Appendix 4

Agri-environment Targets for the Historic Environment: A Guide to the G.I.S. Demonstration.

Final Draft.

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October 2002

1.0 Introduction

This document is intended to act as a guide to two GIS data sets which identify a number of potential agri-environment 'target areas' in the Severn-Vyrnwy Land Management Initiative (hereafter SVLMI) project area. These target areas flag up particular parcels of land on the basis that they possess certain attributes relating to the *historic* environment. As such, both data sets are intended to demonstrate how Landscape Character Assessment and Historic Landscape Character Assessment might be used to inform various land management issues in the future. This paper details why particular attributes of the historic environment were selected for this demonstration, how the data sets themselves were constructed and outlines what some of the management priorities for these areas might be.

2.0 Selection of historic environment attributes for agri-environment targeting.

For the purposes of this demonstration '*historic environment attributes*' can be defined as particular elements of historic environment which can be quantified and spatially defined. Two basic kinds of historic environment attributes have been selected: -

- Historic environment attributes derived from the *historic landscape character types* defined by the Historic Landscape Character Assessment (hereafter HLCA) of the SVLMI project area (Wigley 2002). These character types are generic, in the sense that they occur in different parts of the landscape but in each case the area to which they are applied will posses similar qualities. They also operate at the 'landscape scale', since they are applied to areas of no less than 1ha. For the purposes of this demonstration four historic landscape character types have been selected as potential candidates for agri-environment targeting. Their definitions and the reasons behind their selection are summarised in Table 1.

- Historic environment attributes constituted by *historic environment designations*. Since the features to which they have been applied are deemed to be of local and national important it was decided that they should be included. Records of these designations are held within the Shropshire Environmental Record, although they are issued and administered by English Heritage and/or The Department for Culture, Media and Sport. It is important to bear in mind the distinction between site specific designations (e.g. Scheduled Ancient Monuments and Listed Buildings) and area designations (e.g. Registered Parks and

Gardens, Conservation Areas[1]). Their definitions are summarised in Table 2.

Table 1 – Summary of historic environment attributes based on historic landscape character types selected for this demonstration.

Historic Environment Attribute.	Definition	Reason for selection
Piecemeal Enclosure (see Fig. 1)	"Piecemeal enclosure can be defined as those fields created out of the medieval open fields by means of informal, verbal agreements between farmers who wished to consolidate their holdings (Johnston 1996). Within Shropshire this process appears to have been well under way by the late medieval period, and a number of 16th century commentators regarded the county as largely enclosed (Kettle 1989: 84). These areas have field patterns comprised of small irregular or rectilinear fields. At least two boundaries will have 's-curve' or 'dog-leg' morphology, suggesting that they follow the boundaries of former medieval field strips." Wigley 2002: 13.	Because of the historic processes behind their formation, these areas are likely to preserve some of the oldest field patterns in the SVLMI project area. Together with the small size of the fields, this makes the character of these area particularly vulnerable to field amalgamation. In addition, in some plots the remains of medieval strip cultivation (i.e. ridge and furrow) will survive as extant earthworks, although later ploughing will have destroyed them in others. Where they survive, such archaeological features are susceptible to modern cultivation technologies, which are capable of destroying them in a very short space of time.

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[1] Conservation Areas are designated and administered by District or Borough Councils.

Wetlands (see Fig. 2)	This historic environment attribute combines a number of different historic landscape character types: - - Mosses/raised bogs – areas of which survive as wet peatlands. The formation of the organic sediments in these areas will usually extend back to the earlier part of the Holocene (Leah et al 1998) - Drained wetlands – areas where the majority of the field boundaries follow drainage ditches, indicating that they have been drained and converted to farmland. The soils in these areas will be predominantly organic, since they are derived from peatlands. - Very large post-war fields that are based upon drained wetlands –areas where *current* historic landscape character is 'Very Large Post-War fields' and *former* historic landscape character is defined as 'Drained wetlands' (for definitions of these terms see Wigley 2002). In other words, these are areas where post-war agricultural improvement has resulted from the amalgamation of fields created through the drainage of wetlands. Miscellaneous floodplain fields – Fields on the floodplain which do not have a diagnostic morphology and which will have traditionally been used as meadows.	English Heritage's *Strategy for Wetlands* has now made the management of wetland areas a key priority for the historic environment sector. These areas will contain archaeological and palaeoenvironmental evidence in varying states of preservation, depending upon current and historic land use. They also host wetland habits, which in many cases support a rich abundance of wildlife. However, both the archaeological residues and the ecosystems in these areas are highly susceptible to damage by modern intensive agriculture.

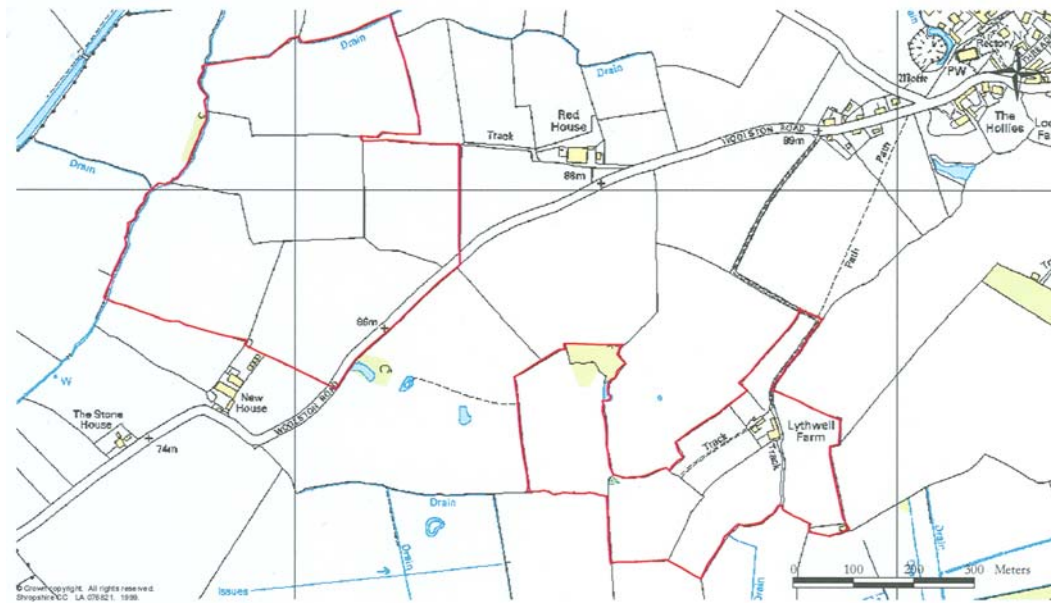| Historic Environment Attribute.	Definition	Reason for selection
Other areas of small fields that have lost < 10 fields since the publication of the 1880s 1st ed. 6" Ordnance Survey map (see Fig. 3).	This historic environment attribute combines two historic landscape character types: - - Small irregular fields – miscellaneous small irregular fields which lack the diagnostic features that would enable them to be assigned to another historic landscape character type. These areas are likely to include small meadows and closes. - Other small rectilinear fields – miscellaneous small rectilinear fields which lack the diagnostic features that would enable them to be assigned to another historic landscape character type. These areas are likely to include small meadows and closes. In addition, only areas with below average field loss since the publication of the 1st ed. 6" Ordnance Survey (e.g. < 10 fields) have been selected.	Although on the basis of the HLCA alone it is difficult to assign a date to the field patterns in these areas, it is reasonable to assume that they represent some of the oldest fieldscapes in the SVLMI project area. In addition, the below average field loss enables us to demonstrate that these areas have changed little over the past 120 years. Both of these factors mean that the historic landscape character of these areas is vulnerable to change through field amalgamation.
Ancient Semi-Natural Woodland.	This historic environment attribute combines two historic landscape character types: - Ancient broadleaved woodlands – Areas of woodland identified by the Forestry Commission as being composed of broadleaved species and designated by English Nature as being Ancient Semi-Natural. Mixed ancient woodland - Areas of woodland identified by the Forestry Commission as being composed of mixed species and designated by English Nature as being Ancient Semi-Natural. Areas of woodland, which English Nature have designated as Ancient Semi-Natural by English Nature but the Forestry Commission has identified as consisting of coniferous species, have *not* but included (these areas have been assigned to the 'Coniferous plantation' historic landscape character type).	These woods are likely to date back to the medieval period, although later planting will have taken place in the case of mixed ancient woodland. Until the early 20th century they would have been maintained through regular management cycles, which provided a sustainable supply of timber. They may contain a number of archaeological features (e.g. remains of prehistoric/Romano-British field systems, earthworks relating to woodland industries such as charcoal burning etc.) and will also provide some of the richest woodland habitats. As a result the character of these areas is likely to be severely degraded by felling activity and other changes of landuse.

Fig. 1 – Example of an area of 'piecemeal enclosure' at Doveston.
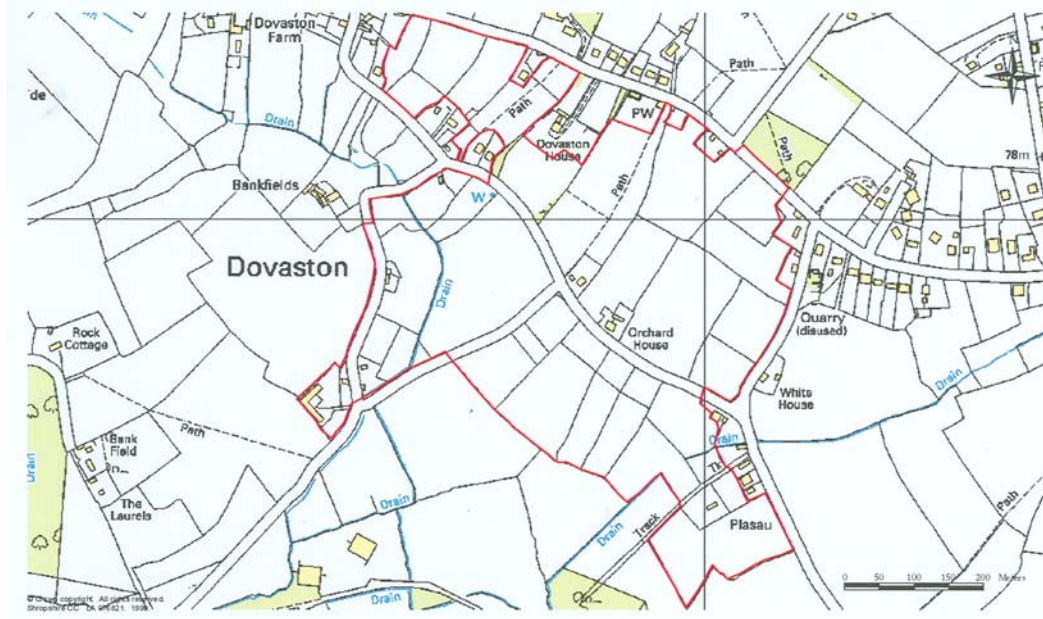
Fig. 2 – Example of an area of 'drained wetland' east of Babbinswood
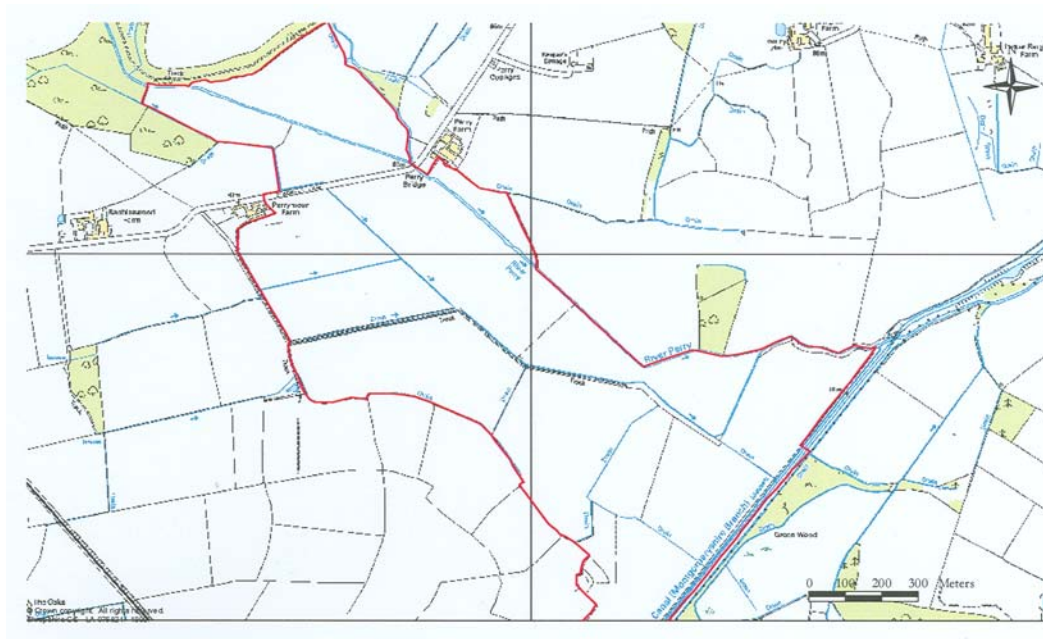
Fig. 3 – Example of an area of 'other small irregular fields' (with below average field loss) near West Felton.

Table 2 – Summary of historic environment designations selected for this demonstration.

Historic environment designation.	Type	Definition
Listed Buildings	Site specific	Buildings which are protected under the terms of the Planning (Listed Buildings and Conservation Areas) Act 1990 because they are deemed to be of special architectural or historic interest.
Scheduled Ancient Monuments	Site specific	Archaeological monuments which are protected under the terms of the Ancient Monuments and Archaeological Areas Act 1979. Selected because they are deemed to be fine examples of their class and are therefore of national significance. Whilst these sites may be protected in this way, scheduled status does not necessarily guarantee that a monument will be managed sympathetically. This is particularly true of monuments which lie in farmland (and other areas) and are not subject to specific management agreements.

Historic environment designation.	Type	Definition
Conservation Areas	Area designation	Areas designated by local authorities and protected under the terms of the Planning (Listed Buildings and Conservation Areas) Act 1990 because they are deemed to architectural or historic interest such that it is desirable to preserve or enhance them.
		These designations generally apply to settlements and are therefore unlikely to cover areas of farmland. None-the-less they have been included in the demonstration for the sake of inclusiveness.
Registered Parks and Gardens.	Area designation	Areas of parkland included in English Hertiage's *Register of Parks and Gardens of Special Historical Interest in England* because they are deemed to be national importance.

3.0 Methodology.

For the purposes of this demonstration it was decided that target areas should be identified at two scales: -

- At the level of the Landscape Description Units (LDU) defined by the Shropshire Landscape Character Assessment.

- At the level of the 'HLCA polygons', which form the basic unit of analysis of the Shropshire HCLA .

In spatial terms, the LDU's represent larger units than the HLCA polygons and therefore operate at a smaller scale. Mapping at these two scales thus provides both a broad and a more focused level of targeting.

In order to identify target areas which possess the historic environment attributes outlined above in the GIS environment two separate targeting shape files were created[2]. These were based upon the LDU's and the HLCA polygons respectively. Within the attributes tables the original polygon identification codes were retained (in order to facilitate cross comparison). Additional numerical fields were then created for each of the historic environment attributes (see Table 3). A series of queries were run using the 'select by theme' command in order to ascertain which polygons intersected with a given historic environment attributes[3]. A simple binary yes/no code (i.e. 1 = Yes, 0 = No) was then entered into each field, depending upon the results of each query. Finally, a 'HE targeting' legend was created that can be applied to each of these fields (see Fig. 4).

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[2] svlmildu.shp = LDU based polygons; sv he targets2.shp = HLCA based polygons.

[3] These were firstly identified either by manipulating the HLCA data in such a way that only certain historic landscape character types were displayed (see Table 1) OR by using the historic environment GIS shape files held within the Shropshire Environmental Record.

Table 3 – Summary of field names used in the GIS shape file attribute tables.

Historic environment attribute	Field name[4]
Piecemeal enclosure	Piece enc
Wetland	Wetland
Other areas of small fields that have lost <10 fields since the publication of the 1880s 1st ed. 6" Ordnance Survey map.	Othersmall
Ancient Semi Natural Woodland	ASNW
Listed Buildings	ListedB's
Scheduled Ancient Monuments	SAM's
Conservation Areas	Consareas
Registered Parks and Gardens	EHregpk

Fig. 4. – HLCA polygons with the 'HE targeting legend' applied to the Wetland historic environment attribute field.


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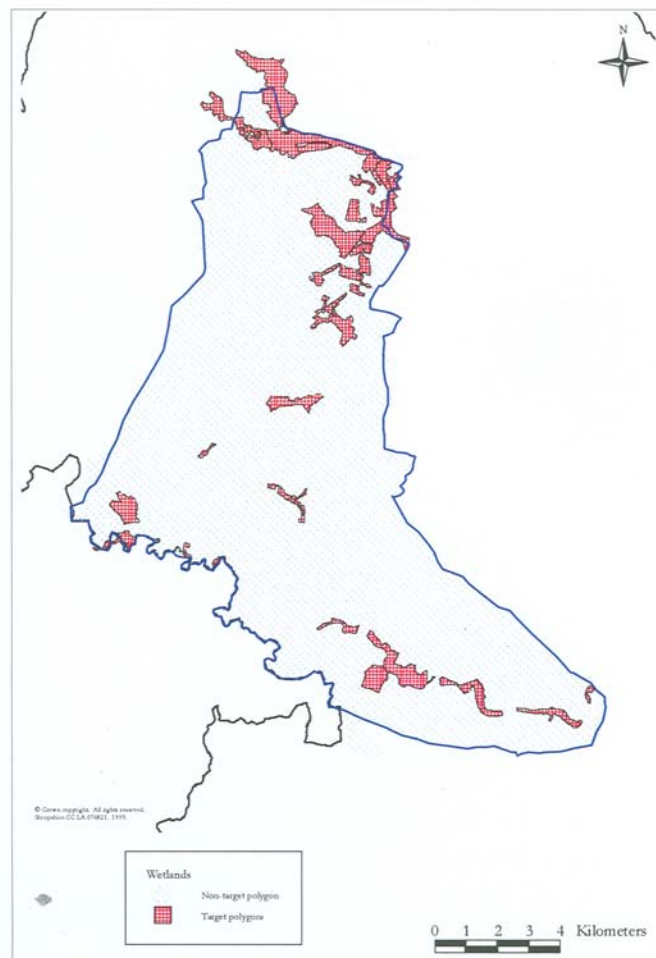
[4] Because of the way in which ArcView works these field names had to be abbreviations.

Finally, a summary field was also added in order to total up the number of times each polygon had intersected with an historic environment attribute. The results can be displayed using the 'graduated colour' function in ArcView's legend editor (see Fig. 5). An additional summary field ('Summary 3') was also created for the HLCA level polygons that details why each polygon has been targeted. This was constructed using an expression which concatenated the codes that were entered into each of the different historic attribute fields. This produced an eight digit binary code (e.g. 00000101) with a limited number of combinations (25 in total). In order to interpret these codes a legend ('summary of targets') was constructed which details what each ones means in terms of the different historic environment attributes.

Fig. 5 – Summary of the number of times LDU's in the SVLMI project area intersect with historic environment attributes.
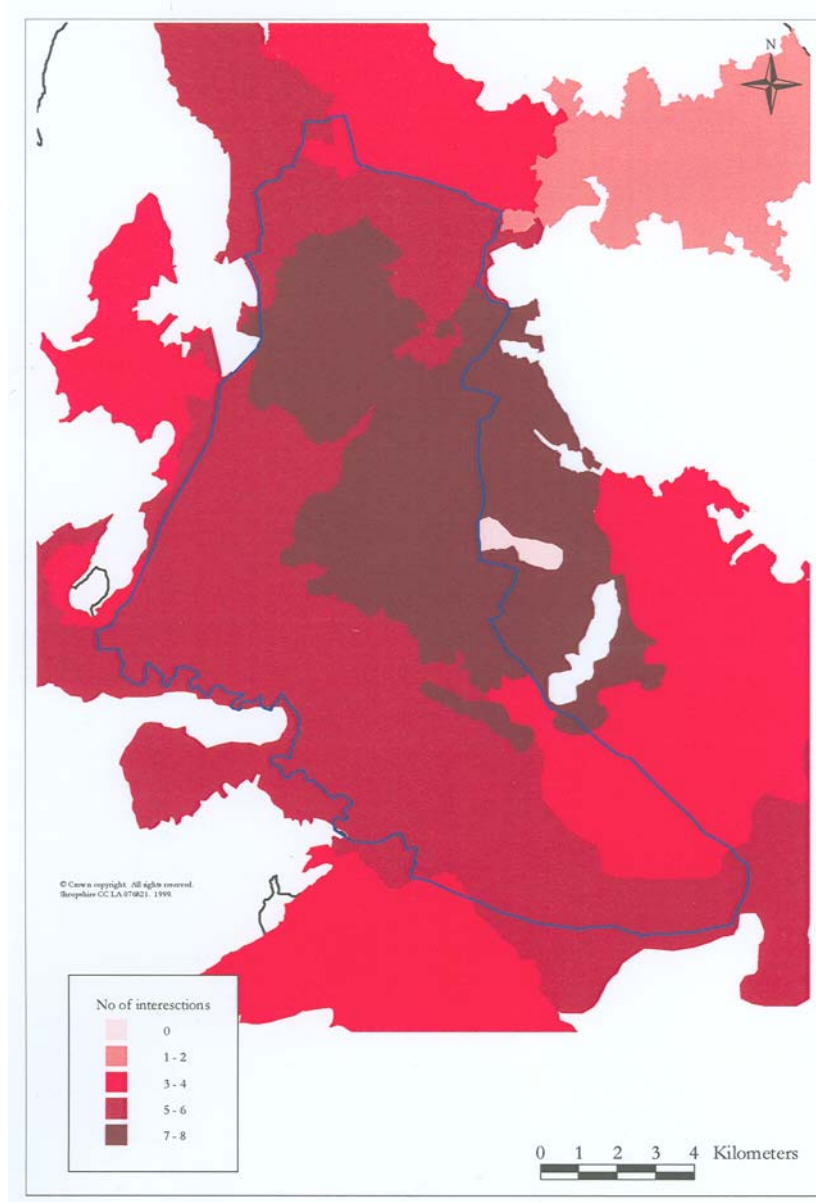
4.0 Implications for land management.

Each of the different historic environments attributes have different management requirements. Resolving what these are in detail lies beyond the remit of this exercise and requires discussion between specialists working for English Heritage and the other stakeholders. None-the-less, it is possible to outline a series of very broad management principles that might form part of a 'Code of Best Practice'. Listed Buildings and Conservation Areas have been excluded from the following discussion because such designations do not commonly apply to areas of farmland (although obviously Listed Buildings do exist *within* areas of farmland).

Piecemeal enclosure

Do's

- Undertake management of rank vegetation and scrub in areas of pasture containing extant ridge and furrow.

- Manage semi-natural grassland in areas of pasture in a sympathetic manner.

- Undertake sympathetic management of existing field boundaries (and larger trees within those boundaries).

- Enter into management agreements with English Heritage or DEFRA where earthwork complexes are present.

Don'ts

- Add or remove any further field boundaries.

- Plough or overstock fields containing earthworks of archaeological interest.

Wetlands

Do's

- Manage bank side trees and hedges in a sympathetic manner.

- Undertake management of rank vegetation and scrub in areas of floodplain pasture containing extant earthwork remains of water meadows.

- Seek to return areas of peatland to unploughed wet pasture in order to preserve surviving organic soils.

- Consult with English Heritage regarding best practice for the management of peatlands.

- Enter into management agreements with English Heritage or DEFRA concerning areas of former water meadows.

Don'ts

- Add additional land drains to low lying fields in floodplain or wetland locations.

- Plough or overstock fields containing earthworks of archaeological interest.

Other areas of small fields that have lost <10 fields since the publication of the 1880s 1st ed. 6" Ordnance Survey map.

Do's

- Manage semi-natural grasslands in areas of pasture in a sympathetic manner.

- Undertake sympathetic management of existing field boundaries (and larger trees within those boundaries).

- Enter into management agreements with English Heritage or DEFRA where earthwork complexes are present.

Don'ts

- Add or remove any further field boundaries.

Scheduled Ancient Monuments

Do's

- Enter into management agreements with English Heritage as a matter of priority.

- Undertake management of rank vegetation and scrub.

Don'ts

- Continue to plough within the scheduled areas around the monument.

- Overstock the fields within which the monument lies.

Registered Parks and Gardens

Do's

- Enter into management agreements with English Heritage or DEFRA as a matter of priority.

- Manage surviving parkland features in a sympathetic manner.

- Seek to enhance areas of former parkland which are currently given over to other forms of land management.

Don'ts

- Remove any surviving elements of the parkland.

- Convert former areas of parkland to arable.

5.0 References.

Johnston, M. 1996. *An Archaeology of Capitalism.* Oxford. Blackwells.

Kettle, A. J. 1989. 1300-1500. In G. C. Baugh (ed.) *A History of Shropshire: Volume 4: Agriculture.* London. The Institute of Historical Research.

Leah, M. D.; Wells, C. E.; Stamper, P.; Huckerby, E. and Welch, C. 1998. *The Wetlands of Shropshire and Staffordshire.* Lancaster. Lancaster University Archaeological Unit.

Wigley, A. 2002. *The Shropshire Historic Landscape Character Assessment. Pilot Study 1 – The Severn Vyrnwy Area.* Unpublished report, Natural and Historic Environment Team, Shropshire County Council. Shrewsbury.