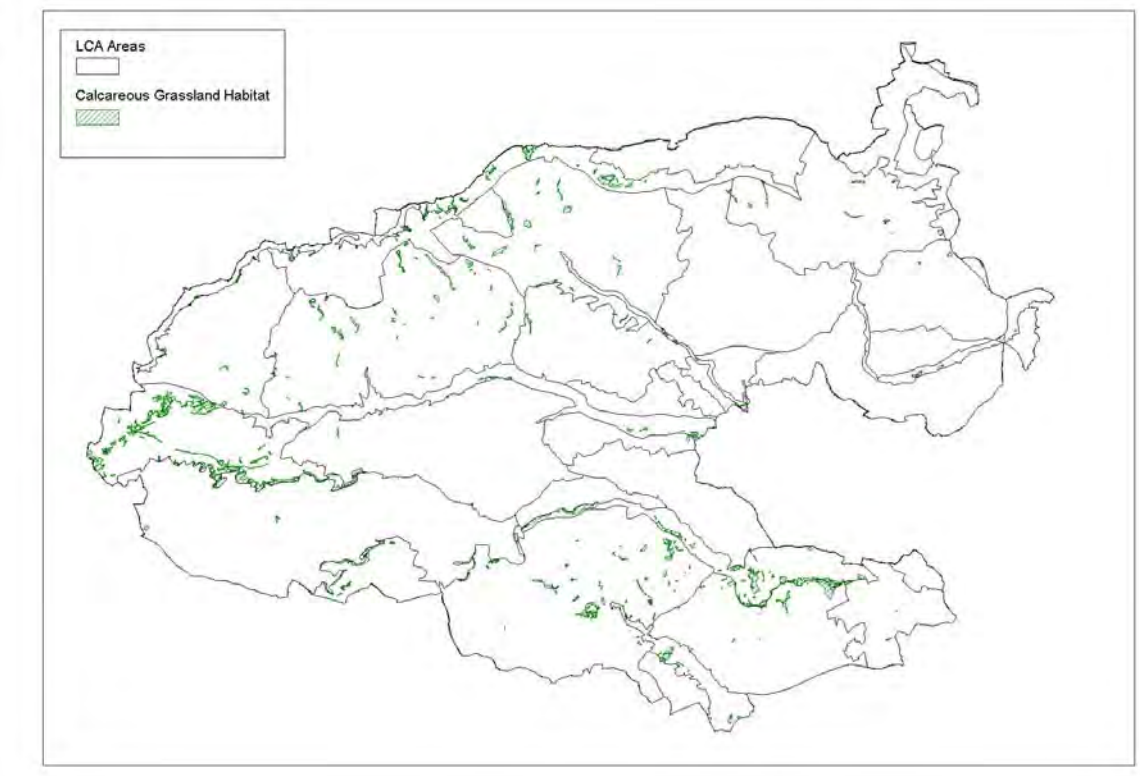
- Oxfordshire - the mapped polygons were derived from its Chalk Grassland Habitat Inventory.

- West Berkshire - the mapped polygons were derived solely from its Wildlife Heritage Sites (equivalent to County Wildlife Sites) where these occurred on grassland supporting soils.

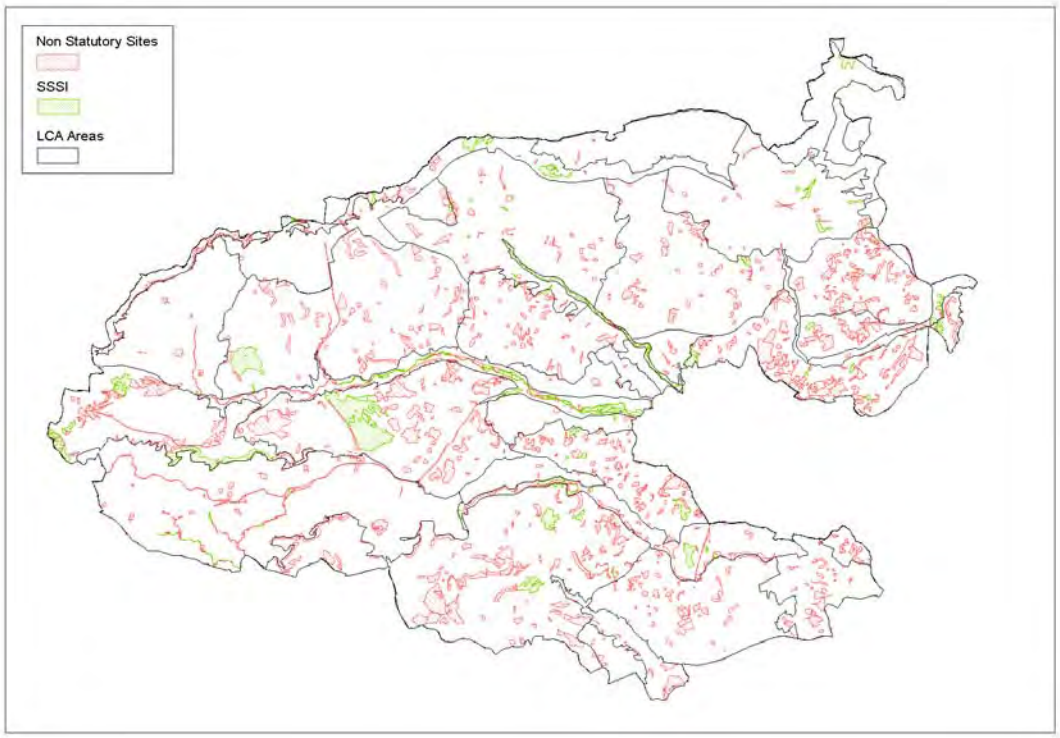
- Wiltshire - the mapped polygons were derived from the National Biodiversity Network (NBN) Priority Habitat Inventory (South West Pilot Project) lowland calcareous grassland dataset.

For the most part, these differences in derivation are unlikely to have a significant impact upon the overall calculation of the extent of the resource. In the case of West Berkshire however, the limited source of the data is such that the mapped polygons more accurately reflect the areas of Wildlife Heritage Sites rather than an absolute area of chalk grassland.

Map 6: Mapped Chalk Grassland



Map 7: All Designated Sites

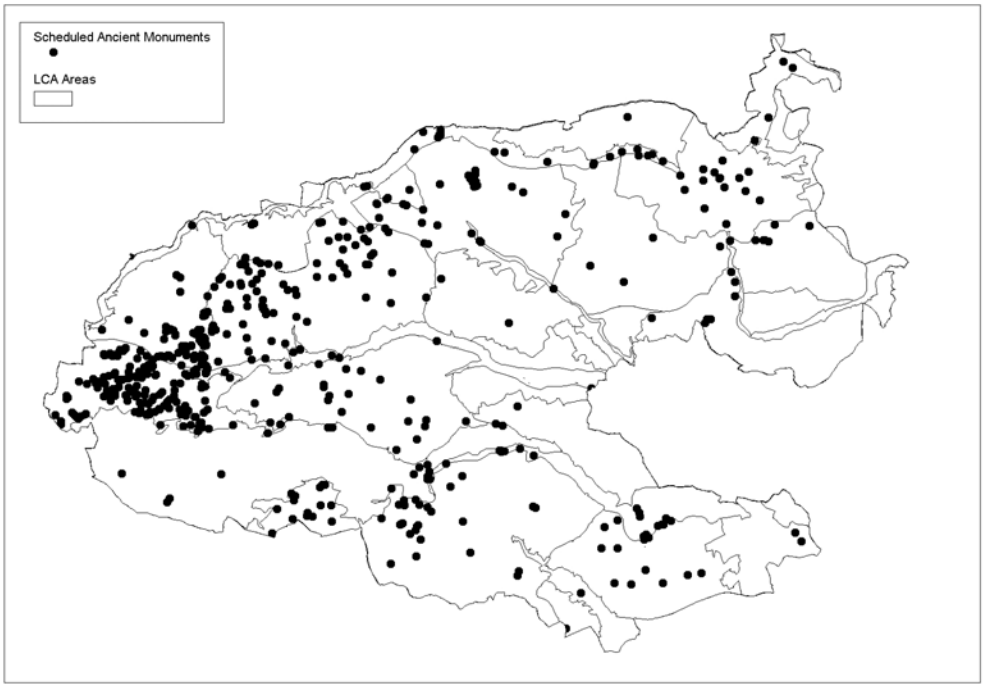


Appendix 5: Identification of focus areas

Having identified and mapped the biodiversity interest, it was necessary to map some of the key landscape and archaeological features. In adopting the LCAs we were both able to build on work that was already directly related to the AONB and ensure that the variety of landscape types was captured in our mapping structure. A total of 43 LCAs with a mean area of 4013.51 ha encompassed the 172,581.12 ha of the AONB.

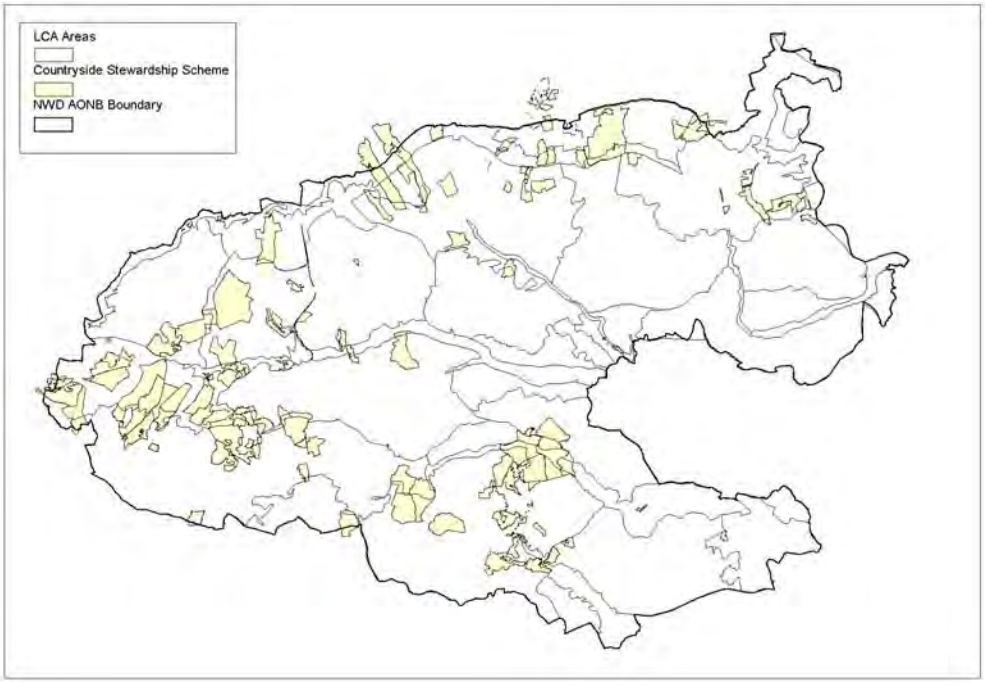
Other key datasets agreed in consultation with the Project Steering Group for use in identifying the focus areas related to archaeology and agri-environment scheme activity. A total of 603 Scheduled Ancient Monuments (SAMs) were mapped as point data to form the primary archaeological data-set. In addition one World Heritage Site (Avebury) and one battlefield site, Roundway Down, were recorded.

Map 8: Archaeological Sites



The existing 17,800 ha of existing Countryside Stewardship Scheme areas with a chalk/limestone component provided a broader indication of biodiversity interest in the wider countryside in the absence of any data for degraded chalk grassland. These are shown below.

Map 9: Selected Countryside Stewardship Scheme Areas



Appendix 6: Landscape Character Area Scoring

ID	LAND TYPE	CHAR AREA	AREA HA	Mean over Actual	CG HABITAT	MoA by CG Area	CG SCORE	CWS CG AREA	STAT	DESIG AREA	MoA by Desig Area	DESIG SCORE	ARCH SITES	MoA by Arch	ARCH SCORE	CSS CG AREA	NO OF CSS	MoA by CSS Area	CSS_CG_SCORE	Total Score
1	Vales	Wanborough Vale	256.47	15.65	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
2	Vales	Vale of Pewsey	15814.69	0.25	13.80	3.50	**2**	13.78	0.00	13.78	3.50	**2**	10	2.54	**2**	2624.50	9	666.06	**3**	**9**
3	High Chalk Plain	Salisbury Plain	2211.52	1.81	96.60	175.31	**3**	193.00	0.00	193.00	350.26	**4**	18	32.67	**3**	219.30	1	397.99	**2**	**12**
4	Vales	Shalbourne Vale	1455.47	2.76	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	1	2.76	**2**	246.40	2	679.46	**3**	**7**
5	Lowland Mosaic	Ewhurst Parklands	589.81	6.80	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
6	Lowland Mosaic	Highclere Parklands	4691.29	0.86	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	2	1.71	**2**	302.30	2	258.62	**2**	**6**
7	Lowland Mosaic	Wickham Wooded Heath	659.84	6.08	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
8	River Valleys	Pang Valley	1207.04	3.33	42.63	141.75	**3**	42.63	0.00	42.63	141.75	**2**	1	3.33	**2**	0.00	0	0.00	**1**	**8**
9	Vales	Thames Floodplain - Streatley and Basildon	245.93	16.32	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
10	Vales	Thames Floodplain - Benson	164.94	24.33	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
11	Vales	Thames Floodplain - Streatley and Basildon	163.16	24.60	4.96	122.01	**3**	4.96	0.00	4.96	122.01	**2**	0	0.00	**1**	0.00	0	0.00	**1**	**7**
12	Downs Plain and Scarp	Clyffe Pypard - Badbury Wooded Scarp	987.75	4.06	31.20	126.77	**3**	49.79	0.00	49.79	202.31	**3**	2	8.13	**2**	28.36	2	115.23	**2**	**10**
13	Downs Plain and Scarp	Clyffe Pypard - Badbury Wooded Scarp	244.54	16.41	0.60	9.85	**2**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**5**
14	Downs Plain and Scarp	Liddington - Letcomb Open Scarp	3066.04	1.31	150.15	196.55	**4**	51.36	178.56	229.92	300.97	**3**	23	30.11	**3**	172.07	4	225.24	**2**	**12**
15	Lowland Mosaic	Winterbourne Farmland	397.19	10.10	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
16	Downland with Woodland	Walbury Hill - Watership Down Scarp	3672.55	1.09	330.13	360.78	**5**	322.78	179.68	502.46	549.11	**5**	28	30.60	**3**	301.00	2	328.94	**2**	**15**
17	Downs Plain and	Chiseldon - Wanborough	4262.13	0.94	2.70	2.54	**2**	2.73	0.00	2.73	2.57	**2**	17	16.01	**2**	963.55	2	907.34	**3**	**9**

	Scarp	Plain																		
18	Lowland Mosaic	Hermitage Wooded Commons	1741.21	2.31	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
19	Downland with Woodland	Brightwalton Downs	9676.97	0.41	2.15	0.89	**2**	2.15	0.00	2.15	0.89	**2**	4	1.66	**2**	0.00	0	0.00	**1**	**7**
20	Lowland Mosaic	Hermitage Wooded Commons	6845.24	0.59	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	7	4.10	**2**	0.00	0	0.00	**1**	**5**
21	Downs Plain and Scarp	Hendred Plain	4251.12	0.94	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	1	0.94	**2**	1514.94	3	1430.26	**5**	**9**
22	Downs Plain and Scarp	Moreton Plain	342.58	11.72	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
23	Vales	Thames Floodplain - Moreton	606.18	6.62	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
24	Downs Plain and Scarp	Moreton Plain	2956.60	1.36	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	3	4.07	**2**	0.00	0	0.00	**1**	**5**
25	Downland with Woodland	Ashmapstead Downs	5002.61	0.80	8.32	6.67	**2**	8.32	5.62	13.94	11.18	**2**	8	6.42	**2**	77.87	2	62.47	**2**	**8**
26	Downland with Woodland	Chute Forest - Faccombe	15163.82	0.26	204.57	54.14	**2**	155.01	134.23	289.24	76.56	**2**	34	9.00	**2**	2490.94	9	659.29	**3**	**9**
27	Open Downland	Blewbury Downs	8258.89	0.49	42.78	20.79	**2**	32.48	98.38	130.86	63.59	**2**	21	10.21	**2**	890.14	5	432.57	**2**	**8**
28	Downland with Woodland	Hannington Downs	3337.70	1.20	20.73	24.93	**2**	20.06	0.00	20.06	24.12	**2**	2	2.40	**2**	27.20	1	32.71	**2**	**8**
29	Downland with Woodland	Litchfield Downs	7862.47	0.51	159.75	81.55	**2**	143.29	0.00	143.29	73.14	**2**	14	7.15	**2**	121.60	2	62.07	**2**	**8**
30	Downland with Woodland	Litchfield Downs	960.11	4.18	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	2	8.36	**2**	0.00	0	0.00	**1**	**5**
31	River Valleys	Bourne Valley	1597.85	2.51	61.43	154.30	**3**	49.80	0.00	49.80	125.09	**2**	1	2.51	**2**	0.00	0	0.00	**1**	**8**
32	Open Downland	Lambourn Downs	11324.25	0.35	148.78	52.73	**2**	165.63	10.15	175.78	62.30	**2**	33	11.70	**2**	1246.03	8	441.61	**2**	**8**
33	Lowland	Winterbourne	975.99	4.11	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	3	12.34	**2**	0.00	0	0.00	**1**	**5**

	Mosaic	Farmland																		
34	River Valleys	Lambourn Valley	484.69	8.28	22.95	190.04	**4**	22.95	0.00	22.95	190.04	**3**	0	0.00	**1**	17.40	2	144.08	**2**	**10**
35	Lowland Mosaic	Winterbourne Farmland	14.46	277.56	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
36	Open Downland	Horton Downs	7098.49	0.57	668.00	377.69	**5**	606.72	515.51	1122.23	634.51	**5**	169	95.55	**5**	3370.36	13	1905.61	**5**	**20**
37	Downs Plain and Scarp	Avebury Plain	6598.64	0.61	15.90	9.67	**2**	13.81	2.14	15.95	9.70	**2**	49	29.80	**3**	801.69	2	487.61	**3**	**10**
38	Open Downland	Marlborough Downs	13924.06	0.29	177.00	51.02	**2**	191.58	278.30	469.88	135.44	**2**	102	29.40	**3**	1622.24	8	467.60	**2**	**9**
39	Wooded Plateau	Savernake Plateau	11120.06	0.36	7.23	2.61	**2**	10.00	0.00	10.00	3.61	**2**	28	10.11	**2**	341.80	1	123.36	**2**	**8**
40	Downland with Woodland	Lambourn Wooded Downs	5850.57	0.69	14.98	10.28	**2**	14.98	18.80	33.78	23.17	**2**	3	2.06	**2**	245.80	1	168.62	**2**	**8**
41	Lowland Mosaic	Hungerford Farmland	1381.35	2.91	0.00	0.00	**1**	0.00	0.00	0.00	0.00	**1**	0	0.00	**1**	0.00	0	0.00	**1**	**4**
42	Lowland Mosaic	Hungerford Farmland	1843.99	2.18	16.06	34.96	**2**	16.06	0.00	16.06	34.96	**2**	0	0.00	**1**	0.00	0	0.00	**1**	**6**
43	River Valleys	Kennet Valley	3270.86	1.23	25.81	31.67	**2**	29.42	0.00	29.42	36.10	**2**	17	20.86	**2**	172.90	3	212.16	**2**	**8**

Appendix 7: Core Area GIS Layer Information

FIELD ID	Description	Contents	Example
ID	Unique identifier for a parcel of land.	**Nnnn:nnnnnnn** - NBN reference for known existing resource. **Consnnnn** – Reference denoting an area selected by consultation. **Hnnnn** – reference denoting a known resource in Hampshire	0053:0000360, Cons035, H0011
NBN RANK	Standard NBN qualifier for status of habitat in the parcel.	Text	Definitely is.
RANK COMMENT	Justification of NBN Rank	Text	
NOTES	General comments on habitat type/features	Text	Degraded/scrubby
STATUS	Status of the Parcel	**Existing** – extant chalk grassland **Existing Probable** – probable extant chalk grassland **Existing Reversion** – area currently undergoing reversion to chalk grassland **Potential Reversion** – area identified as suitable for reversion. (e.g. arable) **Potential Restoration** – Area identified as suitable for restoration (e.g. degraded grassland) **Constraint** – area suitable for restoration/reversion but constrained by existing land use (e.g. amenity use, woodland etc)	
SOURCE	Source of base information		
FILEREF	Reference to the source or site name		
SITEREF	CWS reference if applicable		
AREA	Area of parcel in Hectares		
AGRIC LAND CLAS	Agricultural Land Classification(s) of the parcel	Only ALC's 3,4 and 5 noted. The value '0' being used for ALC's 1 and 2	
ANCIENT MONUMENTS	Presence or absence of Scheduled Ancient Monuments in the parcel.	Y or N. Where the parcel potentially encroaches onto one or more SAMs the value '?' has been used.	
MGT COND	Habitat or management condition information for County Wildlife Sites	**F** – Site considered to be in favourable habitat/management condition or appropriately grazed **U** – Site considered to be in unfavourable habitat/management condition or inappropriately grazed/ungrazed **UK** – Site condition unknown	

Appendix 8: Other chalk grassland related initiatives

There are a number of other chalk grassland projects in the area that have relevance to the implementation of this strategy. These include the following:

Salisbury Plain LIFE Project
The Salisbury Plain LIFE Project was initiated in 2001 to enhance the management of military training areas for wildlife on Salisbury Plain and Porton Down, both candidate Special Areas of Conservation (cSACs) in the Natura 2000 network of internationally important wildlife sites in Europe. To date, the project has involved large-scale habitat restoration work such as the removal of conifer plantation, scrub removal and the reintroduction of appropriate grazing regimes to improve areas of chalk grassland.

Downland Heritage Project
The Downland Heritage Project was initiated by the North Wessex Downs AONB Partnership in 2004 with the aim of restoring an important area of downland within the AONB on a landscape scale. Currently, the draft project area is centred upon Pewsey Down and Horton Down, an area of international importance for chalk downland. This project was recently completed and the draft report was made available when this report was at a draft stage.

Local Grazing Projects
The aim of these local grazing projects is to promote appropriate conservation grazing and to encourage the development of integrated, viable and sustainable solutions to grazing problems. By encouraging the exchange of information on the availability of grazing stock, contract labour and specialist advice, the aim has been to try and overcome some of the problems relating to a shortage of grazing stock, stockmen and associated infrastructure. There are nearly 40 local grazing projects around the country including projects in Hampshire, Wiltshire and Oxfordshire.

Pang & Kennet Countryside Projects
The aim of these projects that are expanding to form a wider Lambourn Valley Countryside Project is to improve the quality of the habitat in this candidate Special Area of Conservation. By promoting sympathetic grazing of important wildlife-rich chalk grassland on steep slopes, problems of diffuse pollution of the river system from arable production can be reduced or eliminated.

Oxfordshire Wildlife and Landscape Study (OWLS)
This project, which has recently been completed, aimed to provide an overview of all the different landscapes and wildlife habitats of the rural districts within the county and developed guidelines to help conserve them. It was based on the LDU level 2 framework and it identified those areas within the county that were capable of sustaining calcareous grassland. Within this broad framework, using a simple scoring system, the study was able to highlight a number of priority areas for targeting chalk grassland restoration and expansion. Within the AONB the escarpment of the North Wessex Down was identified as a priority area and this largely coincides with the Liddington-Letcomb scarp focus area mentioned within this strategy.