Report

footprint ECOLOGY

Avon Valley Grazing Project

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1. Summary

Background

1.1 The River Avon floodplain is one of the largest expanses of unimproved inundation grasslands in Britain, managed by grazing and hay or silage cutting. The floodplain has a long history of agricultural management, in the past as managed water meadows, and today as meadow and pasture. The Avon has always been used for fishing and water extraction. The main river is subject to rapid fluctuations and can flood parts of the floodplain at any time of year, but more regularly in the winter.

1.2 The river itself has a European designation as a Special Area of Conservation (SAC) for its flora and fauna, the valley is designated as a Special Protection Area (SPA) for wintering wildfowl, and much of the valley is also a Site of Special Scientific Interest (SSSI) for its wet grasslands flora and fauna including breeding waders. Breeding lapwings and redshanks have declined significantly in recent decades and now occur only in small numbers in certain parts of the valley. The wildlife of wet grasslands is heavily dependent on grazing and/or cutting to maintain suitable conditions for wildlife, and many farmers have entered into Higher Level Stewardship (HLS) to promote suitable management.

1.3 Historically the River Avon's aquatic plants have been cut in late spring or early summer as the build up of mostly water crowfoot, has prevented free water flows and increased river levels. In recent years this cutting has been carried out by the Environment Agency (EA). However, following a review, EA decided this was not sustainable and in 2005 announced that it would cease cutting in 2010. Further changes are expected in the valley as a result of climate change, with conditions becoming less predictable and possibly wetter in the future. There is concern among the farming community that farming will become more difficult in the valley as a result of these changes. This concern is mirrored by conservation interests, as less active farming could result in further declines in wildlife. Changes which have occurred when farming has already ceased in parts of the valley are a reversion to tall swamp and fen vegetation (such as coarse sedges, rushes and grasses, including reed). If this were to happen in areas of flower-rich meadows, these and their associated wildlife could be lost.

1.4 These concerns led Natural England (NE) to commission a study from consultants Footprint Ecology, to investigate the likely effects of wetter conditions in the valley on the economics and practicalities of grass farming; and to suggest ways (highlighted in the text below) in which the farming community can adapt to the predicted changes. The consultants' findings are based on a number of farm visits, in-depth interviews with individual farmers and discussions with the National Farmers Union (NFU), EA, NE and others. The findings include a description of these discussions and investigations and also consider water and land management issues, livestock and marketing options and potential ways to manage the transition to wetter conditions.

Farm visits

1.5 The visited farms included owner-occupiers and tenants. Most farms in the valley are still farmed by the owner or tenant although a few have given up active farming and the land is let on annual licence. Almost all the land in the valley is grazed or cut or both. Cutting of hay/haylage/silage (forage) on most farms is for use on the farm, although a few farms sell to others, and some buy in. In all cases valley forage is seen as integral to the farm business. Almost all grazing is by cattle with either young stock or suckler herds and with a range of breeds. Most farmers are reluctant to move animals off their farm, because of the cost of bTB testing, although some farms still maintain links with grazing in the New Forest, and see this as an important asset to their business. There are few dairy farms left in the valley, and these use the valley grasslands to cut forage, and to graze with followers and dry cows. Cattle finished in the valley are sent to market with few direct sales to retail outlets (e.g. restaurants). This is due to the distance to slaughter-houses and retailers' requirements for a frequent and regular supply which most small farms cannot meet. There is a single farm shop and some sales direct to public with box deliveries and free range eggs.

1.6 A number of farmers are close to retirement with no obvious successor. Many families have been in the valley for generations and the farmers have a vast accumulated knowledge of the problems and solutions to farming this complex valley; knowledge that could be lost, if not passed on. Where land has been abandoned, reversion to coarse fen can take as little as four years, and beyond that, succession to wet woodland will follow. There are now far more trees and scrub in the valley than 50 years ago. Grazing has declined over the same period and there are fewer animals now than in the recent past. Many farmers have entered Higher Level Stewardship (HLS), but some see the prescriptions as inflexible and derogations difficult to obtain.

1.7 Four farmers were interviewed about the potential effects of wetter conditions on their farming activities and profitability. All four were seriously concerned that the areas that could be cut and baled would be reduced by the changing conditions. Not only would this reduce their available hay crop but could also result in an increase in coarser sedges and rushes and in sward deterioration. In most cases the wetter fields would still be available for grazing, but this might require a change in existing farming systems, and borrowings to finance the purchase of additional animals in spring. They would have to be restricted to seasonal grazing as, with a reduced forage crop, farmers would have no resources to keep more animals over winter, (unless overwintered on land outside the valley). This would impose strict timing constraints, forcing the farms to buy and sell their stock at times when they face most competition in the market. This will inevitably be reflected in the prices that they pay and receive for their stock at each end of the cycle, forcing them in effect to 'buy high' and 'sell low'. The fact that the land in question is designated SSSI and mostly contracted to be managed within various HLS agreements also effectively restricts the farmers options. An extensive livestock enterprise using cattle is, for most farmers, the only practical alternative.

1.8 The farmers had doubts about the availability of suitable breeds in terms of growth rates and disease resistance and it was recognised that it would be necessary to treat all animals against liver fluke. On three of the four farms examined HLS payments went to the landlord and discussion with the landlord would be necessary if HLS supplements (for example for using native breeds) were to be passed to the tenant.

1.9 The net reduction in income relative to present levels on three of the four farms from forgoing hay cutting and introducing seasonal grazing has been calculated at £61-70/acre. The ability of the fourth tenant in the sample to endure an even bigger shortfall of £151/acre is only made possible by having an HLS agreement in their own name. The ongoing payments from their existing agreement provide a financial buffer equivalent to almost 90% of the potential shortfall in income induced by flooding. There would even be scope for enhancing the level of payment under a subsequent agreement, taking account of changes to the plant communities and the additional difficulties associated with managing much wetter fields. None of the other three farms, in the absence of an HLS agreement of their own, would be able to able to tolerate the reductions in income so robustly. The best means for these three to reduce the anticipated financial shortfall would be to negotiate with their respective landlords to apply for, and pass back to them, the tenant, whichever of the relevant supplements might be most appropriately applied for, (e.g. HR1/ HR2 cattle/native breeds supplement, equivalent to a payment of from £14-28/acre or HK18 +HR7 hay making/difficult sites supplement combining to give £51/acre), potentially reducing their losses to a range of £33-56/acre. Losses might be further reduced by collaboration and entering into a direct selling arrangement.

Water management – addressing the challenges

1.10 The management of water flows through the valley is largely out of the hands of individual farmers and landowners. The catchment is permeable so that rises and falls in the river level may affect adjoining land whether or not the river overflows its banks. At times of rising water, ditches will channel water onto the floodplain and as the water drops, they will help to drain it back into the river. The responsibility for ditch maintenance is not always clear and many ditches are under-maintained or choked by trees and scrub. Managing these ditches could help in getting flood waters off the fields more quickly. HLS will pay for ditch restoration, not maintenance, although the dividing line can be uncertain.

1.11 Management of the main river has historically been carried out by drainage authorities, landowners and water suppliers, and most of the main river hatches are now operated for the benefit of fisheries or water abstraction. Recommendations in this subject area are mainly aimed at taking a more strategic view of ditch restoration under HLS, in order to provide ditch drainage over wider, integrated areas; expediting hatch operating protocols on the main river and side streams to cater for all interests in the way these are operated; and assessment and removal of hatches or other structures that prevent free flows, where such action will not be contrary to meeting flood prevention requirements.

Forage crops – addressing the challenges

1.12 If the conditions gradually become wetter, it is probable that less forage will be cut in the valley. As a result, forage will have to be brought in from elsewhere in greater amounts or valley animals will have to be outwintered outside the valley farms. It is likely that once the patterns of need are established, a number of cooperating farmers will be able to buy, store and maintain more regular links with suppliers elsewhere than would individual farmers. Hay may be available from conservation sources and through a number of useful websites.

1.13 An alternative to bringing in hay is to **export stock for the winter to over-wintering sites elsewhere**. Both the New Forest and the Dorset heaths and forests might offer opportunities for over-wintering, but farmers may need to consider the suitability of their stock for these types of sites. It is suggested that NE could put interested farmers in touch with suitable agencies.

1.14 It is also recommended that **a more flexible system be adopted in relation to cutting dates under HLS**. Cutting according to predetermined dates can result in the best opportunity for cutting being missed. The farmers and NE need to mutually agree a protocol for earlier cutting, particularly to overcome any delay when NE staff are not available to agree derogations. Further flexibility is needed in circumstances where no hay has been cut in a previous wet year, but an early cut, to remove old vegetation is possible the following spring. Consideration could also be given for supplementary HLS payments for removal and disposal of dead vegetation built up from the previous year.

1.15 It is recommended that farmers in the Avon Valley consider setting up a **machinery ring**. Advice on this is easily obtainable and there can be considerable advantages not only from activities between members but through the possibilities of bulk buying, negotiation of discounts, sharing of resources including labour, machinery and buildings. Essentially machinery rings can serve any purpose the members want from them.

1.16 Farmers may find it helpful to talk to others who have learnt how to cope with wet conditions elsewhere: very often these are conservation bodies and contractors with long experience of the right machinery to use on wet ground.

Livestock management – addressing the challenges

1.17 The use of **traditional breeds** needs to be considered together with the potential for the use of suitable animals if forage cutting declines resulting in coarser vegetation for grazing. Information is available on suitable breeds for wetland sites based on experience elsewhere. Various possibilities are suggested, such as Red Devons and Sussex cattle, both of which are suitable as graziers on poorer swards, good converters and relatively trouble free. However**, background and experience is also very important**, and other breeds such as Herefords are also eligible for the native breeds at risk supplement of £70/ha under

HLS. It is suggested that a workshop be set up through the New Forest Land Advice Service. This could explore the background and breeds most suitable for grazing the valley floodplain in the future, and arrange farm visits to herds elsewhere.

1.18 The problems and costs of bTB testing for moving herds between holdings is fully recognised as a disincentive to cooperation between farmers to set up joint grazing schemes. It is suggested that **difficult sites supplements under HLS**, together with special project inputs (if available) into improved handling facilities, would assist farmers to move animals more easily under collaborative schemes.

Marketing

1.19 It is recognised that there are difficulties in marketing traditional breeds, with buyers often looking for certain carcass conformation, compounded by the controls over slaughter after 30 months. Several studies have shown that a combination of traditional breeds grazing on natural unimproved pasture, with traditional finishing on grass, can produce high levels of nutritional value and high meat quality. There is a growing trend among consumers for valuing locally and sustainably produced food. This is reflected in an increase in local outlets and even an interest from some of the major supermarkets, although exacting quality and production controls make supermarkets a possible outlet at present only for large producers.

1.20 For the farmer, input into a final product is usually restricted to the production of the highest quality animal for market, leaving the slaughtering, butchering and packaging and subsequent retailing to others. Many animals sold off the Avon valley farms are sold as stores for further fattening or as finished animals for slaughter. Farmers could arrange their own slaughter and butchering of finished animals and sell direct to retail outlets or to the public. Currently two farmers in the valley are known to be doing this. Continuity of supply (e.g. a large restaurant may want a carcass every one or two weeks throughout the year) is frequently mentioned as a difficulty for smaller farms obtaining entry into direct marketing to retail. Distances to markets and abattoirs also pose difficulties and increase costs, and hanging facilities in the valley are limited. It is suggested that **collaborative working could help to overcome continuity of supply to retailers** and this would be a distinct advantage to all.

1.21 **A range of marketing initiatives exists** providing national quality assurance schemes, marketing based on genetic provenance, wildlife conservation and localness branding; all **used to add value to meat products**. The New Forest Marque and Direct from Dorset are examples of these locally. The Avon Valley straddles the boundary between these schemes and a number of farmers felt that branding would not help them particularly. However, **re-engagement with** these schemes, particularly **the New Forest Marque**, could be a valuable part of any marketing initiative.

1.22 There are other potential marketing outlets **including farm shops, farmers markets, box schemes and internet sales**. To be successful these need to be highly professional, well

resourced and for smaller farms, collaboration can also help. There are various **sources of advice** in setting up a direct sale enterprise (National Farmers Markets and Retail Association is one), and numerous web sites hosting directories of producers both nationally and locally. Community Supported Agriculture (CSA) is a localised food and farming model based on an approach of mutual support between producers and consumers. CSA can be farmer-led and include meat box schemes and other farm products. There are currently several CSA schemes locally and further information can be found on the Soil Association website.

1.23 If Avon valley farmers were interested in exploring new marketing initiatives, then help would be available from a number of organisations. It is suggested **that a workshop to look at the various options** could be run through the New Forest Land Advice Service, using a consultant such as Growing Rural Enterprises. Such a workshop should aim to show farmers what can be possible, explain the advantages of collaborative working between farmers, and point them in the direction of further advice and funding. For example, F3 The Local Food Consultants offer up to five days free consultancy for community food enterprises in England, under the Making Local Food Work programme. The Soil Association producers' advice team can also offer free support to producer members (who do not need to be farming organically to join) on various diversification options. Another option that could be explored would be specific **'Avon Valley' branding**, although again, advice should be sought.

The way ahead

1.24 In the longer term, if the valley floodplain becomes wetter, some low lying areas may no longer be suitable for farming and could turn to swamp or fen. Rather than standing back and simply allowing this to happen, **a strategic approach is needed**, to identify such areas and steer them towards a nature conservation or amenity use that will continue to provide an economic value. Natural England can help guide this process of habitat change.

1.25 Throughout this examination of the potential problems and solutions, the **advantages of collaborative working** have surfaced. Many valley farms are simply too small to take advantage of some of the potential solutions without the collaboration of others. Shared marketing opportunities (such as branding, and combined direct sales), sourcing hay and livestock, advertising and requesting additional grazing or hay-making land, the establishment of machinery rings or a shepherding service, and collaboration between landowners and tenants, are all dependent on **increasing the level of communication and cooperation within the community**. Communication between farmers is important and the re-instigation of a newsletter, regular events such as workshops, and setting up an online discussion group, or a machinery ring, could all assist this. There could also be a role for the NFU locally to help and encourage collaboration and communication between farmers

1.26 Another possibility for the future is farmer cooperation to **set up larger grazing schemes under annual grazing licences to include a stock management service**. There are considerable advantages of scale to be obtained in a scheme of this sort which works well elsewhere.

1.27 There are **many sources for advice, further information, examples of successful businesses,** and in some cases **financial help** for farmers to **set up new initiatives**. The farmers in the Avon Valley are not alone in having to cope with major changes on large wet grasslands where the farming will become more challenging. There are others who have met and adapted to these problems elsewhere. Ultimately it is for the farmers themselves to take advantage of the information and advice that is available, with help and guidance from Natural England and others with specialist knowledge. A short list of the most widely relevant websites and organisations individuals who can offer examples of successful working and help is given below.

Further resources

- **Alaska Environmental Contracting** – specialist contract with experience of working on wet ground
  www.alaska.ltd.uk/
- **Business Link** - a national advice service which provides business information and access to a wide network of business support including farm diversification.
  http://www.businesslink.gov.uk/bdotg/action/layer?r.s=m&r.l4=1083582801&r.l1=1081597476&r.lc=en&r.l3=1083731935&r.l2=1082184851&topicId=1083731935
- **Carbon Neutral Company** – carbon neutral branding
  www.carbonneutral.com/about-us/
- **Direct from Dorset** – Dorset Branding
  www.directfromdorset.co.uk/
- **Ecolots** - a conservation-orientated advertising website for both sales and wants.
  www.ecolots.co.uk
- **Grazing Advice Partnership** – breed information, Marketing Guide, networking opportunities
  www.grazing adviceparnership.org.uk
- **Machinery Ring Association of England and Wales –** offer advice and help to set up a machinery ring
  www.machineryrings.org.uk/
- **Making Local Food Work** - a lottery funded partnership project aiming to help people to take ownership of their food and where it comes from by providing advice and support to community food enterprises across England. Includes information and support to CSAs and free consultancy to community projects.
  www.makinglocalfoodwork.co.uk/index.cfm

- **National Farmers Markets and Retail Association** (FARMA) - a central body with a remit to help farm shops.
  www.farma.org.uk/
- **New Forest Marque** – New Forest branding
  www.newforestnpa.gov.uk/new-forest-produce/marque_map.htm
- **NFU fodder bank south west**
  www.nfuonline.com/Regions/South-West/News/NFU-Fodder-Bank-South-West/
- **Rare Breeds Survival Trust** – information and contacts for native breeds
  www.rbst.org.uk
- **Rare Breeds Survival Trust's Traditional Breeds Meat Market Company Ltd -** links accredited butchers and producers of meat from traditional breeds.
  www.tbmm.co.uk/default.asp
- **SheepKeep** - an online database of graziers and landowners worth trying for finding graziers with suitable stock.
  www.sheepkeep.co.uk
- **Soil Association's organic market place** - a one stop shop for organic livestock and fodder
  www.soilassociation.org/Farmersgrowers/Getconnected/Organicmarketplace/tabid/199/Default.aspx
- **Thames & Kennet Machinery Ring**, The Laundry, Whipley Manor Farm, Bramley, Guildford, Surrey. 01483 548216
- **The New Forest Land Advice Service** - available to New Forest and Avon Valley landowners and occupiers who would like advice and support on issues relating to land management.
  ww.newforestnpa.gov.uk/landadviceservice
- **The Soil Association producer's advice team** – offer free support to producer members (who do not need to be farming organically to join) on various diversification options
  www/soilassociation.org
- **The Traditional Beef Company** - small family business based at Parsonage Farm, Farley, Wiltshire which supplies high quality beef direct to the consumer via its website.
  www.traditional-beef.co.uk/

Contents

1. Summary 2
Background 2
Farm visits 3
Water management – addressing the challenges 4
Livestock management – addressing the challenges 5
Marketing 6
The way ahead 7
Further resources 8

Contents 10
Acknowledgements 13
2. Introduction 14
Aims 14
Background to the project 14
Background to weed cutting in the Avon Valley 17
Effects of cessation of weed cutting/climate change 17

3. Farm visits 19
Methods 19
Grazing 19
Marketing 20
Forage crops 20
Drainage and flooding issues 21
Vehicular access 21
Scrub 22
Higher Level Stewardship (HLS) 22
Farm succession 22
Conclusion 22

4. A closer look at the financial implications of changes 24
Methods 24
The Farming Perspective 25
Farm A 27
Size of farm 27

Farm Enterprises 27
Affected Land 28
Financial Implications 28
Farm B 33
Size of farm 33
Enterprises 33
Affected Land 33
Financial Implications 34
Farm C 36
Size of Farm 36
Enterprises 36
Affected Land 36
Financial Implications 37
Farm D 39
Size of Farm 39
Enterprises 39
Affected Land 40
Financial Implications 40
Conclusions and Discussion 43
5. Water management - addressing the challenges 47
Introduction 47
Ditches 47
Hatches 48
Silt clearance 49
River restoration 50
Weed cutting 50
6. Forage crops – addressing the challenges 52
Introduction 52
Shortage 52
How might HLS prescriptions be modified? 54
Equipment 59
7. Livestock management – addressing the challenges 60

Appropriate types of livestock....60
Livestock breed and background....61
Stocking rates....66
Bovine tuberculosis....67

8. Marketing....70
Introduction....70
Overview of marketing....72
Adding value....74
Outlets for niche market products....77
Marketing in the Avon Valley....84

9. The way ahead....87
Introduction....87
Hydrological change....87
Stock handling....88
Collaboration....88
Higher Level Stewardship....89

10. Summary of recommendations....92
11. References....96

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2. Introduction

Aims

2.1 The aims of this report are to:

- Describe the likely effects of the predicted wetter conditions in the Avon valley on the economics and practicalities of grass farming on the floodplain; and to
- Suggest ways in which the landowning and farming community in the Avon Valley can adapt to the predicted changes.

Background to the project

2.2 The River Avon displays wide fluctuations in water level and consequently the valley includes one of the largest expanses of unimproved floodplain grassland in Britain, including extensive areas managed as hay meadows and grazing marsh under low-intensity agricultural systems. The Avon Valley (Bickton to Christchurch) Site of Special Scientific Interest (SSSI)[1] is designated for many features of interest including its wet grassland habitats, breeding waders and overwintering wildfowl. The site encompasses part of the River Avon floodplain south of Fordingbridge to the sea at Christchurch. The valley is also designated under European law as a Special Protection Area (SPA)[2] for its wintering wildfowl, and the river as a Special Area of Conservation (SAC)[3] for its flora and fauna.

2.3 The SSSI comprises 1384ha, of which 14.5% are currently in favourable condition[4], generally supporting damp grassland suitable for breeding and wintering birds sometimes with significant botanical interest. A number of the favourable units are wet woodland. Some 52% of the site is classified as unfavourable recovering and these units are generally under HLS agreements with water level management plans underway. A further 16.6% is recorded as unfavourable no change and 16.8% unfavourable declining, generally due to undergrazing, inappropriate ditch and water level management (in some units leading to excessive dryness) and issueswith weed and scrub control.

2.4 The bird interest of the site is currently threatened. BTO has issued a high alert for Bewick's Swan at the site (there is a national alert for this species) meaning there has

[1] http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=1006622
[2] http://www.jncc.gov.uk/default.aspx?page=2038
[3] http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013016
[4] http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?report=sdrt13&category=S&reference=1006622

been a decline of at least 50%[5]. Numbers of breeding waders have declined significantly at the site[6], again in common with other wetland sites across southern England.

2.5 Appropriate grassland management is key to the success of these habitats and species and is carried out by the landowners, farmers and graziers living and working in the valley. Many landowners and farmers are in Higher Level Scheme (HLS) agreements and funded, amongst other things, to maintain a short sward suitable for breeding and overwintering birds. In parts of the valley the farmers' grazing and cutting management has historically been helped by the Environment Agency's mechanised cuts of the in-river vegetation during the summer. This cut has made it easier for them to make hay and haylage and retain relatively high numbers of cattle and sheep on the meadows adjacent to the river.

2.6 Concerns about the economic sustainability of the practice of routine weed cutting caused the Environment Agency to review their weed cutting practice. Consultation with Natural England concluded that mechanical weed cutting (carried out to agreed specifications) was neither detrimental nor essential to maintaining the SAC and SSSI features. Environment Agency made the decision to cease weed-cutting as it could not be justified for conservation, or flood prevention reasons. Consequently, in 2004 the Environment Agency gave notice that from 2010 the weed cut would no longer be carried out, and in the meantime certain works within the floodplain such as a programme of ditch restoration, were implemented to improve summer drainage and help move flood waters.

2.7 Against this background there is also the gradual impact of climate change, with increased likelihood of extreme weather events. The recent Catchment Management Plan produced by the Environment Agency (2009a) considers that climate change will have the greatest impact on flood risk and that this, combined with sea level rise, will result in increased peak river flows, a greater incidence of large-scale flood events and a greater probability of tidal flooding on the lower reaches of the river. In the longer term, the cessation of weed cutting may have only a minor influence on the hydrology of the flood plain compared to these more widespread effects. Thus irrespective of the issue of weed cutting, there is increasing uncertainty over the viability of traditional hay or silage cutting in parts of the valley where in some years it may not be possible to take a successful forage harvest and where, at best, there could be unpredictability over the timing of such a cut. Of course these problems have always occurred and in some years

[5] http://www.bto.org/webs/alerts/alerts2010/
[6] http://www.gwct.org.uk/research__surveys/species_research/birds/waders/257.asp

in the past farmers have been unable to take a grass cut and in most years the timing has been uncertain. However, in the future for those farming the lower areas of the valley the impacts of these changes on farm businesses are likely to be more significant.

2.8 Therefore a study was commissioned to identify other plans and innovations which could help to promote water level management and management of the grasslands for favourable condition of the SSSI. The first part of the study, carried out by the Game and Wildlife Conservation Trust, examined existing data to assess potential ecological changes at the SSSI unit level under wetter conditions resulting from the cessation of weed cutting and climate change. The implications for farming regimes were highlighted and a protocol for monitoring floodplain condition suggested (Hoodless 2010). The second study, conducted by Footprint Ecology and summarised in this report, used the predictions of the GWCT report as a basis for looking at the areas of potential for Natural England and other projects or organisations to give additional support to the landowning and farming community of the Avon Valley.

2.9 To explore the likely effects of the predicted wetter conditions on farm businesses and the SSSI, 15 farms in the valley were visited and the likely effects discussed with the farmers. The information from these visits is presented in Section 3. A subset of these farms where flooding is predicted to become a greater problem was then selected and in discussion with the farmer, was used to explore the potential for changes in farm businesses and any inherent difficulties this could pose in greater depth. This information is presented Section 4. The 15 individual farm visits plus 4 in-depth interviews were supplemented by discussions with the National Farmers Union (NFU), EA and NE, and a 'think tank' meeting organised by NE. The remainder of the report suggests generic actions to address the challenges described in the previous sections. Sections 5 and 6 consider water and land management issues respectively, while Sections 7 and 8 look at livestock and marketing issues. In each section specific recommendations are presented alongside discussion of the issues and potential solutions. Section 9 concludes the report by discussing the potential ways to manage the transition to wetter conditions in the Avon Valley.

Background to weed cutting in the Avon Valley

2.10 Historically the river channel has been managed by weed cutting in the growing season, to control water levels, assist fishing interests and to permit farming operations on the floodplain by reducing the incidence of periods of summer flooding. This type of operation has persisted in the lower Avon, certainly since mediaeval times, using various methods including at times prison labour working from the bank sides. In recent decades the weed cutting has been carried out by the Environment Agency (EA) operating from boats within the river channel. A significant stretch of the river north of Ringwood has not been cut in this way by EA – the Somerley Estate section – though here the estate undertakes specific weed management for fishery purposes.

2.11 Over time, in common with most wet grassland river flood plains, maintenance activities in the valley have declined. Some hatch and sluice structures have fallen into disrepair and not all ditches have been maintained. Historic photos of the valley show an open, intensively managed grass floodplain, with few trees, whereas now, the aerial photographs show areas of scrub and woodland, particularly lines of willows on the ditch systems, suggesting a degree of abandonment. Some areas of pasture have also been abandoned in recent years and have been taken over by fen and swamp vegetation.

Effects of cessation of weed cutting/climate change

2.12 The Game and Wildlife Conservancy Trust report (Hoodless 2010) concluded that the full effect of a cessation in weed cutting on the River Avon is unclear although the water levels will certainly be higher. The role of weed in impeding river flow is ambiguous because, if left uncut the biomass of Ranunculus communities is likely to decrease through self-shading and natural wash-out after flowering. However it is not clear how soon an equilibrium might be achieved.

2.13 Hoodless (2010) predicts that in winter, the depth and duration of flooding will increase, potentially delaying the time at which livestock can be turned out in spring. In spring/summer, the extent of areas affected by flooding might not be that much greater, but the depth and duration of summer floods south of Fordingbridge is likely to increase. Overall some 141 ha of land may become wetter in summer, with at least four farms close to the river disproportionately affected. It is likely that there will be implications for the farming practices in the affected areas. In particular the report predicts that farms close to the river are likely to experience difficulties in taking forage (hay/haylage/silage) crops, and that grazing may become difficult.

2.14 These changes in farming practices could impact on the wet grassland vegetation communities of the SSSI and species, such as breeding waders that depend on the structure and condition of these habitats. For example, the Avon Valley holds an important resource of the now very restricted 'floodplain meadow' community (NVC MG8 *Cynosurus cristatus - Caltha palustris* grassland) (Rodwell 1992). This grassland type is traditionally managed under a regime of summer hay cutting followed by after-math

grazing. Such harvesting and then late summer grazing also provides the best conditions of sward height for breeding waders in the following spring.

2.15 Theoretically the MG8 swards might be managed adequately by grazing alone. This would require sufficient livestock of suitable breeds, a sufficient period when stock would be able to graze and not be inhibited by flooding, and adequate production of stored winter feed to sustain the animals during the winter period. Inadequate grazing of the valley grasslands, or abandonment, would lead to a rapid shift to fen and swamp communities (Hoodless 2010). Whilst these may develop some nature conservation interest, lack of grazing is likely to lead the decline of the MG8 grassland. Implications of the loss of hay and grazing to farm businesses means that these changes would not necessarily be restricted to the areas experiencing greater flooding within a farm holding. A greater incidence of summer flooding could also have implications for the New Forest since the Avon valley has in places strong links between livestock de-pastured on the Forest also using the valley; and hay from the valley used to support Forest grazing animals in winter.

2.16 Hoodless (2010) discusses the likely impacts on breeding waders, and concludes that increased wetness in spring and summer would appear to be beneficial, provided that the farmers are still able to manage swards appropriately in the summer and autumn, and that nests are not frequently lost to flooding. However, any decreased grazing is likely to result in swards becoming less suitable for breeding waders.

3. Farm visits

Methods

3.1 A selection of those farms likely to be affected by the incidence of increased summer flooding was visited between late April and mid July 2010. Four of these farms were north of A31 and the remaining ten visits were to farms lying south of Ringwood. In addition, a visit to the Somerley Estate allowed discussion of their weed management practices. NFU were also visited for background information on the responses of the farming community to proposed changes. Circumstances differed between farms (for example some were owned, some tenanted) but some general themes and issues emerged from the various interviews and site visits and these are summarised here.

Grazing

3.2 In all cases the land visited was subject to some grazing, though in some cases parts of the holding had not been grazed for some time. This was either because they had been wooded for a long period or had become wetter more recently, so preventing access for hay cutting, which in the farmers view meant they were unsuitable for grazing. Such areas were referred to as an indication of how shifts in farming practice might impact on valley habitats following river level changes.

3.3 In most instances the visited land was still grazed by cattle under the control of the owner/tenant, but there were cases where the owner had ceased to actively farm and let the grass keep on an annual licence to another grazier. In a couple of cases, the main or only grazing influence was from ponies, either grazing directly on the valley land, or held on adjacent land as a livery enterprise, with grass keep supplied from the farm's valley meadows.

3.4 Beef cattle breeds varied. Some farms specialised in a single breed and others were using crosses. In the case of let grazing, the breed type might vary from year to year, while farmers' own stock tended to be established suckler herds, either traditional breeds or continental crosses. The suckler herd practice resulted in the older cows using their knowledge of the sites to lead the herd into different areas and generally be more effective at exploiting the keep, often coping better with rougher vegetation, and allowing grazing in a wider range of circumstances.

3.5 Closed herds were the norm, not least because of the desire to reduce the risk of bovine tuberculosis (bTB) transmission. Many farms used the same local veterinary practice; and the bTB test regime in the valley recently had increased in frequency. Testing costs are based on a call out charge plus hourly rates, and this cost as well as the time taken to bring animals in and hold them for the test cycle was a real disincentive to moving cattle away from the farm, a practice that otherwise might have allowed for shared grazing or to make better use of grass.

3.6 Though less in evidence today, a strong link between the valley meadows and the New Forest persists. The proximity of the sites, the survival of road names (e.g. Ellingham Drove, Ibsley Drove), and the use of the valley to provide winter keep for stock using the Forest, provided clear evidence of this historic association. Several farms held grazing rights for de-pasturing on the New Forest but only in about half of these cases were the rights still exercised. However, where Forest grazing was still part of the farm system, it was seen as an essential part of the economics of running the relevant farms.

3.7 Dairy enterprises are now rare in the valley, whereas once they were widespread. Of the farms visited only the Bisterne estate operates such a system. The neighbouring Avon Tyrell estate also runs a dairy enterprise. The untypically large area here, compared with most of the valley farms, provides much more scope for holding stock off the valley, and for providing alternative winter fodder. Only dry cows and followers use the valley grasslands that otherwise are used for supplying forage.

Marketing

3.8 Marketing practice varied. In some cases animals were finished on the farm, but using land outside the valley. Animals were sold to a regular slaughter-house and these ranged from Sixpenny Handley to Bridport and further afield to Somerset and SE Hampshire. In some cases farms had experienced the greater value obtained from supplying a butcher or restaurant directly, but the inability to maintain a regular supply (e.g. one carcass per week) usually meant that such outlets were not being used.

3.9 Local branding was used in come cases, in particular the New Forest Marque, although some doubt was expressed as to whether this was attaining its full potential; and it does not apply to those holdings in Dorset. One farm shop operates but limited hanging space here currently prevents wide-scale supply by other farms, and the current recession has affected sales. Another farm operates an organic enterprise with box delivery, including growing some vegetables and sheep reared on the farm but not the valley; and another has a large hen flock to supply free-range eggs.

Forage crops

3.10 In almost all cases at least some of the land was routinely used for forage, and in some cases the majority of the land was used for forage crops. This was generally to provide for the farm's own stock in winter, or an on-farm livery enterprise. In a few instances the sale of forage crops was a key part of the business. In some cases too, where the farm had higher land outside of the valley, the growing of winter feed such as maize was integral to the farm economy.

3.11 The amount and especially the quality of forage that can be made from the valley meadows, at least in a good year, is significant. The higher terrace land is poorer, with free-draining and hungry sandy or gravely soils that would need significant and sustained inputs to bring up the yields to anything that could match the valley production. One farm

had sought to buy and rent additional higher land but the cost and limited supply of such land makes this a very limited opportunity. In some cases extra forage was being sourced from much further afield (e.g. Somerset, even Yorkshire) by those already concerned about the situation in the first year of no weed cutting. One farmer estimated the cost of buying in comparable forage to replace lost valley production to be five times that of making forage on the farm.

3.12 The farm visits did not provide opportunity for detailed botanical surveys. However, general observation suggested that areas managed by a regular forage cut and followed by grazing into late summer/autumn appeared more botanically rich than sites that were only grazed. Grazed-only sites also tended to support coarser vegetation, especially sedges. On sites where the practice of any cutting had ceased, often only recently due to wetter seasons, the growth of tall fen vegetation such as reed and reed-grass had been rapid (e.g. dominating within four years).

Drainage and flooding issues

3.13 It was apparent that recent ditch maintenance and restoration had occurred quite widely, together with some sluice replacements. This was often implemented by EA, in some cases with HLS funds. More is programmed for several farms. Farmers visited towards midsummer commented that river levels were rising, and attributed this to weed growth, as there had been no significant rain for three months. They pointed out that water was starting to flow back up some of the ditches from the river, so at this stage any drainage function was being negated. In a couple of cases, where the farm bordered the river, higher than normal river levels were reported by the farmer, an observation based on water level gauges or the submersion of river features such as small sandy beaches.

3.14 The farmers visited often offered many observations on the practice of weed cutting over the years. The recent situation appears to have been generally less satisfactory, perhaps compounded by the occurrence of an especially difficult and wet year in 2008. Nonetheless, it was clear that some form of river-weed cutting has been in place for a very long time. Cutting from the banks operated before the boat-based practice; and even this method had in the past been different since in recent years the cut has been limited to a central swathe of about one third of the channel. The resulting growth of the marginal fringes and the accumulation of silts under this regime were held by some farmers to be at least partially responsible for a decline in the quality of river gravels and thus fish.

Vehicular access

3.15 Crossing points of ditches and gateways, both of which focus farm vehicle movements, were in some cases potential sticking points as the ground became wetter. Localised use of hardcore had been used effectively at some sites and this simple solution might be applied more widely at relevant spots.

Scrub

3.16 Another feature discussed by farmers visited was the growth of trees and scrub in the floodplain, which was not always popular with the farmers, as their use by predators such as crows was identified as deleterious to the success of the already seriously depleted numbers of breeding waders. On most of the farms visited during late spring 2010, there was some breeding activity at least by lapwing and redshank, and in every such case the farmer knew what areas the birds were using and seemed concerned to take account of the birds in farm activity, regardless of whether an HLS agreement for waders applied.

Higher Level Stewardship (HLS)

3.17 HLS agreements were fairly widespread but not universal. In one case at least the farm had declined entry into HLS because of the nature of the restrictions and a concern that such payments would not long survive. In contrast, in two other cases, the HLS payments appeared to enable the farmer to take a more relaxed view of the possibility of increased flooding and the impacts on farming. Not surprisingly there was a distinct difference in the response of farms to HLS between those that received HLS payments direct, and tenanted farms where the landowner received the payments. In several cases references were made to the perceived rigidity of the HLS prescriptions and difficulties in obtaining derogations.

Farm succession

3.18 It was apparent that at many of holdings visited there was no obvious successor to follow on from the present farmer, whether the farm was owner-occupied or in a tenancy. Often the farm had been in the same hands or same family for decades. Within the Avon Valley there is a wealth of experience of the land, how it responds to different environmental conditions and management, what is feasible and what conditions were like in the past. The retirement of long-standing owners or tenants and changes due to less predictable farming means that effort will be needed to capture this knowledge.

Conclusion

3.19 As would be expected, the farmers visited showed a detailed knowledge of the valley and considerable experience farming in the face of fluctuations in water levels. Most holdings appeared to have shaped their farming practices to a system where water levels were at least partially controlled by river management, enabling them to take significant forage crops in most years. Forage cutting was still widespread and an integral part of most farm businesses. In some cases the valley was used for hay production to feed livestock pastured elsewhere. Grazing was widespread, but has apparently declined, with aftermath grazing absent on some sites, and some areas abandoned. Complications in moving stock due to livestock movement restrictions and the distance of livestock housing from grazing land (due to smaller holdings having been merged into fewer, larger holdings over the last few decades) means that smaller areas, or those that require grazing for shorter periods or at variable density, are underused.

3.20 The perceived difficulties in farming in a wetter environment centred around the ability to take a forage crop from wetter land, and the difficulty and expense of buying in hay (especially of a suitable quality) if crop size decreases. Concern was apparent over the suitability of wetter land for grazing, the absence of back-up land during prolonged flood, and the increased incidence of liver fluke.

4. A closer look at the financial implications of changes

4.1 A sample of farms was selected to explore the likely effects of increased flooding on the finances of farm businesses in greater depth. The criteria used to select farms for further study were located in an area likely to experience further flooding and farming practices that were likely to be affected. As Phase 1 of the study had not been presented to the farmers, the estimates of the likely area of flooding were based on their interpretation of how the cessation of weed cutting was likely to affect their land. Areas are expressed in acres – all farmers interviewed chose to work in acres and therefore rounded figures up or down accordingly, making use of hectares cumbersome.

Methods

4.2 A sample consisting of four farms was selected for closer scrutiny, with particular regard to the financial implications of increased frequency and/or intensity of inundation. Each farmer was interviewed on the telephone to obtain details about:

- The details of their current farming system; the nature, size and scale of their main enterprises;
- The amount of land they considered was likely to be affected by flooding;
- The amount of income they typically might expect to obtain from that land under the present farming system;
- The details of the farming operations from which the income is being generated;
- What changes they felt they would be able to make in order to offset any losses arising from increased flooding;
- Their past experiences of flooding and views on its causes (this usually led to discussion of the expected impacts arising from the cessation of the river weed cutting regime).

4.3 This information was then used to assess the nature of the impacts and their financial consequences in terms of income lost and costs saved. The most appropriate options for managing the flood-affected land in alternative, ecologically beneficial ways were considered and these were costed in order to calculate their potential for restoring financial losses.

4.4 However it has to be acknowledged that it is hard to accurately predict financial results without knowing how quickly or to what extent wetter conditions would degrade the productive capabilities of the affected land. Some changes can be seen after a single wet year has delayed or prevented mowing for hay on individual fields but hitherto most of this has been recoverable by removing the crop in years when drier conditions have prevailed. However, the effects of climate change and the cessation of weed-cutting in the river channel are likely to alter the hydrology more permanently, imposing wetter conditions on some areas on an ongoing basis.

The Farming Perspective

4.5 The farmers interviewed in the course of completing these financial assessments all expressed considerable concern about the future of their hay meadows in the Avon Valley. They had all experienced problems with trying to take crops of hay or haylage in years when the fields had been inundated by flood waters from the river. They all felt that higher water levels in the River Avon would reduce the area of meadow that can be regularly cut and baled because of more frequent and more severe flooding events.

4.6 The experiences they describe confirm that the meadows cannot be cut for hay for some time after they have been inundated because the ground conditions are too wet for the machines. Improved drainage, some suggested, could help alleviate this problem by removing the flood waters more rapidly.

4.7 All of the farmers reported that in particularly wet years, the mowing may be prevented altogether so that their only option for utilizing the grass is to graze it off late in the season, by which time its palatability has declined significantly. Such grazing would not normally achieve sufficient off-take of herbage to fully restore the meadow sward because the livestock are unable to remove all of the older and coarser material that has accumulated by that stage of the season; this can then only be properly removed by mechanical means. Normally this happens the following year when drier conditions would permit a crop of hay to be taken but this is something that may not be relied on if flooding of the valley becomes a more frequent and regular event. Mowing for hay is seen as an essential tool in maintaining the productive capacity of the fields because it checks the spread of these coarser, less palatable species. The farmers on the sample farms therefore tend to rotate the hay cut around the available fields on a 2-3 year cycle as a deliberate strategy to help control the spread of rushes and sedges.

4.8 The farmers interviewed all felt that any increase in wetness would, if combined with a reduction in the mowing and removal of the hay crop, lead to changes in vegetation that are likely to result in significant reductions to the productive output of the affected land. They all expect to see increasing amounts of rushes, sedges and horsetail (Equisetum spp.) as conditions became wetter. These types of swards cannot be made into such good quality hay or haylage as the grass- and herb-dominated ones that are currently available.

4.9 The flood-prone fields should, the farmers thought, continue to be grazeable after they could no longer be mown for hay, but their nutritional value would, once they became dominated by sedges and rushes, decline significantly in terms of both livestock growth rates and the stocking levels that they might sustain. None of the farmers could see any way that their existing farm system could support a switch from mowing to grazing on such a significant area of their holding. For two of them all the home-grown hay is needed to support their existing livestock numbers whilst for the other two selling the crop provides a crucial source of income that the calculations indicate cannot be replaced by a cattle grazing enterprise.

4.10 All four of the farmers interviewed felt sure they would suffer financially if increased flooding affected their valley fields and could see little scope for mitigating the impact of such changes. It would obviously be important for the future viability of their businesses for these farmers to do everything possible to minimize consequential losses of income. This is something that, from a farming perspective, could be attempted by replacing the mowing regime with a new or expanded grazing enterprise, affording replacement income from the sale of livestock that had been reared on the fields previously cut for hay. However none of the farmers considered that this alternative would fit well with their existing farming operation.

4.11 A number of issues were raised in discussing the prospects for replacing hay making with grazing. Some of the farmers expressed doubts about the availability of sufficient numbers of suitable cattle; animals that would combine the size and conformation demanded by the meat trade with an ability to convert moderate quality pasture into viable rates of growth. They were concerned about whether such animals could be acquired in sufficient and reliable numbers from sources that are safe in terms of animal health, particularly with respect to bTB and redwater disease.

4.12 Concern was also expressed about other livestock health problems which may increase due to the conditions becoming wetter. The removal of mowing would probably enable pasture-based parasites to complete their life cycles more successfully. Liver fluke is a one such parasite, specifically associated with wet grassland and marshlands and affecting a range of grazing livestock, progressively undermining their general health and condition through weight loss, anaemia and impaired immune response. It can be controlled with drugs but these are expensive to buy and time-consuming to administer. Preventative treatments must be maintained for as long as the animals are exposed to the wet pastures in which this parasite thrives.

4.13 One of the biggest issues for the farmers was the difficulty they expected to have in integrating any new grazing enterprise with their established ones. The potential for successfully combining any new livestock venture into the day to day running of the farm would, they thought, be severely restricted by the concomitant reduction of the farm's supply of home-produced fodder. Without being able to secure other land upon which to grow sufficient supplies of hay they did not think that taking on any more animals would be advisable as they recognized that their options for marketing the extra ones would be limited by the need to sell them at the end of the grazing season when prices for stores are usually lower. This is especially so for cattle that may have not done particularly well during the summer, a fact that helps explain much of the concern about the availability of suitable animals and the quality of the grazing once it has become wetter.

4.14 The other possibility for restoring the adverse economic impacts of increased flooding of the hay-meadows could be the payments available under Higher Level Scheme. Only one of the four farmers has entered the scheme in their own name on land that is likely to be affected. The other three, however, are not party to any agreement relating to the land

they farm in the flood-prone part of the valley, and receive no portion of the payments, all of which are made to the respective landlords. It could be hard for a tenant to negotiate any payments from his/her landlord's HLS to compensate for their own farming losses arising from changes such as these. Much would depend on the level of trust and understanding between the two sides and the amount of mutual involvement and co-operation that had already been invested in setting up and managing the scheme.

4.15 Whilst a landlord would probably expect to retain all of the payment for meeting the main HLS management options, they may feel more open to passing on some of the supplementary payments, particularly where they arise from activities of the tenant that add specific value to the scheme. Examples of this include the Cattle Grazing supplement (HR1 @ £35/ha), the Native Breeds supplement (HR2 @ £70/ha), the Wetland Cutting supplement (HQ11 @ £350/ha), Wetland Grazing supplement (HQ12 @ £200/ha). The implications of using the supplementary payments were discussed with some of the farmers but no real prospects for applying them were identified. Their financial benefits were assessed in course of carrying out the economic analyses reported below.

4.16 The figures for income lost are derived mainly from the information provided by the farmers and are based on their expectations of yields and prices for a typical year. The data on costs saved are taken from standard values for the industry (Nix 2010) and reflect the costs to a typical farmer, nationally. The same is true for predictions of income from proposed alternative enterprises.

Farm A

Size of farm

4.17 The whole farm comprises a total of 202 acres, of which the farmer owns 54.5 acres, the rest being tenanted or share-farmed. There are, according to the farmer, two blocks of land situated in the valley, amounting to a total of 155 acres that are already subject to flooding whenever river levels are high. The remaining 50 acres of the farm are on higher land and will not be affected by raised water levels within the Avon Valley.

Farm Enterprises

4.18 The farm's main enterprise is a suckler herd of 40 native and continental cross-bred cows, all bought in as heifers bred from Friesian dairy cows. These are all put to a Limousin bull and their calves are sold when they are 12 months old. There is a small lambing flock of 19 Texel and Charolais cross-ewes which are all put to a Suffolk tup.

The farm has grazing rights for 60 head of cattle on the New Forest from November to April, enjoying very convenient access that allows the cattle to come back each morning to be fed haylage on the farm during the day. The sixty cattle are then turned back to the Forest for the night.

4.19 The operation also includes a farm contracting business, making round bale haylage for others, much of it on land in HLS. In many of these cases the contractor keeps the haylage as part of the payment, which provides the farm with a large surplus of winter fodder, most of which is available to be sold. The customers are mainly commoners on the New Forest who have no mowing ground of their own and depend on bought-in supplies. The farmer attaches considerable importance to maintaining these links between the Avon Valley and the New Forest, considering that reductions in the productivity of meadows as a result of more frequent summer flooding in the valley could seriously reduce locally-sourced supplies of winter forage upon which many New Forest graziers depend.

Affected Land

4.20 The farm has two blocks of valley land that are already affected by flooding in wetter-than-average years. One of these is 36 acres of which 29 acres are mown and baled whilst the other comprises 119 acres of which 40 acres is now mown. The farmer says that a few years ago, when the drainage was better managed, the firmer going allowed more than half of this larger block, some 70 acres to be regularly mown. He believes that the prospects for continuing to be able to take regular cuts of forage from all 69 acres of his currently -mown land will decline if the weed cutting ceases.

4.21 All of the land in question is in HLS, but under the landlord's name rather than that of the tenant. The landlord does not yet appear to have sought the views of the tenant regarding potential impacts of more frequent flooding of the meadows on the delivery of HLS management objectives, although it is the latter's farming activities that are the principal means for delivering the scheme's objectives. There seems to be little scope for the tenant to gain any financial reward from the HLS to compensate them for the loss of the haylage crop. The tenant believes that the landlord favours the prospects for a slower flowing river with higher water levels because this would benefit their fishing interests.

Financial Implications

4.22 The smaller block of valley land (36 acres) is more productive than the larger, yielding around 300 big round bales from the 29 acres that are cut twice each year; i.e. just over 10 bales/acre. The larger block of mowing fields (40 acres) yields a total of 350 bales from a single cut taken later in the year (i.e. just under 9 bales/acre).

4.23 It can be assumed that the bales made on the smaller block are better quality since, being cut twice it will have to be cut earlier. Consequently, the baled herbage would consist of leafier, less fibrous material with higher feed value in terms of energy and protien. Each of these better quality bales might therefore be sold for £30 apiece in a normal year. This means that for every acre of meadow of this block that is not cut due to raised water levels, output will be reduced by £300.

4.24 The bales from the 40 acres block of land are made in a single later cut. More material is harvested from this single mowing but the feed quality is reduced. It is assumed here that the value of these bales would therefore be less, say £20 each, yielding a crop worth £180 from each acre of this ground.

4.25 The total loss of output, if all the farm's meadow land were to become un-mowable because of flooding would therefore be £16,000, which averaged out over the whole 69 acres represents a loss of £232 for each acre of meadow that fails to get cut.

4.26 The costs associated with making these bales, however, do not have to be met if the meadows cannot be cut. The costs saved (per acre) have been calculated on the basis of standard values for a farmers own costs for undertaking the various field operations, (Nix 2010).

Table 1 Costs per acre of making haylage at Farm A on meadows cut once and twice a season.

Action	2-cut	1-cut
Mowing	£ 23.38/acre	£11.69/acre
Tedding/rowing up	£ 32.23/acre	£16.12/acre
Baling/wrapping(@ £5.60/bale)	£ 56.00/acre	£ 50.40/acres
Carting	£ 26.25/acre	£ 23.30/acre
Total costs	**£ 137.86/acre (on 29 acres)**	**£101.51/acre (on 40acres)**

4.27 The total cost of harvesting haylage on this farm's 69 acres of meadow each year is thus £8058, averaging out at £117/acres[7]. If none of the meadows are able to be cut the farmer would obviously not have to meet these costs, which can therefore be offset against the £16000 (£232/acres) of lost sales calculated above. It means that if the whole 69 acres became too wet to mow, it would result in an overall net loss to the business of £7935 each year, averaging out at £115/acres.

4.28 There may however be scope for recovering some or all of this lost revenue if the land could be grazed profitably either by expanding the existing beef enterprise or starting up a new one. The fields that are already being left un-mown each year are currently grazed by cattle, usually store heifers in their second year. The un-mown portion of the smaller block of valley land supports 15 of them for the whole grazing season, along with the meadow aftermaths following removal of the haylage. If each animal is rated as 0.6 LU, the initial stocking rate when all 15 are confined on just 7 acres at the start of the season is 1.3 LU/acres This reduces to 0.25 LU/acre once the 29 acres of mown fields are opened up following removal of the haylage crop, indicating an overall stocking rate for the entire block for the whole season of around 0.5 LU/acre (1.21 LU/ha), taking into account the decline in grass growth rate towards the end of the summer. This is assumed to be an acceptable stocking rate for the HLS grazing prescription as it is based on the existing agreement's current regime.

4.29 If this type of grazing system were to be extended across all 69 acres of the tenant's currently-mown land, it would, at this same stocking density, support 34.5 LU or 58 store cattle of the type currently being used. There should be scope for using all of the 40 calves that are expected to be born on the farm each year to supply this additional grazing. Instead of being sold at 12 months of age they could be retained to graze the valley fields, along with another 18 that would have to be bought in. The tenant may, however, not wish to retain his home-bred calves if they are unsuited to the type of grazing available in the valley or if they are able to command a premium price as yearlings at the auction mart. This would necessitate all of the animals having to be purchased.

4.30 Either way, a total of 58 yearling store cattle would be needed to graze all 69 acres for the whole grazing season, of which 43 would constitute the new enterprise needed to utilize the extra grazing made available by the failure to mow the meadows. Each calf is assumed to weigh 300kg LW (liveweight) at the start of the season, which at a unit price of

[7] The costs of harvesting the crop in two cuts are significantly higher than a single later cut because the same area is being gone-over twice for some of the operations. In a good year, however, there should be a real return on these extra costs from the higher price obtained for the better quality product.

£1.50/kg (Nix 2010), would mean it would cost £450 to buy in each animal, depending on the state of the market and the quality of the cattle required. This would mean a cash outlay of £19,350, either as additional money to fund the new enterprise or to offset the impact of a reduced cash flow arising from the calves that are not now sold. At 4%, the annual interest on a loan to fund these extra cattle through to their sale in the autumn, six months later, would amount to £387, equivalent to £9 for each of the extra beasts.

4.31 If each animal grew at 0.5 kg LW /day[8] over a 6 month grazing season they would achieve a live weight gain of 90kg apiece, attaining a liveweight of 390kg by the time of sale. Assuming the sale price was based on a unit value of £1.40/kg LW (Nix 2010), the gross output per head would amount to £546.

4.32 The cattle will, under the HLS prescription, be expected to grow without any feed supplements and the main inputs will therefore be veterinary medicines and services to treat diseases and ailments such as liver fluke. Other costs are likely to include the auctioneer's commission for selling them and hauliers charges to transport them to and from the farm at either end of the grazing season. These variable costs would probably amount to £15 for each animal and have to be deducted from the output.

4.33 The Enterprise Margin Calculation (per head) is as follows:

	+	-
Sale of strong store in autumn	£546	
Cost of yearling calf in spring		450
Variable costs		£15
Individual Gross Margin	£81	

The number of additional head needed to graze un-mown meadows would be 43, therefore the Net Enterprise Margin Calculation is :

[8] This growth rate forecast is an estimate based on author Bill Grayson's experience of grazing native-breed cattle on unimproved wet grassland in north-west England

	+	-
Total Gross Margin for additional grazing enterprise	£3483	
Less interest charges for purchase of extra cattle		£387
Enterprise Net Margin	£3096	

4.34 Comparing the income from haylage making with that from the grazing enterprise that might replace it:

	+	-
Total net income lost from failure to make and sell haylage		£7935
Total net income gained from grazing store cattle on the same land	£3096	
Resulting net loss of income for the tenant	**£3096**	**£4839 annually (£70/acre)**

4.35 In theory the HLS Native Breeds grazing supplement of £70/ha (or possibly in some cases the grazing fen supplement of £250/acre) could go some way to offset this loss if it were applied to all 69 acres (28 ha) of the flooded meadows once they have been converted to pasture. However the compensation would only amount to £1960 (28x£70) and would in any case have to be claimed by the landlord on behalf of the tenant as the latter is not currently party to the terms of the existing HLS agreement. The tenant's losses could therefore be reduced to £3017 (£44 per acre) by using the HLS Breeds Supplement, but not offset entirely, and would require the full support of the landowner who would have to be persuaded to pass the entire Native Breeds supplement back to their tenant.

Farm B

Size of farm

4.36 280 acres with grazing rights for 85 head of cattle on New Forest from May-September.

Enterprises

4.37 65 suckler cows (Simmental- and Hereford-cross Friesians put to a Simmental bull). Calve in autumn after cows brought back from Forest. Overwintered outdoors on maize stubble, fed maize silage in ring feeders. Moved onto grass in spring before going back onto Forest for summer. Calves weaned at 6 months old and sold at Shaftsbury Market (where they regularly get top price on the day). Keep best heifers to rear as breeding replacements along with a few bull calves to finish and sell to specialist local outlets. Retained calves graze in the valley where they are overwintered. Plan to increase herd back up to 80 cows.

4.38 70 Dorset ewes graze valley meadows in the autumn where they help to control ragwort. Overwintered on valley hay (fine grasses more suitable for sheep).

4.39 15 livery horses - Also depend on valley hay. Coarser types of fodder will not suit their needs.

Affected Land

4.40 The farm has two separate blocks of valley land. The smaller parcel of these is tenanted and contains 6 acres that are managed as meadows mown for hay in a situation that is less liable to flood. There is another 60 acres block, situated 3.5 miles from the main holding and rented on an annual licence, of which only 40 acres is cut each year for hay, because it is more prone to inundation. The unmown fields in this parcel are used for extensive grazing at the start of the summer, with the stock being released to graze the meadows once they have been cut. All the valley land is SSSI and is all in HLS, but in the landlords' names which means that the tenant receives none of the payments. Nor can the tenant claim the Single Payment on any of the 60 acres of licensed land as the landlord owns the entitlements. All of the valley meadows are grazed with cattle (and sheep) in the autumn to eat off the aftermaths and eke out the winter fodder.

4.41 The rest of the farm is not expected to be directly affected by flooding . Maize for silage is grown on 68 acres of higher ground where the overwintering cattle are fed maize silage. The hay from the valley is brought home to feed to sheep and horses through the winter. There is no return of the associated manurial value back to the fields where it originated, which ensures that their fertility remains low, a situation that favours populations of wild flowers. However it also restricts the yields of hay from these meadows; somewhere between 4 and 5 big round bales to the acre.

Financial Implications

4.42 The potential economic impact of the flooding has been calculated on the basis of the hay crop not being got and having to be replaced by buying in the same quantity of similar quality fodder at prices typical for an average year:

- Typical hay yields: 5 big round bales per acre
- Purchase price for a big round bale of top-quality meadow hay: £30
- Additional costs for replacing crop from each acre of meadow not mown: £150
- Total costs if all susceptible meadows (40 acres) fail to be cut due to flooding: £6000

4.43 Imputed savings from not making hay: The costs saved (per acre) have been calculated on the basis of standard values for the farmers own costs for undertaking the various field operations.

Table 2. Costs per acre of haymaking at Farm B.

Action	2-cut
Mowing	£11.69/acre
Tedding/rowing up	£ 23.97/acre
Baling/wrapping(@ £2.23/bale)	£ 11.15/acre
Carting	£ 12.90/acre
Total costs saved	**£ 59.44/acre**

4.44 The total cost of harvesting the hay crop on this farm each year is thus £2378, with each acre costing on average, £59. This is what would be saved if any of the 40 acres of meadow were not cut for hay because of flooding. It can be offset against the £150/acres of income lost by not getting the hay crop, reducing the overall loss to £91/acres

4.45 If all 40 acres of the flood-prone meadows were to be permanently affected by the higher river levels this would result in a net loss to this business of £3622 annually, a significant sum that would need to be made good in order to safeguard the future of the business. As for Farm A, some form of grazing enterprise would seem to be the most practical way of trying to avoid or reduce these losses. If all 40 acres were to need grazing this would require 20 yearling calves (0.6 LU eacres) to stock it at the same rate of 0.3 LU/acres that is already applied on other parts of the farm's valley land, a level that is somewhat lower than Farm A's but consistent with the lower productivity of B's meadows.

4.46 The cattle could easily be supplied from the cohort of weaned calves produced each year from the farm's own suckler cows. These would normally be sent to the spring store calf sales but instead of being sold, the required number of animals could be kept back to graze the flooded meadows. Having done this throughout the summer they would be sold in the autumn store sales.

4.47 At this stocking rate the sward should be fairly well utilized, allowing it to maintain its productive potential throughout the growing season, enabling the cattle to achieve a similar rate of growth to the ones on Farm A (i.e. 0.5 kg per day each). At this rate each animal would put on 90 kg LWG over a 180-day grazing period, the same as for Farm A and the gross margin calculation is the same, assuming that the cattle on Farm B receive the same type of management and are sold for £1.40/kg LW. This means that the basic gross margin per calf would again be £81. With 20 head of cattle needed to graze the 40 acres of meadow, the enterprise gross margin would therefore be £1620.

4.48 The fact that Farm B comprises separate blocks of land with different holding numbers means that there is an additional cost for grazing cattle on this parcel of valley land. This stems from the need to carry out compulsory pre-movement testing for bTB when cattle are moved from one holding to another. The tenant estimates the cost would amount to £250, which obviously takes another bite out of the gross margin, bringing it down to £1370.

4.49 An additional allowance has to be made for the fact that retaining these calves deprives the business of the income they would generate at the spring store sales. This is likely to impact on the farm's cash flow at what is often a crucial time of year, and probably necessitate extra borrowings. These can be calculated using the same basic assumptions as for Farm A, based on the cash value of each calf at the start being £450, (300 kg LW @ £150/kg), which for all 20 head amounts to £9000 of capital that the farmer will have to invest in the new grazing enterprise. The interest on this loan is currently likely to be in the order of 4%, which for the extra 6 months that the animals will now take to get to market will cost the tenant another £180 (i.e. £9/head). This reduces the net margin of the extended grazing enterprise to £1190.

4.50 Comparing the net costs of having to buy in a replacement supply of hay (£3622) with the additional net income from a substitute grazing enterprise (£1190), it is clear that the farm would still suffer a significant overall deficit amounting to £2432 (£61/acre). This would be proportionately less if a smaller area of meadows were to suffer inundation.

Farm C

Size of Farm

4.51 Farm C comprises 140 acres of tenanted land, of which 100 acres lie within the Avon Valley, with 40 acres situated on higher ground.

Enterprises

4.52 In a normal year, around 60 acres of the valley land are mown for hay on a rotational basis, trying to cut all of the fields within a 2-3 year cycle, depending on the variation in water levels. This is to minimize the rate at which sedge and rush are able to colonize the grassy swards when wetter conditions prevail. About 90% of the hay crop is sold to long established customers whilst the rest is used to feed the 14 horses that are kept on livery on the farm's higher land. About 60% of the crop (36 acres) is made into small bales of hay, whilst the rest (24 acres) is made into big bale haylage. The farmer makes all of the hay for themselves, in stages, one field at a time, starting in July and often not finishing the work until late August or September. They also carry out all of the ditching and fencing works that are needed.

4.53 The valley fields are all in an HLS agreement in the tenant's own name. No farm livestock are kept any more but instead the grazing on the valley pastures is let out to another farmer on an annual licence. It is offered to the same grazier each year rather than being put out to competitive tender because the licensee has proved particularly co-operative in meeting the HLS prescriptions. The rent is a fixed sum, paid each year and does not vary with the number of cattle brought on, which varies between 20 and 30 in-calf suckler cows with calves at foot, depending on the state of the pastures according to the weather and the state of the ground. This represents an initial stocking rate of 0.625 LU/acres when the cows come on in May (25 cows with calves at foot; each cow + calf = 1 LU; initial grazing area = 40acres) , dropping down to 0.25 LU/acres after the cattle are given access to the meadow aftermaths (eventual grazing area = 100acres). The grazing of the aftermaths is a crucial component in delivering the scheme's objectives.

Affected Land

4.54 The tenant has approximately 100 acres of land in the Avon Valley, all of which is in an HLS agreement, held in their own name. It is managed by a rotational mix of grazing and mowing that is specifically designed to encourage breeding waders. The tenant has found that all of the valley land can be affected by flooding whenever the river levels are high. They report that the size of the hay crop has declined significantly in recent years, partly because of increased wetness and partly because of tighter restrictions on inputs of manure. It has also suffered in terms of quality because of reductions in the abundance of some of the more productive grasses and legumes. Any reduction in quantity or quality of the hay would mean a direct loss of income from the 90% of the crop that is sold off of it each year. It could also result in increased costs from having to buy in hay to replace the other 10% of the crop that is needed to feed the horses on livery. The value of the annual

grazing licence could also be affected if the nutritional quality of the sward were to deteriorate due to spread of unpalatable wetland plants such as rush, sedge or horsetail. The annual payment that the tenant receives from his HLS agreement could even be affected if, in the longer term, the land were to become too wet and the vegetation too tall to have any prospects for attracting the breeding waders which now constitute the main objective for the scheme..

Financial Implications

4.55 The main financial impact of an increasing incidence of flooding would therefore arise from reduction of the hay crop. The tenant's own figures for yields and values have been used to calculate the losses:

- Average hay yields: 70 small bales/acre; 8 round bales/acre.
- Value of hay bales: small: £4 each; round: £25 each. (The price of bought-in fodder that would be needed to replace whatever cannot be made is valued at the same rate as that of the home-grown product which would no longer be available for sale).
- Lost output: small hay bales - £280/acre; round bales of haylage - £200/acre

4.56 The costs saved (per acre) have been calculated on the basis of the same standard values for the farmers own costs as for Farms A and B, (Nix 2010):

Table 3. Costs per acre of making hay and haylage at Farm C.

Action	Hay (36 acres)	Haylage (24 acres)
Mowing	£11.69/acre	£11.69/acre
Tedding/rowing up	£ 23.97/acre (3 operations)	£16.12/acre (2 operations)
Baling/wrapping	£ 18.90/acre (@ 0.27p each)	£ 44.24/acre (@ £5.53 each)
Carting	£ 44.25/acre	£ 20.65/acre
Total costs saved	£ 98.81/acre	£ 92.70/acre

4.57 Net losses per acre are therefore: small bales - £181/acre (280-99); round bales - £107/acre (200-93). If all 60 acres of the meadows become too wet to harvest, the total net losses would amount to £9,120 assuming that 60% of the area (36 acres) continues to be made into small bales and 40% (24 acres) into round bales. This is equivalent to a net reduction in the farmers annual income of £152 for each acre of meadow that becomes un-mowable as a result of flooding.

4.58 Failure to mow for hay should allow for additional grazing capacity, provided that the species composition does not alter too adversely. However the tenant would feel unable to capitalize on this by charging a higher rent from the grazier because, a) they are convinced that, without mowing, the quality of the grazing is likely to diminish and b) they depend on a high degree of co-operation from the grazier in order to meet the HLS objectives and feel that this could be compromised if a rent increase were to be imposed.

4.59 The tenant's other main strands of income from this land are the Single Payment Scheme and HLS, both of which provide annual payments based on the area being managed in accordance with each scheme's stated objectives. SPS should not be affected by the flooding as long as the inundation is temporary and does not persist long enough to prevent the land being either grazed or mown. For that reason it has not been included in any of the assessments of economic change. In practice there could be an increased risk of incurring financial penalties if the land becomes so wet that the grazing causes excessive poaching but this is thought to be unlikely given the SSSI rules and HLS prescription that protect against this.

4.60 If the flooding becomes a regular and protracted event, the vegetation could become so coarse and tussocky that it is unlikely to attract breeding waders, which could mean that the basis for receiving HLS payments may eventually have to be changed. Whilst it can be assumed that the current agreement would remain unaltered for its intended term, subsequent agreements might be affected by such changes.

4.61 'Fen' (HQ6) is the HLS option that seems best suited to describe the taller, rushy pasture that is most likely to develop on fields that become consistently wetter. In the current schedule of payments, this only qualifies for an annual payment of £60/ha (£24/acre), which is considerably less than the £335/ha (£136/acre) that the tenant currently receives for managing the land to encourage breeding waders. However the fen management option could be boosted by £200/ha. (£81/acre) if it were to be accompanied by the grazing supplement (HQ12), or by £350/ha. (£142/acre) for the cutting supplement (HQ11. Combining these different payment options would see the present HLS income either increase by £1800 to £9960 for 'Fen with Cutting' or reduce by £1860 to £6300 for 'Fen with Grazing'.

4.62 It would be up to the agreement holder to select their preferred options and supplements from the ones on offer at the time of renewal. Whilst the supplementary payment for cutting is larger than the one for grazing, it might be financially less advantageous if the costs of implementing the required regime (equipment, fuel, labour) exceeded the extra income it attracted. The farmer already has equipment for mowing the fields for hay and, provided that this will be adequate for dealing with taller and coarser vegetation characteristic of fen communities and provided that the scheme objectives can be met with just a single cut each year, his management costs, at £12/a., should be low enough to make this option the most worthwhile in financial terms.

4.63 On the other hand, although the supplement for grazing is £61/acre lower, the everyday costs of implementing it are borne by the grazier rather than the farmer, which could make it a more attractive option when it comes round to negotiating the next ES agreement. Furthermore, input from the NE adviser will also be needed regarding the most suitable options for delivering the best results from a nature conservation standpoint. The ideal solution would almost inevitably demand some combination of cutting and grazing but just how this would be prescribed and rewarded will depend on the details of the HLS scheme at the time of renewal.

4.64 The full implications of any changes in HLS income will therefore remain largely speculative until the full extent of future increases in flooding of the valley becomes apparent. They will also be subject to any changes yet to be made to the ES scheme rules following the major review of the EU's Common Agricultural Policy due in 2013.

4.65 Whilst the reduction in income from lost hay sales that leaves Farmer C worse off by £9,120 each year is a bigger loss per acre than any of the other three farms, the fact that this land is in an HLS agreement provides a substantial economic buffer against such downturns that is not available to the other three farmers. This is because the HLS payments for managing the meadows to encourage breeding waders will continue to provide Farmer C with a payment of £8160 for each year that the agreement is in place, which affords a significant financial buffer, equivalent to nearly 90% of the anticipated reduction in income from lost hay sales.

4.66 In conclusion, HLS cannot and does not provide any farmer with a guaranteed safeguard against all adverse financial impacts should the meadows they farm be affected by more frequent flooding. However it does provide considerable added security with which to face such problems.

Farm D

Size of Farm

4.67 The farm comprises 200 acres of tenanted land with more than three quarters of it situated in the Avon valley.

Enterprises

4.68 The farm is grazed with cattle and sheep, and pigs are also kept. The valley fields are grazed according to a management agreement using 30 Hereford suckler cows with calves at foot from May through to September. All the produce is sold through the farm's own shop.

4.69 In a normal year, up to 100 acres of meadow is mown in the valley, to produce about 800 round bales of hay or haylage all of which is fed to the livestock on the farm. This land is expected to enter an HLS agreement, but in the landlord's name rather than the tenant's

Affected Land

4.70 Approximately 160 of the farm's 200 acres lie within the Avon floodplain, any of which could be affected by increases in frequency or severity of flooding events. Most of these valley fields will be mown at least once within any 2 or 3 year period, as cutting and removal of the crop has proved an effective technique for controlling the ranker vegetation that tends to develop when this type of land is subjected to a grazing-only regime. All of this land is due to be entered into HLS but the tenant is not directly involved in this process and will receive no payment for delivering the prescribed management.

4.71 Flooding already affects the low-lying parts of the farm in wetter-than-average years (thought by the tenant to be a consequence of late weed cutting). Inundation can prevent or delay the mowing of the meadows, significantly reducing the size and quality of the farm's supply of winter fodder. As long as the flooding remains irregular and infrequent, the status quo can probably continue to be maintained, but if it were to become the norm, the fields may undergo more permanent changes.

4.72 Although the fields in the valley are expected to all be in HLS fairly soon, this should not directly affect the tenant as the agreement is in his landlord's name. It would probably be helpful for landlord and tenant to discuss the implications of increased flooding events and consider available contingency plans.

Financial Implications

4.73 The main impact of the flooding on the financial performance of the farm would therefore be the additional costs of replacing any shortfall in haylage production. The lost output has been estimated using the farm's actual figures for yield and value. As for the other three case studies, the costs of making and getting the crop have been calculated using the standard figures (Nix, 2010):

- Average haylage yields: 8 round bales/ acre
- Value of bales needed to replace lost production: £25 each. (The price for bought-in fodder is based on the farmer's own estimates of the average quality of the farm's produce)
- Lost output: £200 per acre (i.e. £20,000 for the whole farm if none of the 100 acres of meadows currently mown each year can be cropped).
- Costs saved for field operations associated with mowing and getting the above crop (Nix 2010) are shown in **Table 4**:

Table 4 Costs per acre of making haylage at Farm D.

Action	Cost
Mowing	£11.69/acre
Tedding/rowing up	£16.11/acre *(2 operations)*
Baling/wrapping(@ £5.53/bale)	£44.24/acre
Carting	£20.65/acre
Total costs	**£ 92.69/acre**

4.74 Each acre of meadow cut on this farm costs, on average, £93 to convert into haylage . These costs can be offset against the £200/acres of value lost by not getting the haylage crop, reducing the net loss to £107/acres

4.75 If none of the 100 acres of meadow were to be cut for hay because of flooding the farm would save a total of £9300 in costs; the farm would therefore suffer a net loss of £10,700, overall.

4.76 Some means would have to be found for making up as much as possible of this considerable loss of income if the business is to attempt to remain viable. Grazing would provide the only practical option for continuing to farm the wetter land, something that would also be necessary for the tenant to continue claiming the Single Payment. The tenant might therefore consider establishing a new enterprise based on grazing store cattle, bought in the spring and sold in the autumn so that they did not place any additional demands on the reduced winter feed resources. The weight-gain of each animal during the summer months should provide a financial return that could go some way to off-setting the additional costs of having to buy in the hay and silage needed to replace the farm's missing supplies.

4.77 Any new grazing enterprise would have to be integrated with the needs of the existing suckler herd, allowing the bought-in stores to have sufficient grazing for the entire season without compromising the needs of the cows and their calves. It is important therefore to establish an appropriate stocking rate for the new enterprise in line with the capabilities of the land and the objectives of the HLS agreement.

4.78 Of the farm's160 acres of land in the river floodplain, 60 acres are deliberately left unmown so that they can be grazed from the start of the summer by 30 suckler cows and their calves, at an initial stocking rate of 0.5 LU/acre. After the forage crop has been taken these same animals are allowed to graze the entire block of 160 acre, which means that

by the end of the season the stocking rate has been reduced to 0.19 LU/acre. These figures indicate an overall stocking rate for the new grazing enterprise of around 0.35 LU/acre, high enough to afford good utilization of the pasture but not so high that it risks compromising individual growth rates of the cattle or delivery of HLS objectives.

4.79 In this wetter scenario it is assumed that none of the valley land is cut for haylage, and instead a number of yearling store cattle are bought in to graze the 100 acres of fields that thus become available. At a stocking rate of 0.35 LU/acres this would require 35 LU worth of cattle, which for yearlings valued at 0.6 LU each, would require a total of 58 head, of a type similar to the ones that are already being reared on the farm. As all the calves born on the farm are already bespoke in terms of the land that they graze, this new enterprise will require additional animals to be bought in specifically to graze the former meadows.

4.80 These additional animals could be similar to the ones proposed for farms A and B, costing £450 each at an average weight of 300kg. They would also be expected to perform in the same manner, generating a gross margin of £81 apiece having grazed the uncut fields for six months before being sold weighing 390kg at an average sale price of £546 (as calculated for farm A). The total output that this new grazing enterprise could thus achieve might be £31,668, generating a total gross margin for the enterprise of £4698.

4.81 The initial cost of buying in the 58 yearling store cattle would be £26,100. The borrowings needed to fund this new investment would, as calculated for Farm A, impose an interest charge, which at an annual rate of 4%, would amount to £9 per beast over the 6 months that they are being reared, or £522 overall.

4.82 The net margin on this new grazing enterprise would therefore be £4176, which obviously falls well short of the £10,700 net loss from failing to make haylage on the corresponding land. The overall shortfall in annual income would therefore still be £6524 (£65/acre)

4.83 The practicalities of establishing such an *ad hoc* grazing enterprise are especially problematic for this holding because the main outlet for its produce is direct sales through its own farm shop. So whilst it would be possible to graze additional numbers of cattle on the meadows in the summer, this would not help the main thrust of the business as there is no means for taking them through to finishing without the extra fodder needed for sustaining the additional animals through one or possibly even two winters. Even if it were possible to finish them viably, the tenant would not wish to sell them through his farm shop as they would all have originated on another farm. The customers, he feels, probably have more confidence, knowing that the meat comes from calves born and reared on the premises.

4.84 Although none of the income from any HLS agreement on this land will go to the tenant directly, there could be scope for the tenant to negotiate with the landlord to apply for and pass back supplementary payments that can be seen as ‘added value’ and therefore

do not detract from payments that the landlord expects to receive. These supplements have been discussed in the previous case studies and, depending on the options that eventually form the core of the agreement could amount to anything from the £35 to £70 per hectare cattle/HR1 and native rare breeds/HR2 supplements for any of the grassland options through to the £200- £350 per hectare for the wetland grazing (HQ12) and cutting (HQ11) supplements. The tenant would have to persuade the landlord to apply for these extra payments on their behalf, as appropriate reward for the effort and costs that they, the farmer, put into delivering the scheme objectives. The tenant at Farm D is already using cattle and should therefore have few problems justifying the £35/ha supplement. But although the Hereford is one of the qualifying 'At Risk' breeds, only the animals registered as being from the 'original' population will count towards the £75/hacres HR2 supplement. The tenant would possibly have to adapt the breeding policy of his existing herd in order to meet this criterion, switching to a bull of one of the requisite blood lines and 'breeding up' his herd over time or finding a source of qualifying store cattle bred from registered stock to make up the numbers on the rest of the agreement land.

4.85 This is obviously a somewhat speculative idea, depending for its success on a number of factors; but if everything were to fall into place the tenant could be in a position to receive an additional £4534, if, say, the breeds supplement could be applied to all 160acres of the farm's valley land. This could be either transferred as a direct payment from landlord to tenant or accounted in lieu of rent. This would help reduce the scale of losses associated with a worst-case scenario for flooding but still leave a deficit of £2024 for the farm business to find. As with the other sample farms, the scale of these losses is directly related to the actual area of flooding and would be proportional to the area of the farm that is actually affected by flooding. In this example access to a portion of the HLS income would allow the tenant to reduce their overall losses from £65/acre to £20/acre.

Conclusions and Discussion

4.86 All four farms participating in this study stand to lose significant amounts of income if all the low-lying land that they now use for forage production becomes too wet to mow. The reductions in income will be proportionate to the area affected by the flooding on each holding, ranging from £60/acre to £151/acre.

4.87 The worst-case scenario that confronts the four farms (i.e. calculated on the assumption that all the susceptible land will be made un-mowable by flooding) ranges from a reduction in income of £3622 to £10,700 annually. All four farms have scope for reducing these shortfalls if they are prepared to adopt other management options, although all of the remedial steps would require additional work and capital investment.

4.88 The fact that the land in question is designated SSSI and contracted to be managed within the constraints of the various HLS agreements effectively restricts the options that are available to the farmers for securing other means of generating replacement income. An extensive livestock grazing enterprise would appear to be the only practical alternative

that could deliver a reliable financial output for the farmer without compromising any of the valley's established conservation objectives.

4.89 The calculations showed that, for all of the farms where it was applicable, such an enterprise could provide an alternative source of net income that, at £30-£40/acre, would help mitigate the shortfalls arising from a failure to make hay. However none of these projected grazing options were able to fully restore the original financial situation, generating net margins ranging from £1190 to £4176, across the four different farms. These margins are only sufficient to make good between 30% and 40% of the projected losses.

4.90 One of the main reasons for the economic shortfall of these projected grazing enterprises is the fact that they are having to be implemented in an *ad hoc* fashion that does not fit in easily with any of the established farming systems that are required to support them. They would have to be restricted to the summer grazing season as there is clearly no scope for feeding additional animals through the winter when supplies for each farm's established livestock enterprises are already likely to be compromised by the reduced area of meadows. This will impose strict timing constraints, forcing the sample farms to buy and sell their stock at times when they face most competition in the market, something that will inevitably be reflected in the prices that they pay and get for their stock at each end of the cycle, requiring them in effect to 'buy high' and 'sell low'. It may not be possible to achieve any better integrated approach until the new pattern of floodplain hydrology has emerged, allowing the full implications for land use in the valley to be properly assessed in the longer term.

4.91 Any of the new grazing enterprises considered here could well improve their economic performance if they were in a better position to take advantage of other, more strategic marketing options. Unfortunately two of the farms in question are not geared up to finishing cattle on any significant scale and normally rely on selling younger animals as stores, a market for which it is notoriously difficult to secure any kind of reliable premium over and above the standard market price. Most of the farmers who benefit from market premiums sell their cattle as finished stock, usually with a specific story or brand attached to them based on the properties of the farming system that has produced them. It would require a major upheaval for sample farms A and B to switch from selling store cattle to marketing finished stock. They would need either to take on more land and buildings to keep the extra animals until they were big and fit enough to be slaughtered or else to sell some of their existing breeding stock to free up land and buildings to accommodate the new finishing enterprise. Such significant changes to the whole farming operation could only be embarked upon once the opportunities had been thoroughly researched and the financial implications had been fully costed.

4.92 Farm D is already successfully marketing its own meat products, selling them directly to customers through a farm shop. This ensures that they obtain the biggest possible mark-up on the selling price, with average retail prices generally being at least twice the farm

gate price for the equivalent live animal. This added value can only be achieved however by investing large sums of capital in the facilities for processing, storing and displaying the produce along with the infrastructure that will enable the public to visit the farm. This, and the considerable amount of time needed to process, pack, label, advertise, promote and sell the meat means that exploiting such opportunities is beyond the means of most farmers, whose time, capital and attention is already fully taken up with running things at the livestock production end of the chain.

4.93 Apart from having a suitable location to which to attract visitors, the success of a farm shop perhaps depends most on its ability to communicate its own sense of identity and the values that underpin its produce. This is a strategy that works well as long as the produce being sold actually comes from the farm. This need to emphasise the immediate provenance of the product rather restricts the potential for a successful farm shop to supplement its throughput by buying-in animals from elsewhere. Which is not to suggest that development of such links would be impossible, particularly if, as here in the Avon Valley, there are groups of similar farms all operating on the same type of land in a way that clearly expresses their sense of shared identity. There ought to be potential for trying to develop closer working links amongst groups of farms like the ones in this sample, allowing them all to secure better prices for their produce by communicating its nature conservation story directly to the customer. This has already proved effective with schemes like 'Eat the View' and 'Bat-Friendly Milk' and might work for the Avon Valley if it were given the necessary support and funding.

4.94 Only one of the four farmers (Farm C) has an HLS agreement in their own name for the land that is at risk of flooding. This farm appears likely to sustain a bigger net reduction in its income than the other farms in the survey, principally because the existing grazing arrangements may not be varied in order to provide additional income to help compensate for any reduction of the hay crop. On the other hand, the income provided by HLS means that Farmer C is in a stronger financial position to start with and would therefore be better able to withstand just such a downturn. The payments will obviously be maintained for the duration of the current contract and can thus continue to bolster economic performance in a way that is not available to the other three tenants who do not have their own HLS agreements. There would also appear to be suitable options for sustaining payments under any subsequent HLS agreement at around the same level as now, even if some of the meadows become permanently wetter, causing the grassland to develop into fen.

4.95 None of the other three farms would, in the absence of HLS agreements of their own, be so well buffered against the potential reductions in the income generated by their meadows. All of these three, however, would have further scope for minimizing the financial shortfalls they face if they were able to persuade their respective landlords to apply for and pass back to them any of the various HLS management supplements, which could be worth from £14/acre to £142/acre. These payments are made in relation to

specific features of the grazing or cutting regimes that the tenants themselves would directly provide, a fact that could only serve to strengthen the tenant's case for receiving at least a substantial portion of them.

5. Water management - addressing the challenges

Introduction

5.1 This section considers the background to the provision and current maintenance of the water management in the Avon Valley. The main river and side streams have traditionally been the responsibility of drainage authorities and landowners, with ditch systems managed by landlords tenants or owners. Imperatives for water course management have been for water meadow regulation in the more distant past and more recently for fisheries and water abstraction. This section endorses the current approach of the Environment Agency in putting protocols and water level management plans in place and urges that this process be completed as soon as possible and that the results reflect the needs of grass management as well as other interests. References to flooding or summer flooding in this section refer to water spreading across the fields and meadows of the valley floor from high river levels, rather than referring to issues relating to flood prevention measures which are the responsibility of the Environment Agency

Ditches

5.2 The Avon floodplain has an extensive system of ditches and waterways, many of which were part of the former water meadow systems, designed to allow water to flood across the meadows in early spring and then drain back into the river, the shallow floods moving across the grasslands and encouraging early growth whilst protecting the grasslands from frost (Bettey 1977). Apart from the main river there are a number of tributaries in the lower Avon (the River Ebble, Ashford Water and Sweatfords Water) as well as eight different New Forest streams running into the river across the flood plain. Some larger ditches which were previously maintained by an internal drainage board have recently been restored by the Environment Agency, although they do not have a continuing duty of maintenance.

5.3 There are hundreds of kilometres of ditches across the floodplain, in all states of maintenance, but no recent surveys have been undertaken, although a suggested approach to strategic planning of ditch restoration across the Avon Valley SPA was illustrated for the Somerley Estate using a colour coding system by Solomon (2007). It is unclear to what extent individual ditch systems act to drain off flooded meadows into the river or act as conduits for water to move onto the meadows when water levels are rising in the river. Many ditches probably perform both functions. The Avon floodplain is a permeable catchment, and surface water tends to be more responsive to groundwater flows than in some other wet meadow systems in run off catchments.

5.4 A further complication is that the main river and tributaries are managed for fisheries and much of the literature consulted appears to consider the effects of management of these watercourses for the notified features of the SAC and SPA, for the commercial fishing interests and flora and fauna, but with less reference to farming. The responsibility for maintaining ditches and other minor watercourses which have less direct relevance to

fisheries (but may constitute important nursery areas for fish) will, on tenanted land, depend on the tenancy agreement, and may in some instances, be outwith the control of the farming tenant.

5.5 Solomon (2007) noted that parts of the floodplain are now wooded, especially alongside the main river but that early maps and photos show the floodplain much more open. Many ditches are also lined with scrub, and collectively, this woodland and scrub may pose a barrier to free drainage of water across the floodplain. However, rising water temperatures are causing concerns for the viability of salmon populations. Appropriate tree planting provides woody debris and can also, where appropriately sited, potentially reduce water temperature by shading.

5.6 Under higher level stewardship there are payments available for the restoration of ditches, but not for maintenance. At what point a ditch reaches the stage where clearance work is restoration rather than maintenance is a matter of judgement, and will partly depend on the view taken by the NE officer concerned. There are also capital payments for sluices, silt traps, culverts, drove improvement, all of which may assist in improving access in wetter conditions. A number of major improvements to structures have been made in recent years under the Water Level Management Plans prepared by the Environment Agency.

Recommendation 1

NE to consider agreeing special projects on individual farms or groups of farms to assess hydrological measures (such as installation or removal of structures, restoration of watercourses, installation of new drainage channels, removal of woodland or scrub) to mitigate on a local scale for potential summer flooding problems. This should be done in a way that provides suitable conditions for featured flora and fauna, minimises the need for new structures, provides simple water management mechanisms and covers larger areas to give best value for money.

Hatches

5.7 There is a bewildering array of sluices, hatches and other water control structures, both on the main river and on subsidiary watercourses, many of them operated privately, with no clear guidance on best practice (STREAM 2009). Most hatches were installed originally for the benefit of water meadow and fisheries management and are still used for the latter, but there seems to be no integrated approach to hatch management for the benefit of all floodplain users. Even if it were clear what effect each hatch alone and in combination with other hatches was having on the hydrology of the floodplain, there will be cases where those who might be affected and those who operate the hatches may have different objectives.

5.8 As with ditches, the suggested operating protocols for hatches (Royal Haskoning 2008) and the identification of stakeholders makes only passing mention of the interests of graziers and makes no mention of hay and silage making, which is the main land use in the lower parts of the valley (Hoodless 2010).

5.9 An example of the problems of hatch management occurred in 2010 when the operation of an automatic sluice gate malfunctioned (JBA Consulting, 2010) and flooded the hay crop of a farmer upstream. The Environment Agency is attempting to bring greater integration to this area of river management through the development of hatch operating protocols.

5.10 Of the various options for river restoration, hydraulic modelling suggests that removal of structures could have beneficial effects on flood risks, at least in the middle stretches of the river (JBA Consulting 2010). For example, the modelling showed that removal of a sluice structure at Downton significantly lowered flood risk with a reduction in water levels upstream of 190mm and an effect stretching approximately 1.8km upstream where water impoundment would be reduced.

Recommendation 2

That EA:

- Expedite the institution of hatch operating protocols and monitor their effectiveness.
- Carry out an assessment with NE of hatches and sluices to determine whether any structures should be removed to reinstate a more natural hydrological regime for the benefit of farming systems and wildlife and where removal would not increase flood risk

Silt clearance

5.11 Silt clearance in the main river will increase channel capacity and may reduce flood risk very locally. However providing additional channel capacity in the context of the capacity of the floodplain as a whole will provide minimal additional capacity against flooding over larger areas and is unsustainable in the longer term. Regular dredging will constantly set back the natural processes attempting to reach equilibrium in the river (JBA Consulting 2010).

5.12 A better solution is to take further steps to reduce silt inputs to the river from upstream through measures to encourage better farming practices which avoid soil erosion i.e. catchment sensitive farming promoted by EA. This is a matter for a number of agencies but also needs a continuing commitment towards soil conservation by DEFRA.

5.13 Any steps to increase water velocities such as structure removal will also reduce siltation upstream of the removal but may increase it downstream. Conversely, steps to allow the river to assume a more natural configuration through meanders and the build up of natural debris piles in the river and side streams will increase flood risk unless these are washed away by winter floods.

River restoration

5.14 The Environment Agency has produced a detailed draft of restoration options, supported by maps of each reach (EA 2009b). This lists a number of constraints including nature conservation, fisheries and amenity.

5.15 This draft strategy includes a wide variety of measures including rehabilitation of channels, changes to weirs and hatches, better hatch operation, changes to embankments, de-silting, tree planting and channel narrowing and bed raising. Some of these measures could reduce flows and cause bank overtopping upstream although this is likely to be minimal (JBA Consulting, 2010). Tree planting could be deleterious for breeding waders.

Recommendation 3

NE to continue discussions with EA over proposals and options (including those within the Water level Management Plans) for restoration of the main river and other watercourses and promote measures that could help reduce the probability of summer flooding, including the removal of structures, clearance of obstructions to watercourses and continued maintenance of former IDB drains.

Weed cutting

5.16 The Environment Agency has now ceased annual weed cutting in the River Avon. While it is possible for individual landowners or tenants to seek consent to continue cutting, its effectiveness would be heavily dependent on a cooperative scheme for long lengths of the river and appropriate timing, and in practice this would be very difficult to achieve.

5.17 Studies of the aquatic communities in weed cut and uncut streams suggest that the biomass of water crowfoot *Ranunculus penicillatus* declines when cutting ceases and that the diversity of the plant community is significantly greater in uncut streams (Cook 1976, Baattrup-Pedersen et al 2003)

5.18 Hydrological modelling suggests that the effects of ceasing weed cutting on increasing water levels will be enhanced locally if this is coupled with flow deflectors and bed raising, with the largest difference if this is combined with channel narrowing (JBA Consulting, 2010). JBA Consulting recommended that weed growth in the lower Avon should be modelled for a year to allow better simulations to be made of the effect of weed growth.

5.19 In the medium to long term the most serious threat to traditional farming practices in the valley is climate change. Weed cutting or other single issue responses locally or on a wider scale will do little to avert this. A wider consideration of land management practices throughout the valley will be needed to tackle the changes ahead with a re-appraisal of all aspects of the traditional farming model by all stakeholders and cooperative rather than individual responses may be the best way forward.

6. Forage crops – addressing the challenges

Introduction

6.1 Much of the Avon Valley is used for fodder crops – hay, haylage or silage. Increased flooding is likely to decrease the overall amount of hay produced, either because the vegetation is flooded, or because the ground is too soft for machinery. This has serious consequences for the viability of the grazing enterprises in the valley. Those farmers grazing the floodplains before the meadows are shut off for hay, and ideally after the hay is made to graze the aftermath (although this happens less and less) are reliant on the hay for winter feed. Some farms use silage made on higher land, but many are reliant on the floodplain meadows. Without hay, they cannot keep the livestock. Buying in is both costly and difficult – a national hay shortage is predicted for 2010/2011 due to the abnormally dry weather in the first half of 2010. The national hay crop is thought to be down by a fifth[9] and the Farmers Guardian reports prices being up by as much as 40%. Recommendations here are made concerning sourcing additional hay, out-wintering stock to reduce the amount of fodder required, amendments to HLS agreements to facilitate haymaking, and specialist equipment and practices which may allow hay crops to be taken in wetter conditions.

Shortage

6.2 Data are presented in the Game and Wildlife Conservation Trust for how much of the Avon Valley area considered in this report have recently be used for hay (Hoodless, 2010). However, it is not possible to predict the consequences of increased flooding on the hay yield (data are not available on areas used for haylage or silage). In some cases a hay crop may still be taken, in others the crop may be reduced or only taken in some years, and in yet others no crop will be achieved at all. The in-depth interviews with farmers showed that on the farms most likely to be affected by increased flooding, most farmers are expecting to lose a substantial amount of their hay crop. Overall, the valley farmers may well be seeking many 100s of additional round bales. Concern was also expressed in the interviews about the quality of bought-in hay not being comparable to that grown in the valley (this is likely to be of most concern to those farms which have diversified into livery). Loss of hay is also a very serious issue for those farm businesses whose finances are underpinned by sales of hay. In addition, much of the surplus valley hay has in the past been sold to New Forest farmers, meaning that there will be additional demand and therefore competition for hay in the region.

[9] http://www.bbc.co.uk/news/uk-10985153

6.3 There are a number of options in sourcing hay. Word of mouth is often used to find likely suppliers, but depends on good communication within the farming community. Collaboration can also reduce transportation costs. Adverts can be placed in the farming press, and there are an increasing number of online advertising facilities. For example the NFU fodder bank south west site[10] has several ads for hay for sale at the time of writing, including the River Bourne Community farm at Salisbury. The Soil Association's organic marketplace[11] also has ads and requests for hay. Another route for sourcing hay from semi-natural swards may be through the conservation grazing community. A recent trial request on Nibblers, the Grazing Advice Partnership's online discussion forum, resulted in a couple of offers immediately, and a subsequent unrelated offer was made. However, quality should be checked carefully, as hay on conservation sites may be cut later than it would be from purely nutritional objectives, or may be from sites with are used heavily for dog walking, resulting in contaminated hay.

Recommendation 4

Alternative methods for sourcing hay to be explored by Avon Valley farmers, including contacting the conservation grazing sector, and use of online facilities (see 6.3).

6.4 There is the possibility of using ground on the eastern terraces above the floodplain for hay, and one farmer has recently bought additional land with this in mind. However, the dryness and relative poverty of the soils probably preclude this as a wide-spread option. The possibility would in any case depend on suitable land coming available and farmers having the resources available for land purchase/rent.

6.5 An alternative to feeding forage crops is to outwinter stock. This is unlikely to be an option for continental breeds and crosses, but hardier traditional breeds could be outwintered on nearby heathland sites. Provided they come off the summer grazing in good condition (which will depend on fluke load) only a small amount of supplementary feed is likely to be needed. A small input of concentrates may also be required to ensure they have sufficient protein to digest the heather. The Avon Valley lies between the New Forest to the east and the Dorset heaths to the west, both of which offer potential for winter grazing.

[10] http://www.nfuonline.com/Regions/South-West/News/NFU-Fodder-Bank-South-West/
[11] http://www.soilassociation.org/Farmersgrowers/Getconnected/Organicmarketplace/tabid/199/Default.aspx

6.6 Some valley farms still practice their common grazing rights on the New Forest. However, a number of farmers mentioned that they do not currently use their rights. While areas of the New Forest are currently heavily grazed, others are almost ungrazed. The western area currently has less grazing pressure than other parts of the forest. While extra grazing is not actively being sought (Clive Chatters, pers. comm.) the importance of not losing the western commoners is recognised. Should further use of the forest be promoted, liaison would be needed with the New Forest Park Authority to ensure that overstocking did not result.

6.7 Outwintering on the urban heaths of Dorset is already undertaken by one farm, which successfully uses British Whites. It should be noted however, that they receive the HLS payments for this grazing. The Dorset Urban Heaths Partnership currently uses a herd maintained by Bournemouth Borough Council to graze some of the sites, and lets heathland grazing to private graziers elsewhere. There is however potential for more sites to be grazed, and the partnership may be willing to consider private graziers (Sarah Alsbury, pers. comm.).

Recommendation 5

Farmers looking to over-winter livestock outside the Avon Valley to talk to Dorset Urban Heaths Partnership and Forestry Commission about potential for outwintering valley livestock on the Dorset urban heaths and forestry sites. (NE will facilitate first contacts if required)

6.8 There are also significant areas of coniferous forestry which could be suitable for winter cattle grazing due to the relatively high proportion of heather in the ground flora. A heathland restoration area owned by Hampshire County Council is already grazed, and previous advice to HCC has included the recommendation that Ringwood Forest be extensively grazed (Richard Collingridge, pers. comm.) There is now precedent in nearby Wareham Forest, where an extensive grazing scheme was launched in 2010.

How might HLS prescriptions be modified?

6.9 Most of the farms visited were already within a Higher Level Stewardship (HLS) agreement, either for wet grassland and/or breeding waders. This indicates that the incentive is popular and worthwhile for the farmer (or landowner). NE is required to carry out “indicators of success” visits for all HLS agreements. However, it is not apparent whether current monitoring allows an objective conclusion to be reached on the success of the scheme for biodiversity, efforts so far having been focussed on achieving entry into HLS rather than any assessment of outcomes. Further information will be needed from NE.

6.10 In several cases the existence of an HLS agreement enabled the farmer to be more relaxed about the potential impacts on farming resulting from the cessation of weed cutting. The reasoning applied was that if funds were being received, for instance to compensate for land to stay wetter for breeding waders, that removes the need to 'make' that element of the farm income from the land. This was more likely to be the response if the farmer was the owner and received the HLS payment directly. If the land was in a tenancy and the HLS payment went to the landlord, the tenant had the restrictions but not necessarily any benefit. However, it was also apparent that the perceived nature of the restrictions imposed by HLS had prevented at least one farmer from entering the scheme, even though the individual was not at all unsympathetic to wildlife and farmed in a traditional way. There was also a suspicion, justifiable or not, that the HLS funds may not be that long-lasting.

6.11 Extra pressures on farming practice in the valley can confidently be anticipated as a result of the effects of cessation of the weed cutting and the general impact of climate change, both of which are likely to cause some land to be wetter for longer, and to cause less predictability in seasonal weather and thus what farming can be carried out. The need to examine the nature of the requirements and restrictions imposed by HLS is clear, in order that the agreements can be as attractive as possible to every farmer in the SSSI, whilst adequately safeguarding and enhancing wildlife.

6.12 A major difficulty appears to arise from the strict timings required by HLS, for instance in cutting forage. The adherence to dates set irrespective of the season would not have been the practice in traditional hay management - hay would have been cut when it was ready and the weather suitable. This can vary from season to season and the best time might be in the second half of June in one year but not until into July in another year, for example. Cutting according to predetermined dates can result in the best opportunity for cutting being missed, particularly if weather is subsequently unfavourable and significantly delays cutting. The crop then becomes less nutritious and the nature conservation interest compromised. If timings are found to be difficult in the light of changing circumstances in the valley, discussion should be sought with NE to find a solution.

6.13 Whilst the prescribed dates are presumably for the benefit of breeding waders, some of the farmers interviewed understood NE to put forward the argument that the hay should be allowed to 'flower and set seed' before harvesting. With the exception of yellow rattle *Rhinanthus minor*, most of the plants of permanent grassland such as meadows are perennials that do not need to recruit from seed each year. Moreover, a traditionally timed hay cut sometimes allows a second later flowering; and always there will be plants not cut around the margins allowing some seed to be set. The damage done to grassland by leaving the harvest regularly until later is more serious than cutting some plants in flower since coarser vegetation results. NE recognises that cutting times of hay meadows should vary, so that species should be allowed to flower and set seed in some years, and this needs to be reflected in the HLS prescriptions.

6.14 There is now sufficient flexibility within HLS in to allow dispensation from cutting dates to be made by Natural England. NE prefers such applications to be made annually (Simon Curson, pers. comm.) to ensure they retain input into cutting dates. The experience of some of the farmers interviewed is that the relevant officer may not be available to give immediate consent. Staff can be frequently out of the office and also may work part-time, so it can be some days before the consent is given to go ahead with a hay cut, even if there is no problem. These lost days can be critical when a weather window may be short and the opportunity to press on with the hay harvest is thus foregone.

6.15 Another issue encountered was an HLS requirement that only one third of the hayfield could be harvested in any season (to ensure that suitable areas were still available for breeding waders). While it is recognised that time constraints prevent NE officers from assessing all farms each year, it is noted that blanket applications, irrespective of seasonal weather or bird distribution that year and across all fields in the agreement, can lead to frustration and missed opportunities.

6.16 Refinement of the precise application of these rules could make a significant difference. A rule-based approach ignores experience on both the farmer's and officer's part and smacks of mistrust. It was very readily apparent that all of the farmers visited knew exactly what "their" waders were doing and where the nest locations were. Moreover there was a great sense of pride in being able to allow the lapwings or redshanks to successfully raise broods. While it is recognised that NE are responsible for the interest features for these internationally designated sites, a better appreciation on the part of NE officers of the experience and judgement of farmers in HLS would release everyone from the burden of unnecessary restrictions and foster a much healthier and genuine partnership.

6.17 The increasing uncertainty over whether hay/lage can be made from any field in the valley will mean that some areas – and perhaps most – will need to be grazed rather than harvested. This will impact on breeding waders as the turf height may not be most suitable in the following spring. The vegetation composition itself may change if hay cutting is regularly prevented, with a change to coarser swards with more sedge and fen species becoming more obvious. If a hay-cut does become possible in any season then the framework needs to be in place to easily capitalise on that opportunity. Flexibility in timings and options will be essential to enable the SSSI to receive what beneficial management can be applied when it can.

Recommendation 6

- NE to review HLS prescriptions to make them as flexible as possible and targeted to individual fields. In particular, timing of hay cut and amount of land that can be cut in year to be addressed. There is provision within HLS to allow this.
- Farmers and NE to ensure full mutual understanding of the requirements of both parties and the process to request derogations.

6.18 There are several long-term tenants within the Avon Valley who receive HLS payments in their own right. However, in the majority of cases, HLS payments go to the landowners. Thus where the farm is tenanted, the landowner either keeps the payment, (but may make a rental allowance to the tenant to reflect the payment, in whole or in part), or passes some of the payment onto the tenant. In some cases it appears that the tenant gains little financial benefit from the farm having been entered into HLS even though it is the tenant who will meet the requirements of the scheme. The tenant will, however, receive the single farm payment.

6.19 Whatever the arrangement between landlord and tenant, unless the tenant receives a substantial part of the HLS payment, s/he is unlikely to feel committed to the objectives. NE should follow up HLS agreements on land which is tenanted to ascertain:

- Whether the tenant is aware that the land is in HLS
- Whether the tenant is aware of the requirements of the HLS agreement on the land
- Whether the tenant receives any financial incentive to meet the requirements
- Whether the tenant takes any steps to meet the requirements in his farming on the land

In those circumstances where land is entered into HLS but the tenant gains no financial advantage from the scheme, NE should look carefully to see whether the objectives are being met and initiate action where they are not.

Recommendation 7

That in relation to the requirements of HLS on tenanted land where payments go to the landlord that:

- NE encourage landlords to fully explain the scheme requirements to tenants
- That Tenants be encouraged by NFU to ask about the requirements and the opportunities available to them under HLS
- That NE make clear to whichever party receives the payments their responsibilities for meeting scheme objectives, and takes appropriate action when they are not
- That the example of West Sedgemoor (see case study below) is made available by NE to Landlords who may find it useful in achieving HLS outcomes.

Case Study 1 West Sedgemoor

An example of a system developed between landlord and tenant which is intended to maintain floodplain meadows in suitable condition for breeding waders has been developed at West Sedgemoor in Somerset, where the landlord is the RSPB and much of the land is grazed or cut for hay or silage by farm business tenants. The RSPB receives the agri-environment payments which in this case these are ESA payments.

Under this system the RSPB charges a commercial rent for the grazing land, but under an agreement with the tenant there are repayments for meeting the conservation prescriptions set out in the ESA agreement. Payments can be made for the following:

1. A basic provision that poor grassland management such as under-grazing does not take place.
2. Operations and outcomes resulting in further payments for:
    - •Grazing with a specified (within a range) number of animals for a defined season
    - •Grazing with certain types of cattle (age and breed)
    - •Achieving an average sward height by the end of the season
    - •Cutting hay in unimproved hay meadows every year or every second or third year as agreed
    - •Cutting, bailing and removing unpalatable vegetation

Where farmers have not achieved objectives due to circumstances beyond their control, e.g. weather or flooding, then payments will still be made for most prescriptions provided the tenant has made every reasonable effort to comply.
A scheme based on these principles would need to be carefully tailored to a specific site and trialled before being implemented more widely.

Equipment

6.20 As conditions get wetter in the valley, continued hay or silage cutting will at times be dependent on having the right equipment. This could take the form of low cost adaptations of existing equipment such as the use of cage wheels or balloon tyres, but for some activities more specialised equipment may be needed, for cutting vegetation and carting silage on very soft ground for example. In some cases it will be beyond the resources of individual farms to acquire such equipment and a collaborative effort may be needed. This could be in the form of a machinery ring.

6.21 Machinery rings set up initially by local farmers and suppliers vary enormously in size and the services they offer. At its simplest, a machinery ring is a cooperative group matching surplus labour and machinery on some farms with shortages on others. For the 'supplier' this form of contracting reduces the costs of owning machinery and for the 'demander' it reduces fixed costs as it is not necessary to own all the machinery used. Rings can offer a trade between members in straw, silage, hay, feedstuffs, fertiliser, winter grazing or stock housing as well as machinery and labour. In fact machinery rings can gain advantages from any form of cooperative working from hiring outside labour to negotiating bulk discounts on fuel, farming supplies or insurance cover.

6.22 Existing machinery rings have not found huge problems in matching supply and demand even for similar machinery or services at times of peak demand. Some people have always finished long before others and are looking for further work. Of course the larger the ring, the greater the flexibility, but all rings started small. The first ring was started in the 1980s by 23 farmers and contractors and now has over 800 members!

6.23 Rings usually operate by charging an annual subscription and then a fixed fee or a percentage for each job. Initially it would be possible to start a ring with a volunteer organiser (perhaps a retired farmer) who would have their costs covered (mainly telephone and a web site to begin with) and be paid a small honorarium. As more people see the advantages and join a ring, most have been able to appoint a full or part time manager. Current membership of existing rings is between £100-150 subscription per annum with a charge for each transaction of 1-2%. Rings are non-profit making and the money from subscriptions and charges goes into paying for administration.

6.24 Advice on what would be involved and help in setting up a ring can be obtained from the Machinery Ring Association of England and Wales[12]. The nearest ring to the Avon Valley is the Thames and Kennet Machinery Ring[13].

6.25 To obtain advice on types of equipment to operate on wet ground contacts should be made with a conservation body such as RSPB, who have the largest land holding of grazed and cut wet meadowland in the UK, or with a specialist contractor who operates on wet ground and knows what is possible. One such contractor is Alaska Environmental Contracting[14].

Recommendation 8

That farmers seek advice and help from the Machinery Ring Association of England and Wales to assist them in investigating the possibility of setting up a machinery ring and help from New Forest Land Advice Service to arrange a demonstration day with the types of machinery that could assist in future farming in the valley.

7. Livestock management – addressing the challenges

Appropriate types of livestock

7.1 The changes predicted for the Avon Valley subsequent to the cessation of weed cutting include an increase in swamp communities (Hoodless 2010). There is likely to be an increase in competitive species such as coarse grasses and rush and sedge species. Where haycutting becomes impractical, coarse sedge and rush dominated vegetation is likely to be further favoured. It is important that the livestock types (i.e. species, beef/diary, breed, age, and background) used in the Avon Valley, particularly in those areas most likely to be subjected to flooding, are both able to control coarse vegetation under wet conditions and are able to do well on such forage. Should an increasing number of stock be outwintered on the surrounding heathland, livestock must also be suited to this.

[12] http://www.machineryrings.org.uk/.

[13] Thames & Kennet Machinery Ring, The Laundry, Whipley Manor Farm, Bramley, Guildford, Surrey. 01483 548216

[14] http://www.alaska.ltd.uk/

7.2 Cattle are the main livestock species currently used in the Avon Valley, and are best suited to the vegetation and conditions. They are ideal for removing long, coarse grass growth, and are less selective than sheep or equines (Tolhurst and Oates 2001). Cattle will take sedges early in the season, although are unlikely to be able to advance the spread of rush.

7.3 In the UK cattle are now kept either for dairy or beef, since resources used for milk production are not available for growth. Most breeds fall into one category or the other, although a few such as Dexter, Red Poll and Shetland are dual purpose. On the whole beef breeds are likely to do better than dairy breeds in the Avon Valley as production of meat can be better sustained on poorer quality pastures. Dual purpose breeds are suitable where they are used for beef and not milk production. Most livestock farms in the valley currently use beef animals. However, there are two dairy herds, though only dry cows and followers are grazed on the valley. We suggest that suitable beef animals are likely to both do better and play a greater role in maintaining wet grassland communities.

Livestock breed and background

7.4 There is currently a debate over the extent to which livestock breed plays a significant role in an animal's ability to do well on poorer quality pasture (e.g. Rook et al. 2004, Isselstein et al. 2007) (recent research addressing the quality of the meat produced is outlined in section 8.5). Similarly, the published evidence base for whether traditional breeds are more likely to create the desired outcome on semi-natural swards is currently ambiguous (e.g. Dumont et al. 2007). However, within the nature conservation community, it is generally accepted that, all other things being equal, hardy native breeds are likely to do better than commercial breeds (Tolhurst and Oates 2001). Traditional breeds generally have low input costs, the ability to outwinter, better efficiency in converting poor pasture to prime beef, easy handling, easy calving and longevity. That some native breeds may have attributes that are particularly well-suited to harsh climatic conditions, to difficult terrain, to grazing semi-natural vegetation and to achieving conservation objectives is reflected in the native breeds at risk supplement with Higher Level Stewardship. Unfortunately there is little comparative data available between native traditional and continental breeds. Breed societies can provide useful information on individual breeds, but they are of course keen to promote their own breed. The GAP breed profile handbook is a useful starting places (Tolhurst and Oates 2001), although it should be borne in mind that it is largely based on anecdotal evidence. The Rare Breeds Survival

Trust[15] also has breed profiles on its website, and is currently expanding these with information on daily liveweight gain etc.

7.5 Before exploring different breeds further, we stress that individual genetics, background and experience are extremely important and can over-ride the effects of breed (e.g. Lake 2002). Ideally stock should already be accustomed to the type of vegetation they are required for – in this case un/semi-improved wet grassland. This will ensure both that their digestive system is adapted to the type of forage and that they have experience of how to forage effectively on sites with similar challenges. They may also have immunity to diseases associated with particular areas, such as Redwater fever (a tick-borne disease of the red blood cells, present in wet, marshy habitat inhabited by ticks). Similarly, where possible, it is preferable to retain older animals with knowledge of the site within a herd, so that younger inexperienced animals can learn from them. In addition grazing ability tends to improve with age, and older animals tend to cope better with a poorer quality diet as their rumen matures around age 18 months. Discussion with conservation land managers suggests that even hardy breeds can suffer if moved from improved pasture to more challenging unimproved swards. Work at Bristol University looking at different breed and pasture type showed no obvious differences in health and welfare between traditional and modern breeds.

7.6 Appendix 1 summarises the key characteristics of traditional UK cattle breeds according to four main types. Given the above proviso about background, it can be seen that breeds falling within the upland and lowland beef categories are likely to be the best breeds, although others may also be suitable.

7.7 Under Higher Level Stewardship, the use of a native breed brings a supplementary payment of up to £70 per hectare. The list of qualifying species is given in Appendix 2.

7.8 Choice of breed will depend on a farmer's personal preference and experience. While any of the breeds in Appendix 2 (excluding Chillingham) could be suitable, we suggest that the two most local breeds, Sussex and Red Devon, are particularly likely to be adapted to the local climate as well as semi-natural swards, and further information is given on these two breeds below (adapted from Tolhurst and Oates 2001 and using information from the relevant Breed Societies).

7.9 Discussion with various conservation grazing managers across the UK via the conservation grazing discussion group Nibblers[16] has identified a further five breeds which have been

[15] http://rbst.org.uk
[16] http://www.grazinganimalsproject.org.uk/nibblers.html

used successfully in similar situations: Dexter, Shetlands, traditional Herefords, Red Poll and Galloways. More common breeds such as traditional Herefords and Galloway may well be easier to obtain. Red Poll and traditional Hereford are already used in the valley.Further information on these breeds is given in Appendix 3.

7.10 A further suggestion was the use of Water Buffalo, which are already used on a number of wetland sites by conservation organisation across the UK (e.g. at Ham Wall, Chippenham Fen, the Wirral) and are farmed commercially at two sites in Hampshire. Information collected for a draft Breed Profile for the Grazing Animals project are given in Appendix 3. British Whites are also used in the valley, and are successful in both managing coarse vegetation and doing well. Information is readily available in the valley on this breed, but it is noted that there was some negative response to suggestions that this breed should be considered by farmers currently using conventional breeds, mostly centred around marketing issues and carcass quality.

7.11 Farmers may be unwilling to change livestock breeds, particularly if they have built up a long standing herd. For example, the FORBIOBEN Project found farmers reluctant to switch to traditional breeds even with agri-environment incentives[17] . Therefore we suggest a workshop be held through the New Forest Land Advice Service[18], looking at the importance of breed and background and creating links to farmers already using native breeds on similar habitat. The Grazing Advice Partnership may be able to use their membership database to find useful contacts. The Rare Breeds Survival Trust[19] employs a field officer for Southern England who has been contacted and may be able to participate, and numerous other conservation grazing projects using rare breeds can be contacted through the GAP online discussion forum Nibblers.

[17] http://www.iger.bbsrc.ac.uk/Forbioben/index.html

[18] The New Forest Land Advice Service is available to landowners and occupiers who would like advice and support on issues relating to land management. across the National Park and Avon Valley with support for landowners and farmers. They can be contacted at http://www.newforestnpa.gov.uk/landadviceservice

[19] http://www.rbst.org.uk/

Red Devon (North Devon, Ruby Red)

An old, hardy breed of cattle, an attractive deep red in colour with magnificent horns, placid and easy to handle and renowned for its ability to convert forage into growth. A high quality beef breed, producing sought-after meat.

Physical attributes and husbandry

• Handling - one of the quietest breeds, respects electric strand and flexi-net fencing.
• Flies and ticks - thick hide means it is not unduly bothered.
• Size - shorter in height than Shorthorn or Hereford, but heavier, so may cause poaching on soft sites. Average weight of a cow 500 - 550 kg.
• Horns – Most animals are disbudded as calves, many breeders are trying to maintain naturally polled herds.
• Very hardy, with a thick skin and dense curly coat which protects it from driving rain and cold temperatures.
• Able to outwinter on most sites if purebred.
• Tolerant of hot conditions and not susceptible to sunburn. However, like all animals, requires some shade.
• Breeding - easy calving with good milk yield off poor quality pasture, although milk quality may be better if the cow is not on the very poorest areas at calving. Cows may calve into mid-teens. Bulls usually even tempered in a herd situation.
• Could be sourced from Red Water resistant herds relatively local to the Avon Valley

Grazing Characteristics

• Moves back and forth across a pasture, producing a well grazed sward .
• Has been shown to make a take more tall grass and herbs than commercial breeds (Dumont et al 2007)

Marketability

A high quality beef breed, producing much sought-after meat.
• Fattening – possible to finish within 30 months on poor grazing, although carcass size is slightly on the small size.
• Meat - reputedly the finest beef available and is much sought after. The Breed Society is aiming to obtain a European Union “Certificate of Specific Characteristic” to aid in the marketing of the meat.

Breed Society

http://www.redrubydevon.co.uk/

Sussex

A very old traditional breed believed to be direct descendants of the red cattle found roaming the Weald at the time of the Norman Conquest. A large, deep red animal, placid and easy to keep, reputed to live on fresh air and views and considered commercially viable.

• A hardy breed, suitable for outwintering and on hot sites during summer months.
very docile and easy to handle, will respect electric fencing
• May be horned or polled.
• Not unduly bothered by flies and ticks
•
• Size - one of the larger UK breeds. Average weight around 650 kg.
• Breeding - easy calvers providing that the cow has not become over-fat (out wintering in-calf cows on very low quality grass with supplementary feed can be a useful). Cows continue to produce into the mid-teens. Bulls are very docile in a herd situation.

Grazing Characteristics
• Unselective grazers, taking a range of species and tending to graze a sward more tightly than other breeds of cattle. Saw Sedge may be eaten if no other food available, otherwise avoided. Purple Small-reed, rushes (mainly during winter), and thistles are readily taken, although in no great quantities.
• Will range widely over a large site, slowly walking many miles in a day.

Marketability
• Does well on low quality forage, will finish at 18 - 20 months off average quality forage.
• A small amount of Limousin blood has been introduced to much of the breed, to improve carcass quality.
• Beef considered to be fine-textured with a traditional flavour, suited to high quality retail outlets

Breed Society
http://www.sussexcattlesociety.org.uk/index.html

Recommendation 9

New Forest Land Advice Service to be asked to facilitate workshop for Avon Valley farmers to explore the breeds and background of stock suitable for grazing the valley floodplain meadows in the future, and to arrange farm visits to herds.

7.13 Sourcing native breeds can also be more of a challenge than sourcing continental breeds and crosses. Breeds societies (easily located through an internet search) can often help in sourcing appropriate animals. It is also worth talking to livestock market auctioneers, who often know which farmers have what stock, even if they aren't currently bringing them in to market. Placing advertisements in Farmers Weekly, Farmers Guardian, Organic Farmer or The Ark can also be effective. Ecolots[20] is a conservation-orientated advertising website for both sales and wants. SheepKeep[21] is an online database of graziers and landowners worth trying for finding graziers with suitable stock. Organic Marketplace[22] is a one stop shop for farmers looking for organic livestock. Specialist agents provide livestock selling services in which they actively collate lists of animals available for sale, matching them with enquiries received from potential buyers. Such agents regularly advertise their services in the classified pages of the general farming press. Finally, word of mouth is often a productive way of finding suitable stock.

Stocking rates

7.14 Stocking rates are currently agreed within the HLS agreement for farms within the scheme, and therefore specifics concerning stocking rates are not covered further here as they will need to be addressed on a farm by farm basis. However, it is noted that rates may need to be amended according to how changing water levels, changes in vegetation and changes in breed used. For example stocking density may need to be increased if the duration of flooding increases, thus decreasing the length of time for which grazing is possible. In contrast, the use of traditional breeds able to cope with wetter conditions may allow the grazing season to be increased. However, changes in vegetation may mean that a given area supports less productive forage than previously as rush, sedge and horsetail invade. Breed by itself is not thought to have an effect on the stocking rate required (e.g. (Scimone et al. 2007). However, anecdotal evidence suggests that hardy

[20] http://www.ecolots.co.uk/
[21] http://www.sheepkeep.co.uk/
[22] www.soilassociation.org/Farmersgrowers/Getconnected/Organicmarketplace/tabid/199/Default.aspx

upland breeds such as Highland and Galloway (and crosses) may consume 25% more than other breeds relative to their size. Grazing demands also vary with size, with smaller breeds eating less than larger breeds, which will effect true stocking rate.

7.15 Ideally, a "trickle on trickle off" approach would be used in stocking the floodplain meadows, allowing the stocking density to be managed according to the precise conditions. Historically this approach was probably the norm. However, the more recent amalgamation of smaller holdings into fewer, larger holdings has resulted in livestock frequently being housed or pastured further from the meadows. Today many of the farmers hire a livestock haulier to move livestock onto the meadows in one trip, precluding a more gradual approach. This system is however still used successfully at one farm which stock British Whites. The possibility of an Avon Valley herdman co-ordinating cattle movements in the future is explored in section 9.6. Better infrastruture e.g. permanent pens for catching would make it easier to control stocking rates subtly by removing small numbers as necesary.

7.16 It is noted that research into the impacts of grazing animals on the biodiversity of species rich grassland (Tallowin, Rook, and Rutter 2007) suggests that a lenient grazing pressure can maintain botanical diversity and the abundance of positive indicator species and also enhance faunal diversity and abundance. However, they did not find any enhancement in positive indicator species and there was an increase in pernicious weeds suggesting that grazing alone may not maintain the nature conservation interest of species rich grassland, and that additional management interventions may be required. This lends weight to the perception that grazing alone, with no hay cut, may not be adequate to maintain the species diversity of the species-rich Avon Valley meadows. Although not a substitute for mowing and removing material, topping may help, and can be fitted in more easily around problematic weather.

Bovine tuberculosis

7.17 Bovine Tuberculosis (bTB) is a serious chronic disease of cattle caused by bacteria attacking the respiratory system, and capable of infecting most mammals.

7.18 bTB testing and associated measures such as movement restriction and culling have been carried out in the UK since the 1930s. A testing and slaughter programme became compulsory in the 1950s, and is still central to the Governments attempts to limit bTB[23]. The incidence of bTB has however increased over the past 15 years, and enhanced testing and control measures were introduced in 2004, and pre-movement testing in 2005.

[23] http://www.defra.gov.uk/foodfarm/farmanimal/diseases/atoz/tb/abouttb/index.htm

7.19 At the time of the farm visits forming part of this study, the Avon Valley was free from bTB. However incidence of bTB in one herd has now been confirmed. All herds must be annually tested. This means that it is a statutory requirement that all cattle over 42 days old moving out of a tested herd must have tested negative to a TB test within 60 days prior to movement unless the herd or movement meets an exemption. These tests apply to movements both to and from grass keep or holdings. Routine bTB surveillance tests are also carried out.

7.20 All pre-movement tests must be arranged and paid for by the herd owner. However, routine bTB surveillance tests paid for by the Government qualify as pre-movement tests, if animals are moved within 60 days after that test. Herd owners can ask for additional animals to be included in their routine herd test if they wish to move those animals within 60 days of this test.

7.21 Approximate costs for bTB tests are a call out charge of £30 per visit, plus a rate of £10 per 10 minutes[24]. Two veterinary visits exactly three days apart are required per testing. Depending on the handling facilities, and speed of the farmer moving the animals, it would take about 30 minutes to test 20 animals (although the second visit is generally quicker). Total costs for testing 20 animals would therefore be around £120.

7.22 In addition, cattle movement requirements mean that all cattle moving on or off a holding must be accompanied by a valid passport, and that all movements are reported to the British Cattle Movement Service. The implications of these testing and movement requirements are that farmers are reluctant to move their stock onto land within another holding, even if there is grazing available. This has serious consequences for collaborative grazing projects in the Avon Valley (see section 9.7). It is likely that more areas within the floodplain will be ungrazed, and therefore essential to find ways to facilitate farmers to graze them. It would also be worth disseminating information to the valley famers (e.g. via an email discussion group or newsletter on how exactly these bTB requirements apply). For example, rented land can be included as part of a holding under a Sole Occupancy Authority and therefore pre-movement testing is not required when the second farmer moves their stock onto the piece of land in question. The lease can be a spoken agreement between the two parties, with no paperwork requirements (we would however suggest that this is checked with the local Animal Health Office[25] once there is a concrete case to test it). It is likely to be dependent on the nature of the agreement

[24] Based on rates at the Cedar Veterinary practice, Bisterne, used by most of the valley farmers

[25] http://www.defra.gov.uk/animalhealth/about-us/contact-us/search/index.asp

between the landlord and tenant, and would be more difficult to justify if the land is let under license and the landowner claims the Single Payment.

Recommendation 10

NE to make greater use of HLS difficult sites supplements in the valley e.g. at sites where the cost of bTB testing for livestock moving on/off ungrazed sites is prohibiting grazing.

7.23 A second constraint related to bTB testing is the lack of on-site infrastructure to hold animals leaving the site and therefore requiring testing. Capital grants are potentially available within HLS to enable this, and could facilitate grazing on sites where cattle would have to be moved on and off from separate holdings (e.g. Ogber).

Recommendation 11

NE to encourage use of HLS special project grants if possible for holding facilities where inadequate equipment for bTB tests is prohibiting grazing.

8. Marketing

8.1 This section sets out the background to marketing issues and then suggests possible marketing options that could be explored by Avon Valley farmers. The benefits and challenges of each option are outlined.

Introduction

8.2 Marketing requires considerable planning and forethought. This is particularly the case for farmers using traditional breeds. The UK meat industry is still geared towards the faster growing, late-maturing continental breeds, and sales of traditional breeds in mainstream markets are limited in many places. However, while rearing livestock on less productive swards may raise challenges, it often also presents opportunities for adding value (e.g. Boothman, Grayson, and Swanson 2008), and in the Avon Valley, niche marketing may be the best way to capitalise on this. There are currently no studies making a direct like for like comparison between conventional sales and value-added sales.

8.3 In the Avon Valley, problems mentioned by farmers include the difficulty in maintaining the continuity of supply usually required by outlets. In relation to traditional breeds, difficulty was experienced in selling stock in markets where traditional breeds are just seen as “the wrong colour”. There was also a feeling in some cases that traditional breeds did not result is an acceptable standard of end product because of their smaller size and poorer conformation.

8.4 However, it is generally accepted that animals reared and finished on extensive pasture such as those in the Avon Valley produce a superior flavoured meat which is healthier for the consumer than that from animals finished on concentrates (e.g. Young and Baumeister 1999, Young et al. 2003, Fisher et al. 2000, Moloney et al. 2001). An ongoing Rural Economy and Land Use research project “Eating biodiversity: an investigation into the links between quality food production and biodiversity protection”, sponsored and funded by various Government bodies and carried out through several universities has produced results that take this further. The work provides evidence that diversity in botanical composition in the pasture confers specific differences to lamb flavour (beef flavour was not explored in this study) and suggests that this could form the basis of premium quality marketing schemes.

8.5 Of particular interest is recent work by Bristol University (Bristol University 2009) looking at both pasture type and beef breed. They found that highest concentrations of beneficial fatty acids were observed in traditional breeds reared on biodiverse pastures. A trained taste panel found that one of the traditional breeds (Longhorn) had higher scores for all aspects of eating quality than continental crosses when reared under the same conditions. Scores for fat cover and conformation (carcass shape) of commercially-finished native breed cattle were not very different from the general throughput in British abattoirs, although it was implied in discussion with breeders that low prices were

received for traditional breeds because they had poor conformation. However, the fact that traditional breeds grow slowly means they are often slaughtered before reaching a 'well finished' state because they have reached 30 months of age where controls over slaughter apply (see section **Error! Reference source not found.**). Overall, the research has shown that a combination of traditional breeds, biodiverse pastures and traditional processing methods can produce high levels of nutritional value and quality that would be attractive to consumers looking for a high quality product.

Recommendation 12

NE to publicise findings about the quality of meat from traditional breeds raised on semi-natural pasture to Avon Valley farmers e.g. through articles in an Avon Valley newsletter (see section).

8.6 Interest in local food is increasing, and local livestock breeds have a key role to play in the local food movement. The local food movement, a collaborative effort to build more locally based, self-reliant food economies in which sustainable food production, processing, distribution, and consumption is integrated to enhance the economic, environmental and social health of a particular place (Feenstra 2002) is now well established although far from mainstream. "Making Local Food Work"[26] is a lottery funded partnership project aiming to help people to take ownership of their food and where it comes from by providing advice and support to community food enterprises across England.

8.7 Mainstream supermarkets are also becoming more interested in local foods. Waitrose and Sainsbury, for example, stock secondary meat products such as sausages from breed traditional to the locality in many stores. This, combined with an increasing consumer awareness of different qualities and types of meat, as reflected in Waitrose's Aberdeen Angus and Hereford lines suggests that opportunities for marketing specialist products may be increasing.

8.8 Although in principle interested in locally sourced traditional meat, especially with an accompanying sustainability story, Waitrose buyers are currently unable to take more primary meat products. Due to anticipated expansion of the chain, they currently have more than enough suppliers to meet demand, and are therefore only interested in secondary value-added products (sausages etc.). In addition producers must supply under

[26] http://www.makinglocalfoodwork.co.uk/index.cfm

contract and are subject to continually meeting a series of exacting quality and production controls, some of which could be challenging to achieve on rushy pasture. Other disadvantages in selling to supermarkets to weigh against the benefits of a regular outlet include becoming locked into a pricing structure, use of central distribution points, and having to use the supermarket's abattoir or approved suppliers for feed etc. Supplying to supermarkets is however an area to watch and supermarkets are beginning to recognise the potential of the local food sector.

8.9 Alternative marketing strategies will therefore be needed in the Avon Valley if value is to be added to by the circumstance in which the livestock are reared, and particularly if traditional breeds are to be used. In Adding Value below we give an outline of various approaches that might be useful.

Overview of marketing

8.10 Before exploring possible marketing approaches appropriate to beef producers in the Avon Valley, we briefly review the different marketing requirements of the various farming systems which are currently in place in the valley, and any constraints on these.

8.11 Marketing of red meat products can be described as a three-stage process (more detailed information on each of these stages can be found in Boothman, Grayson and Swanson 2008)[27]:

8.12 Production on-farm, where the marketing process begins with the final stages of production when effort is put into ensuring that the animals are in an optimal condition for whichever outlet they are destined for.

8.13 Processing, the intermediate stages of the food chain (slaughter, cutting, packaging) in which the live animal is converted to an appropriate range of products that can be put on display for the customer.

8.14 Retail, the final transaction in which the customer buys the product and decides, on the basis of its eating quality and other factors, whether it is worth coming back for more.

8.15 Livestock presented at auction fall within one of four classes: Finished animals fattened and ready for slaughter, stores to be sold for further fattening, breeding animals in their productive stage of life, sometimes with young at foot, or cull animals at the end of their productive lives. Farms with a shortage of very productive land will usually aim to sell beef cattle as stores (partly grown animals), having bred them on the farm and grown them to

[27] http://www.grazinganimalsproject.org.uk/business_development.html

a certain size (depending on the system) before selling them to another farm for finishing (i.e. completion of growth) or as breeding replacements. This is the case with many of the farms visited in the Avon Valley. Finishing systems vary, with the animals being kept either indoors on a high quality silage / cereal diet or outside on good quality pasture. However many producers keeping hardier thriftier breeds of traditional livestock use extensive outdoor systems that generally provide for more modest growth rates. Some supplementation with hay and concentrates is likely to be needed, especially in winter, to keep the animals growing at commercially viable rates.

8.16 An increasing proportion of farmers are selling the meat from their livestock directly to the public through a variety of means. This usually involves off-farm facilities, on a contract basis, to slaughter and butcher the animals. In these cases the farmer has to be able to judge when the animals they are rearing will provide the kind of carcass that will best meet the demands of their customers. At least two farms within the Avon Valley are currently using direct sales.

8.17 Wholesaling bulk orders of meat to a range of retail outlets is also an option (see section 8.7 for a discussion of the role of supermarkets) and high-end independent outlets are most likely to offer the best scope for local producers to improve their returns. Again, slaughtering and butchering are generally contracted out but packaging and labelling are usually done by the retailer, ideally based around information about the product's provenance . Within the Avon Valley, problems with continuity of supply for these larger volume markets were frequently cited as an obstacle.

8.18 The number of abattoirs and livestock marts has declined in recent years, in part due to FMS and BSE and subsequent regulations, and remaining abattoirs tend to be larger plants less suited to the requirements of smaller, specialised producers. Abattoirs most commonly used by farmers in the Avon Valley include ABP in Sturminstor Newton (which used to supply Sainsbury before publicity arose surrounding possible welfare infringements), W.S Clarke and Sons, a small abattoir in Sixpenny Handley, Norman and sons in Bridport, and C & S Meats in Sherborne, which range from between 15 miles (Sixpenny Handley) to 50 miles (Bridport) from Ringwood. One farmer also previously used Chitty's in Guildford which supplied Waitrose. Sixpenny Handley cannot take animals over 30 months. Shaftesbury and Salisbury the nearest livestock markets, can take calves, breeding/store cattle and cull cattle.

8.19 Following the BSE epidemic, meat from cattle over 30 months was not allowed into the human food chain. This was subsequently amended and currently abattoirs and cutting plants must be licensed to handle over 30 month animals. A license is also needed for animals over 48 months, for which a brain test must be carried out and the spinal cord removed. The implications of obtaining a license mean that abattoirs are only like to do so if they are sufficiently large and have a big enough throughput of older animals to justify the extra costs and time, as OTM animals must be segregated and product traceability ensured. Currently, the Bridport, Sherborne and Sturminster Newton abattoirs

are licensedAbattoirs also need to be licensed to handle organic stock. Organic cattle in the valley are currently taken to Bridport.

8.20 Processing is important for the quality of meat. Work at Bristol University underlines this, finding that longer ageing times (20-28 days compared with 10 days) and ageing 'on-the-bone' (dry ageing) compared with ageing in vacuum bags (wet ageing) increased taste panel scores for tenderness, juiciness and beef flavour. However, the opportunities for ageing, particularly dry ageing, tend to be limited due to space constraints. At the present time, some producers who retail meat products directly in the valley use the butchers at Owls Barn Farm as a contracted service, but hanging space is limited here and vac-pacs are used. The owner currently has planning permission for an abattoir and increased hanging space, but has so far been thwarted by lack of finance.

Recommendation 13

Farmers to seek advice from Business Link for exploring how to secure enlarged hanging facilities and the creation of an abattoir in the Valley (potentially Owls Barn Farm might offer a suitable site if the owner is interested in promoting this).

Adding value

8.21 Here we use the term "adding value" to refer to any scheme or initiative which results in a higher than average financial return on a product. These include national quality assurance schemes for meat quality, environmental and farm animal welfare standards; genetic and geographical provenance assurance; and branding linked to sustainability issues including landscape and nature conservation and the local food movement. The 'average' price for a finished beast can usually be taken as the value it would be expected to have when sold at nearest livestock mart.

Adding value – gains and costs

The economics of the different levels in the meat chain are outlined here, showing the overall levels of return available to producers who invest additional resources in securing 'added value'. As an example, a well finished native breed beast weighing 500 kg LW and grading R3 is used.

The average live weight (LW) price that such an animal might secure at the local auction mart, provided that it was not penalized for its appearance (e.g. colour, coat texture) would be £1.60/kg at today's prices, making a total value of £750.

This same animal if sold deadweight would produce a carcase weighing 53% of its LW, i.e. 265kg. This would return £755 if sold at the average dead weight price of £2.85/kg achieved under a standard (i.e. non-premium) contract directly to the processor.

If the beast were sold to a specialist processor offering a guaranteed premium it would normally secure a higher price. For example, the average organic beef price for an animal of this size and quality is currently £3.10/kg, which would generate a total price of £823, a mark up of £68 per head. Note however that this price advantage has to be set against additional costs of e.g. scheme membership, longer distance/bigger haulage costs.

If the producer opts to sell the meat directly to the final customer they could expect to secure the full retail value of the meat. The meat yield from the 265kg example carcase would be c. 65% of the deadweight, i.e. 172kg. This would comprise all the differently priced cuts of beef from mince to fillet steak . The overall retail price averaged across the full range of cuts and adjusted for their differing proportions in the carcase is currently c.£8.50/kg. This would generate a total retail value of £1464 from the sale of the sample carcase, representing a near- doubling of the average farm gate price that would have been achieved if this same animal had been sold at the local mart.

There are significant additional costs associated with securing this added value, namely the slaughtering of the beast, the butchering of the carcase and the packing and labelling of the meat cuts. These costs can vary considerably but typically would fall within a range of £200-£300 per animal, leaving a surplus of £400-£500 to cover all the farmer's own fixed costs and invested assets (capital, time, expertise) involved.

8.22 One of the simplest means of adding value is to move the product's final point of sale further along the chain, investing more resources into the processing and retailing stages in order to capitalize on the higher prices thus achieved (further informattion on the gains and costs are giving using an example in the text box below). This strategy combines well with any of the recognized farm assurance schemes (8.23) because they increase the possibilities for linking the product with information about the specific aspects of its provenance that are aimed primarily at the concerns of the final consumer.

8.23 Relevant national quality assurance schemes include the various organic and biodynamic certifications; the LEAF (Linking Environment and Farming) Marque; Freedom Foods set up by the RSPCA to improve farm animal welfare standards; the English Beef and Lamb Executive quality standard; Farm Assured British Beef and Lamb (allowing use of the Little Red Tractor Logo); and the Traditional Breeds Meat Marketing Scheme. (Further information on these can be found in Boothman, Grayson and Swanson and via the internet). Membership generally involves an annual fee (often around the £100 mark) and routine and spot inspections plus of course meeting the criteria of the scheme in question. There is now some integration between schemes. Benefits to the producer are the use of a logo and accreditation assuring particular standards thought to be attractive to consumers, are met.

8.24 Other schemes are based on genetic provenance. Some of the leading supermarkets have established schemes based on beef from cross-bred animals sired by a specific breed of bull (Aberdeen Angus, Traditional Hereford, Beef Shorthorn) on the basis that they provide premium quality meat. In some cases schemes combine genetic and geographic provenance, such as the Cotswolds.

8.25 Nature conservation is another area to which branding is applied. For example, Limestone Country Beef[28] requires participating farms to be under an HLS agreement, and RSPB sell "bird friendly" beef from their Lake Vyrnwy reserve. Work looking at branding meat products as landscape or nature conservation friendly (e.g. Land Use Consultants 2005) has concluded that there is not currently a role for a national "nature conservation" brand. Therefore individual projects have to explore the potential for branding specific to their situation (e.g. Countryside Agency and Peak District NPA 2004).

8.26 Another feature which may increasingly add value to products is carbon neutral status (e.g. from the Carbon Neutral Company[29]). This incorporates the food miles component of local branding, but otherwise "localness" is not surprisingly a factor which requires a local approach. Two existing geographic brands covering parts of the Avon Valley include the New Forest Marque[30] and Direct from Dorset[31]. Both are local food initiatives aiming to promote sales of local products. The New Forest Marque, managed by the National Park Authority and District Council seeks to "give businesses a distinctive 'New Forest' banner under which to sell their goods and services, help customers identify quality New

[28] www.limestone-country.org.uk
[29] http://www.carbonneutral.com/about-us/
[30] http://www.newforestnpa.gov.uk/new-forest-produce/marque_map.htm
[31] http://www.directfromdorset.co.uk/

Forest produce, encourage people to 'buy local ' and reduce the environmental impact of transporting food long distances and help sustain the New Forest's local economy by supporting local businesses and employment" Direct from Dorset aims to "help to support the local economy, local communities, the local landscape and reduce food miles" by promoting recognition of products grown in Dorset. Uptake in the Avon Valley of these brands is very limited, possibly due to peripheral location of the valley in relation to each brand's geographic area. Many farmers interviewed did not generally consider that such branding would help them particularly, although one farmer was a founder member of the NFM. We suggest that further engagement from the NFM in particular should be sought.

Recommendation 14

Farmers to explore increased engagement with New Forest Marque, including training and networking opportunities.

8.27 More localised branding also occurs. For example, within Purbeck, the Purbeck Keystone Project is helping set up a "love the land" logo. This will be linked to produce from Purbeck (see also Case Study 2) and is intended to tell the story of local produce that comes from land farmed in a conservation friendly way.

Outlets for niche market products

8.28 There are a variety of techniques currently used to sell specialist meat products, and those which have potential application in the Avon Valley are explored here. Although often used successfully for marketing traditional breed meat, they are suitable for use with any value-added meat products. Further useful information and other case studies can be found in the GAP Marketing Guide (Boothman, Grayson, and Swanson 2008).

8.29 **Farm shop/farms gate sales.** Used widely by many specialist farmers, and numerous examples can be found on the internet. It requires facilities for storage and sale, access to appropriate slaughter and processing facilities and staff time to operate the business. Farm shops provide direct contact with customers, allowing direct communication about wants and needs to ensure these are met by the products on offer. Environmental benefits include the reduction of food miles, while cutting out the "middle man" means competitive prices can be offered. Farm shops also help to sustain other local food chain businesses such as abattoirs and butchers.

8.30 There is currently a farm shop in the south of the valley (Owls Barn Farmshop[32)] which stocks Hereford beef plus lamb, pork and vegetables. There may be potential for another north of Ringwood, where interest has been expressed by two of the Avon Valley farmers in converting a farm building. Research would be required to establish the potential market, and that the existing farm shop's business would not be jeopardised. If a number of valley farmers collaborated to ensure supply, a second farm shop might be feasible. However, significant capital investment to convert the premises would also be required, particularly if butchering on site is intended. The National Farmers Markets and Retail Association (FARMA)[33] is a central body with a remit to help farm shops.

Case Study 2 Purbeck Producers

Purbeck Producers farmers market is run by a group of farmers and producers from within Purbeck, a district to the west of the Avon Valley with a similarly distinct geographic identity. The group states that its products have been produced in an ethical way, by people who care for the environment and the animals they produce "*Food products marketed under the Purbeck Products label are special: in them you can taste the waves crashing on the Purbeck coastline and the wind blowing over the Purbeck hills*".

The group is supported by the Purbeck Keystone Project, a lottery funded partnership initiative hosted by Purbeck District Council, with natural and cultural landscape and outdoor learning objectives for providing a long-term, self-sustainable future for the unique landscapes of Purbeck.

Farmers markets are currently held twice a month in two locations, plus one-off events. The markets are directly run by the producers group. Negotiation within the group ensures that each producer sells an agreed product avoiding duplication. Although the co-operative is badged "a huge success" there is a rather more mixed response from people involved as to how successful this approach is, as considerable negotiation can be required in establishing who sells what and when.

The group has a website www.purbeckproducts.co.uk, which also provides links to enable sales direct from the producer

[32]http://www.owlsbarn.com/
[33] http://www.farma.org.uk/

8.31 Farmers' Markets: A Farmers' Market is one in which farmers, growers or producers from a defined local area are present in person to sell their own produce, direct to the public. All products sold should have been grown, reared, caught, brewed, pickled, baked or smoked or processed by the stallholder" Again, FARMA can offer advice. Environmental, economic and social benefits are very similar to those from farm shops. However, there are extra costs and time involved by the primary producer for selling at Farmers Markets (which may threaten the business if the extra income is not sufficient), and also the need to develop selling skills. Issues include how to sell the less popular cuts of meat, and other options (e.g. frozen meat) may be needed to provide longer term flexibility of supply. Collaboration with other producers is necessarily a part of this approach, which sometimes has its own challenges.

8.32 Box schemes. These are increasingly used in the organic sector, and involve customers buying a regular box containing various meat products (e.g. shoulder roast, leg roast, bacon, chops, steak, mince, burgers) maximising the amount of the carcass than can be sold. The system helps ensure a steady customer base, and provides direct contact with consumers. However, delivery can be costly and time-consuming. Riverford Organic[34] is perhaps the most widely known scheme, and together with its sister farms now delivers to many parts of England. However, smaller schemes are on the increase (e.g. Case Study 3 and 4). Some farms also supply other products including vegetable boxes and poultry.

Case Study 3 Whitney Farm meat boxes

Whitney Farm (73 acres) produces a variety of Somerset beef boxes year round from a small herd of cattle.

"*We rear Red Devon's, Hereford and Aberdeen Angus as we feel that the traditional breeds offer the quality and texture that our customers are looking for. We allow the young calves to mature naturally, resulting in a great taste for our high quality beef boxes*."

The farm also rears geese and has a cider orchard. A secure online farm shop allows sales of free range geese in addition to the boxes, with payment processed through PayPal.

www.whitneyfarm.co.uk/index.php

somerset.greatbritishlife.co.uk/article/goose-farm-somerset-christmas-whitney-15702/

[34] http://www.riverford.co.uk

8.33 **Internet/mail sales:** Often used in conjunction with other initiatives, such as farmers markets, farm shops and box schemes, and easily integrates with these without minimal further capital outlay. It relies on building long lasting relationships with the customer through quality, value and service – success is based on ease of ordering, range offered, price, delivery costs and service, and payment method in addition to the quality of the product. In addition to the issues of how to deal with all components of carcasses and continuity of supply, website design and maintenance and recruiting an electronic customer base must be addressed. Collaboration between farms is a useful way of sharing the workload, particularly if the farms can be linked. For example, two farms on National Trust land near Hadrian's Wall have joined forces to set up a website selling meat boxes from the two farms. They use landscape conservation as a selling point together with meat quality based on slow growth– see Hadrian's Wall Beef and Lamb[35.]

8.34 **Directories**: Food or product directories or are listings, whether in booklet form or on the internet of local produce available, generally, direct from the producer. Directories offer consumers the chance to find out about the local food producers in their area, and producers the chance to advertise to a wide audience. A number of national directories exist such as www.bigbarn.co.uk and www.tasteofengland.co.uk. Some include online shops. More localised directories are also common, and within Hampshire and Dorset these include those hosted by Farms Direct[36], New Forest Marque[37], Hampshire Fare[38] Chalk and Cheese[39], Direct from Dorset[40], and Rural Dorset[41]. Many of these directories offer an inexpensive way of advertising. It is important to establish the costs and any inclusion criteria for entry before committing, and ensure that funding and sponsorship is available for the whole directory to ensure enough copies are printed and distributed/the website is reached by a wide enough audience.

[35] http://www.hadrians-wall-beef-lamb.co.uk/
[36] http://www.farmsdirect.org/Dorset/Dorset.html
[37] http://www.newforestnpa.gov.uk/new-forest-produce/marque_map.htm
[38] http://www.hampshirefare.co.uk/
[39] http://www.chalkandcheese.org/products_food_directory.php
[40] http://www.directfromdorset.co.uk/
[41] http://www.ruraldorset.com/food/local.asp

Case Study 4 The Traditional Beef Company

A small family business based at Parsonage Farm, Farley, Wiltshire which supplies high quality beef direct to the consumer via its website. All the beef produced comes from Aberdeen Angus, Highland and Hereford cattle reared on the farm.

"Our aim is simply to produce the best tasting beef, we only use the old UK breeds renowned for producing the best flavoured beef and allow them to graze on grass and mature slowly.

Carcasses are dry aged for 4-6 weeks, cut to order and vac packed before being sent overnight to customers in specially insulated boxes with ice packs. Customers can order individual cuts and products, or choose from a variety of beef boxes.

The company emphasises high welfare standards and quality.

http://www.traditional-beef.co.uk/

8.35 Community Supported Agriculture (CSA): CSA is a localised food and farming model based on an approach of mutual support between producers and consumers. The variation on the model are numerous, but all involve a food producing enterprise with members who own 'shares' in the harvest and therefore also share in the risk. Production is generally (but not necessarily) according to organic or biodynamic principles and projects often have strong ethics, for example in relation to the environment, financial practices and employment. CSA projects may be producer-lead (and can include farmer cooperatives) or member-lead. The wide range of existing CSA enterprises range from veggie, fruit and meat box schemes (see Case Study 5) to sponsoring apple trees or beehives to artisan bakeries and vineyards.

8.36 There are currently several CSA projects involved with livestock production, including the River Bourne Community Farm[42] at Salisbury, New Daisy Dairy , FutureFarms[43], a co-

[42] www.riverbournecommunityfarm.org.uk

operative set up to supply food to the Parish of St Martins near Fordingbridge, and Tablehurst and Plaw Hatch CSA[44] in Sussex. Further information, support and numerous case studies can be found via the Soil Association website[45]. Launching a CSA would require serious commitment, as it is a significant shift in approach and is multifaceted. However, support is available via the Soil Association, and this innovative approach would be well worth investigating should any of the farmers be keen to explore it.

Case Study 5 Scarborough Shearling CSA

http://www.envoy.uk.net/localfood/shearling.html

Set up by a group of 10 farmers who produce shearling meat from hefted Swaledale flocks on the North York moors. Shearling meat (between lamb and mutton) is not widely known about, and there was previously no regular outlet for it. Each member of the CSA buys one or more shares, each equivalent to a whole shearling. Over the course of eight months (October – May) each member receives the full range of cuts of meat; for instance, one month it might be a leg of lamb, another month, mince and chops. On a designated day each month members collect their meat, conveniently butchered and vacuum packed, from a central Scarborough location. Members also invited to take part in a farm visit and to attend a "Shearling Supper". Welfare, sustainable eating, landscape conservation, convenience, taste and learning new skills are listed as reasons to join the scheme, and producer members are required to adhere to a set of husbandry criteria.

"Nearly two years of slow growth and living free on the varied plants of the North Yorkshire Moors (including bog myrtle, bilberries and moorland grasses) gives this meat its distinctive flavour, which is very different to that of ordinary grass-fed animals. Locally slaughtered and hung, the fine marbling of fat in moorland shearlings makes superb-tasting meals. You won't find shearling meat in a supermarket, and it is only occasionally stocked by a few butchers."

[43] www.futurefarms.org.uk
[44] http://www.tablehurstandplawhatch.co.uk/index.html
[45] http://www.makinglocalfoodwork.co.uk/about/csa/index.cfm

8.37 **Brokering:** The Rare Breeds Survival Trust's Traditional Breeds Meat Market Company Ltd[46] (TBMMC) links TBMMC accredited butchers and producers of meat from traditional breeds. This is generally done through approved finishing units, with the producers selling weaned and store stock meat to the units to be fattened for the butchers. There are also opportunities for direct supplies, although the finishing units take precedence. There is currently no finishing unit in the vicinity of the Avon Valley. The nearest accredited butcher is at Laverstoke Park in Hampshire. A possible future role for TBMM and or a finishing unit could be explored should this become relevant. Independent brokers also exist (see Case Study 6).

Case Study 6 Riverside Beef

Riverside Beef is a recently formed producers group delivering premium quality beef from cattle grazing on conservation grassland. Producers who join the scheme agree that a local fieldsman will select the cattle which go to a farmer owned meat co-operative for slaughter and hanging. In return the producer gets a premium on the normal market price. The meat is then marketed as a product which is supporting nature conservation through a box scheme. Any unsold meat is marketed through the co-operative, mostly as mincemeat to schools and other institutions as part of a normal supply contract. Further details can be obtained by visiting the website www.riversidebeef.com

8.38 Direct sales to retailers: An effective but time-intensive sales technique. Considerable effort is required both to make the initial contacts, and to show the special value of the produce (see Case Study 7). One of the valley farms currently sells British White beef to a local restaurant using this technique. Promotional materials such as leaflets are very helpful, and should tell the story of the produce (including traditional breed, flower-rich pasture, long history of grazing the landscape etc). Activities such as guided walks and tasting events are effective. However, this level of work is likely to need grant aid or an

[46] http://www.tbmm.co.uk/default.asp

external input from a conservation body or other. Continuity of supply can be an issue. Again, this is an area where collaborative working would be beneficial. Natural England have suggested they would be able to help with writing publicity material relevant to highlighting the importance that grazing has to the wildlife of the Avon Valley SSSI.

Case Study 7 Pastures New

Pastures New is a project set up by the Dorset Wildlife Trust to help farmers carry out grassland restoration through livestock grazing. The Trusts' own animals play a role, and Wiltshire horn – Texel/Beulah cross lamb is marketed through local butchers. Although the butchers were sceptical about the special qualities of the meat at first, they were soon reporting that customers were coming back for more, praising its excellent flavour.

To initially interest butchers in the unusual breed, DWT produced leaflets explaining the role of the sheep in nature and landscape conservation, and how the flavour was due to the herb-rich pasture they grazed. The Trust ran guided walks on the sites grazed, and provided taster events.

http://www.dorsetwildlifetrust.org.uk/pastures-new-grassland-management.html

Marketing in the Avon Valley

8.39 Further specialist marketing advice is recommended to assist farmers willing to diversify. However, this will not be possible until it is clear what options farmers may be interested in, and how they propose to proceed. To facilitate this, a workshop looking at niche marketing open to all valley farmers is recommended. This could be run through the New Forest Land Advice Service, using a consultant such as Growing Rural Enterprises[47] who have a proven record of running marketing workshops for conservation grazing businesses. Such as workshop should aim to show farmers what can be possible, provide ideas and inspiration, encourage the idea of collaborative working between farmers, and point them in the direction of further advice and funding. For example, F3 The Local Food Consultants[48]offer up to five days free consultancy for community food enterprises in England, under the Making Local Food Work programme. The Soil Association producer's

[47] http://www.growingruralenterprise.co.uk/index.html
[48] http://www.localfood.org.uk/index.html

advice team can also offer free support to producer members (who do not need to be farming organically to join) on various diversification options[49].

Recommendation 15

Farmers to ask New Forest Land Advice Service to instigate an "Introduction to marketing" workshop. Content will need to be tailored according to the interests of participants, and should signpost sources of further information and advice.

8.40 A local approach to branding could be beneficial in the Avon Valley. The area is currently split between the two existing marques, neither of which currently provides much benefit to the valley farmers. Such a brand could exploit the "sustainability" story in the valley, and include landscape, nature conservation, cultural history and the high quality of beef grazing semi-natural swards. Individual farms may also be interested in traditional breed, carbon neutral and organic branding. Development of such a brand would require considerable collaboration between the farms involved. Advice should be sought on accreditation issues and a cost benefit analysis undertaken before proceeding.

8.41 Inability to provide continuity of supply was cited by several farmers as the reason they were unable to meet the requirements of specialist butchers and restaurants. The location of the Avon Valley adjacent to the New Forest, a popular tourist destination, suggests that there are likely to be restaurants and hotels interested in buying locally produced, high quality meat. One innovative famer in the valley has been able to make arrangements with a local restaurant on the basis that it will buy a side of beef every time one of their animals is slaughtered. While a lot of footwork would be involved in establishing sufficient contacts, continuity of supply could also be assured by several farmers collaborating together. Such a project would probably need an assigned co-ordinator to ensure a favourable outcome for all participants. Use of a broker is another possibility, but obviously requires someone with suitable interest and experience to step forward.

8.42 One of the issues with using traditional breeds (which may, depending on the background and experience of the individual animals used, be best suited to grazing the Avon Valley in the future) is finishing stock. Significant effort will need to be put into sales of store animals if finishing proves difficult in the long term on particular farms without access to

[49] Contact Astrid Toner at the Soils Association for further information

land outside the valley. Options include a brokering service and setting up a finishing unit – again, both need would be dependent on someone stepping forward and possibly significant investment depending on their starting position.

9. The way ahead

Introduction

9.1 There are various options which may go some way to offsetting the problems described in earlier sections, at least in the short term. It is recognised that much depends on the willingness of the farmers themselves to adapt, and while there are no easy solutions, there are ways forward. Here we concentrate on aspects relating directly to land management and meat production. Other forms of diversification (i.e. broadening the activities of the business into other new potentially money making ventures to provide the means to carry on farming) may also have a key role for some of these farms in the future. Indeed some are already doing so (e.g. horse livery, renting out accommodation etc.). Further advice on farm diversification can be obtained from Business Link[50] (a national advice service which provides business information and access to a wide network of business support) in the first instance.

9.2 There are a number of measures that we suggest Natural England, Environment Agency, the New Forest Land Management Advice Service and the valley farmers could take to increase the likelihood that extensive livestock farming continues within the Avon Valley. Specific recommendations have been made in text boxes throughout the report, and are summarised in Table 5. Here we discuss general themes which have emerged and recommendations relating to these.

Hydrological change

9.3 In some parts of the valley changes to the species rich hay meadows and wader populations may be inevitable in the long term as wetter conditions prevail and as sea level rise further complicates the situation. An assessment of the long term prospects in different parts of the lower valley for maintaining meadowland or allowing some areas to revert to fen would help to inform future actions and priorities. Higher up the valley, the possibility of migrating wader and plant populations from lower down needs also to be borne in mind.

9.4 In wetter areas where changes are likely to be more rapid and where reversion to fen may be inevitable in the medium term (depending on management), both farmers and others will need to consider alternative forms of land use. This may be some form of amenity or wildlife conservation land use and could encompass a change in land ownership patterns

[50] http://www.businesslink.gov.uk/bdotg/action/layer?r.s=m&r.l4=1083582801&r.l1=1081597476&r.lc=en&r.l3=1083731935&r.l2=1082184851&topicId=1083731935

or long leasehold arrangements with bodies representing these interests. Natural England, with its knowledge of the valley, conservation expertise and links with both farmers and landowners and with amenity and conservation institutions could take a lead in facilitating this process.

Recommendation 16

On those parts of the lower valley where increased wetness will bring an almost inevitable change to conditions unsuitable for farming, NE will help guide owners/occupiers achieve an ordered programme of change in the best interests of the affected farmers and the flora and fauna.

Stock handling

9.5 As the farming community gets older, it is likely that more and more of the valley land will be let on annual grazing licences, possibly to farmers outside the area. Elsewhere, where the owners of large areas of wet grassland do not farm themselves, grass lets are provided which include a stock management service. This allows graziers from elsewhere to deliver stock which are looked after by others and returned at the end of the grazing season, while for the landowners, the burden of looking after either the stock provided by a grazing licensee or their own stock is passed on.

9.6 If a number of farmers in the valley combine to employ a cattleman then this system could work here, as it does elsewhere. The cattleman would have responsibility for taking delivery of the animals, providing a lookering service which would include moving animals around, simple vet and med, and over-seeing their general welfare. At the end of the season the owner would collect them.

Collaboration

9.7 One of the themes that has arisen in almost all the issues discussed in this report is that of collaboration between the farmers in the valley. Shared marketing opportunities (such as branding, and combined direct sales), sourcing hay and livestock, advertising and requesting additional grazing or hay-making land, the establishment of machinery rings or a shepherding service and collaboration between landowners and tenants are all dependent on increasing the level of communication and cooperation within the community. The Avon Valley is a self-contained area, a little isolated from the New Forest on one side and the Bournemouth conurbation and urban heaths of Dorset on the other. Its geography perhaps reduces the opportunities for easy communication and collaboration both along its length and from one side to the other, there being few crossing places. There is of course already a degree of co-operation between many of the farmers, particularly with regard to hay cutting. However, any means of increasing this can only benefit the farming community of the valley.

9.8 A focus is needed for the Avon Valley farmers to allow them to keep in touch with one another and events, and to explore possible collaborative projects. A straightforward way for other interested parties such as NE and EA to communicate to the community as a whole is also required if many of the recommendations suggested in this report are to be effective. We suggest three possible means of doing this, that should work synergistically :

- Re-instigating an Avon Valley Newsletter, that could be circulated at regular intervals to all farms within the Avon Valley. This would provide an opportunity for farmers to share experiences, requests and offers plus serve as a vehicle for communicating to the farming community as a whole. It may be best if this were produced from within the farming community - we suggest NFU could play a lead role here. The possibility of such a newsletter will be discussed at the workshop to be held by Footprint Ecology in late January, and progressed from there.
- Regular events allowing face to face contact and disseminating information as suggested in the recommendations in this report (e.g. farm visits and workshops on use of traditional breeds, marketing, water management etc). A programme of events could be worked up between the farmers, the New Forest Land Advise Service, and NE, and run by the New Forest Land Advice Service using specialist advisers.

Recommendation 17

Collaborative working between farmers supported through an Avon Valley newsletter, email group, website and programme of events.

- An online discussion forum, either based on a website, or a stand-alone forum e.g. hosted by google, or yahoo, would enable farmers to communicate readily and ask questions to the whole group in a time-efficient way. Again, this will be raised at the workshop to establish whether there would be sufficient interest. A stand-alone forum would be free of charge and could be set up in a very short space of time. A website could be useful if branding or other collaborative marketing opportunities are progressed, but would require funding. For example, a basic website (not including sales facilities) might cost in the region of £1000 (domain name, hosting, and website design) but of course would be highly dependent on the complexity of the site. Ongoing costs would depend on whether there were the required IT skills within the group to maintain the site, and would include around £100 per year for hosting.

Higher Level Stewardship

9.9 It is likely that HLS will remain a fundamental component of the farming system within the Avon Valley. Several of the recommendations in this report include HLS funding, and while amendments have been suggested, it is recognised that HLS has a significant role to play in allowing the farming system of the valley to adapt to change.

Recommendation 18

It is essential that the Avon Valley is prioritised with HLS funds and that commitments are made to those funds, in order to ensure that special projects, capital works and amendments to HLS agreements can enable the valley farmers to keep the SSSI in favourable condition.

Vision for the future –25 years from now

The Avon Valley still floods in winter as it has always done, and low lying areas can also flood in summer. Removal and simplification of the system of hatches and sluices has returned much of the valley to a more natural system, and help from the statutory agencies has restored the river and maintained the conservation grasslands, breeding waders and fish populations. Fishing is still a popular activity in the main river. The information centre features a display showing the old water meadow management in the valley, to which a number of local farmers and landowners have contributed their knowledge and expertise

Large parts of the valley are still traditionally managed with haylage cutting and grazing by beef cattle, many of them traditional breeds. The valley has a strong reputation for producing high quality meat through its marketing cooperative and supplies not only a valley retail outlet but also a range of local restaurants and other outlets and has links through other meat wholesalers to local hospitals and schools.

A number of both active and retired farmers and landowners let a large parcel of valley land for grazing through a cooperative venture which provides a lookering service to graziers. Both this and the marketing cooperative are run by a manager on behalf of the farmers and landowners. There is keen competition from graziers who send animals from adjoining counties for summer grazing. Some of these animals are wintered on the heaths and forestry adjacent to the valley.

There is a thriving machinery ring with a part time manager and a membership extending into other areas of Hampshire and Dorset, offering access to machinery and labour and many other services for local farmers and contractors. A number of local people including farmers and landowners have diversified into holiday accommodation with a joint enterprise which offers fishing, birdwatching and canoeing holidays in the valley which is already highly popular.

In the wettest parts of the valley, there is a wetland nature reserve with a wide variety of wintering and breeding birds which has been set up in a partnership between a conservation body and local landowners and has links to the holiday accommodation enterprise. There is also a water buffalo enterprise selling meat through the marketing cooperative.

10. Summary of recommendations

Table 5 Summary of recommendationssummarises the recommendation made throughout this report according to their context, and who needs to take them forward. The Avon Valley think tank group created as part of this project by Natural England will hold responsibilities for these actions.

Table 5 Summary of recommendations

No.	Recommendation	Issues addressed	Lead
1	NE to consider agreeing special projects on individual farms or groups of farms to assess hydrological measures (such as installation or removal of structures, restoration of watercourses, installation of new drainage channels, removal of woodland or scrub) to mitigate on a local scale for potential summer flooding problems. This should be done in a way that provides suitable conditions for featured flora and fauna, minimises the need for new structures, provides simple water management mechanisms and covers larger areas to give best value for money.	Water management	NE
2	That EA (i) expedite the institution of hatch operating protocols and monitor their effectiveness and (ii) carry out an assessment with NE of hatches and sluices to determine whether any structures should be removed to reinstate a more natural hydrological regime for the benefit of farming systems and wildlife and where removal would not increase flood risk.	Water management	EA

No.	Recommendation	Issues addressed	Lead
3	NE to continue discussions with EA over proposals and options (including those within the Water level Management Plans) for restoration of the main river and other watercourses and promote measures that could help reduce the probability of summer flooding, including the removal of structures, clearance of obstructions to watercourses and continued maintenance of former IDB drains.	Water management	EA, NE
4	Alternative methods for sourcing hay to be explored by Avon Valley farmers, including contacting the conservation grazing sector, and use of online facilities (see 6.3).	Forage crop	Farmers
5	Farmers looking to over-winter livestock outside the Avon Valley to talk to Dorset Urban Heaths Partnership and Forestry Commission about potential for outwintering valley livestock on the Dorset urban heaths and forestry sites. (NE will facilitate first contacts if required)	Forage crop	Farmers
6	Natural England to review HLS prescriptions on agreements in the valley and specifically to re-consider the differences that may exist between different fields within the same prescription. In particular NE to also consider the timing of hay cuts and amount of land to be cut in any year. Farmers and NE to ensure full understanding of the requirements of both parties and the process to request derogations.	Forage crop	NE, Farmers
7	That in relation to the requirements of HLS on tenanted land where payments go to the landlord that: • NE encourage landlords to fully explain the scheme requirements to tenants	Forage crop	NE, NFU

No.	Recommendation	Issues addressed	Lead
	• That Tenants be encouraged by NFU to ask about the requirements and the opportunities available to them under HLS • That NE make clear to whichever party receives the payments their responsibilities for meeting scheme objectives, and takes appropriate action when they are not • That the example of West Sedgemoor (see case study below) is made available by NE to Landlords who may find it useful in achieving HLS outcomes.		
8	That farmers seek advice and help from the Machinery Ring Association of England and Wales to assist them in investigating the possibility of setting up a machinery ring and help from New Forest Land Advice Service to arrange a demonstration day with the types of machinery that could assist in future farming in the valley.	Forage crop	Farmers
9	New Forest Land Advice Service to be asked to facilitate workshop for Avon Valley farmers to explore the breeds and background of stock suitable for grazing the valley floodplain meadows in the future, and to arrange farm visits to herds.	Livestock	Farmers, NFLAS
10	NE to make greater use of HLS difficult sites supplements in the valley e.g. at sites where the cost of bTB testing for livestock moving on/off ungrazed sites is prohibiting grazing.	Livestock	NE
11	NE to encourage use of HLS special project grants if possible for holding facilities where inadequate equipment for bTB tests is prohibiting grazing.	Marketing	NE
12	NE to publicise findings about the quality of meat from traditional breeds raised on semi-natural pasture to Avon Valley farmers e.g. through articles in an Avon Valley newsletter (see section 8).		NE

No.	Recommendation	Issues addressed	Lead
13	Farmers to seek advice from Business Link for exploring how to secure enlarged hanging facilities and the creation of an abattoir in the Valley (potentially Owls Barn Farm might offer a suitable site if the owner is interested in promoting this).		Farmers, Business Link
14	Increase engagement with New Forest Marque, including training and networking opportunities.	Marketing	NFLAS, farmers
15	Farmers to ask New Forest Land Advice Service to instigate an "Introduction to marketing" workshop. Content will need to be tailored according to the interests of participants, and should signpost sources of further information and advice.	Marketing	Farmers, NFLAS,
16	On those parts of the lower valley where increased wetness will bring an almost inevitable change to conditions unsuitable for farming, NE will help guide owners/occupiers achieve an ordered programme of change in the best interests of the affected farmers and the flora and fauna.	Future	NE, Farmers
17	Collaborative working between farmers supported through an Avon Valley newsletter, email group, website and programme of events.	Collaborative working	Farmers, NFLAS, NE
18	It is essential that the Avon Valley is prioritised with HLS funds and that commitments are made to those funds, in order to ensure that special projects, capital works and amendments to HLS agreements can enable the valley farmers to keep the SSSI in favourable condition.	Future	NE

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Appendix 1 Cattle breeds

Table 6 Key characteristics of UK cattle breed types for conservation grazing (based on Tolhurst and Oates 2001 and Crofts and Jefferson 1999).

Key characteristics	Upland beef breeds	Lowland beef breeds	Lowland dairy	Dual purpose
Examples of breeds	Highland, Galloway, Welsh Black, Red Devon and Vaynol (Welsh)	Hereford, Aberdeen Angus, Sussex, and Lincoln Red.	Holstein, Ayrshire, Jersey, Guernsey and Kerry.	Red Poll, Shetland, Dexter, original Shorthorn
Hardiness	Hardy and thrifty, able to do well on poor quality swards	Moderately hardy and thrifty where some good keep in included in grazing area	Reliant on high quality pastures for milk production. Some breeds (e.g. Jersey, Kerry) can be very effective grazers of coarse vegetation when not in milk production Some are also very hardy (e.g. Kerry)	Hardy, thrifty breeds, which when not being kept for milk production
Size and weight	Small – medium, less likely to damage sensitive swards.	Medium	Large ranges. Small breeds (e.g. Jersey, 350kg) useful on sensitive or wet sites	Range in size and weight, (e.g. Dexter 360kg, Red Poll 450kg, original shorthorn 600kg).
Handling	Some breeds may be flighty and difficult to handle. Strong maternal instinct.	Generally placid temperament, easy to handle.	Generally adapt well to handling and become placid; young stock may be flighty.	Generally adapt well to handling and become placid.

Key characteristics	Upland beef breeds	Lowland beef breeds	Lowland dairy	Dual purpose
Growth	Slow growing and late maturing, less likely to be able to finish within 30 months unless given supplementary feed or finished on improved grazing.	Fast growing and early maturing, possible to finish within 30 months without too much supplementary feed.	In general require supplements or plenty of good grazing to maintain condition.	Moderate/good growth rate: fatten well on good grass; some breeds may finish within 30 months on semi-natural swards with little supplementary fed.
Conformation (carcass quality)	Moderate- good, local or niche markets for meat often used.	Good	Generally poor	Moderate – good

Appendix 2 Native breeds

Table 7 Native breeds eligible for the native breeds at risk supplement under HLF.

Native breeds at risk	
Aberdeen Angus[1]	Irish Moiled
Beef Shorthorn	Jersey[2]
Belted Galloway	Lincoln Red
Blue Albion	Longhorn
British White	Luing
Chillingham	Northern Dairy Shorthorn
Diary Shorthorn[1]	Redpoll
Devon	Shetland
Dexter	Sussex
Galloway	Swona
Gloucester	Vaynol
Guernsey[2]	Whitepark
Hereford[1]	Whitebred shorthorn
Highland	

[1]Pedigree-registered animals listed as being part of an 'Original Population' of that breed, usually in a separate 'closed' sub-register of the breed society's herdbook. [2] 'Island' means pedigree-registered animals listed as being part of the 'Island' population of that breed, usually in a separate 'closed' sub-register of the breed society's herdbook.

Appendix 3 Cattle breeds for wetland sites

Table 8 Characteristics of breeds known to be used in similar wetland habitats (based on Tolhurst and Oates 2001 and RSPB breed profiles)

Key characteristics	Traditional Hereford	Galloway	Dexter	Shetland	Red Poll	Water Buffalo
Appearance	Red body, characteristic white face, white stripe from the neck to the withers and patchy white under parts.	Broad white belt around its otherwise black or dun body.	Red, black or Dun, may have small amounts of white on the underside behind the navel and on the tip of the tail. Horned.	Commonly black and white, but may also be red and white. Horned.	Dark red body, white tail and some white on udder. Pink nose	Large head and body, leathery grey/black/dun skin, characteristic spreading horns
Hardiness	Hardy, maintains good health on poor forage may need some hay or feed if outwintered.	Very hardy, prefers to outwinter, likely to need minimal amounts of hay/feed.	Very hardy, can outwinter satisfactorily, agile on rough ground.	Hardy, adapted to poor grazing. Able to outwinter.	Very hardy and able to maintain well on poor forage. Tolerant of heat and cold.	Fairly hardy, requires good shelter in wet/windy weather. Supplementary feed likely to be minimal on sites with plenty of forage – mineral licks may be needed.

Key characteristics	Traditional Hereford	Galloway	Dexter	Shetland	Red Poll	Water Buffalo
Husbandry & attributes	Docile, adaptable, easy calver, strong mothering instincts. Compact, short-legged.	Usually docile, easy to handled, polled. Some may kick. Not particularly susceptible to flies, ticks etc.	Very small, generally docile and adaptable, Short period in season, may need to run with bull. Hooves may need trimming on soft ground	Easy to handle, quite small (calves very small), fine-bones and short-legged, very easy calving.	Small to medium, young may be flighty, good feet, calving problems rare.	Very large. Placid but timid, may startle easily. Thick skinned, big feet. Standard vet can be used. Stronger fences with lower wires needed compared to cattle. Strong swimmer, likely to go through still/moving water up to and possibly beyond 1m deep. Must have wallowing pools up to neck depth.
Grazing Characteristics	Non- fussy, but prefers herb rich swards. Readily takes coarse vegetation, including rushes	Not particularly selective, appears to take broad range of vegetation including coarse	Strongly grass-based, consumes a wide range of grasses	Takes a wide variety of grasses, and coarse herbs, takes rushes in	Not fussy, readily eats coarse grasses and herbs and young/topped rushes. Will	Readily takes coarse vegetation including reeds and rushes. Nibbles like

Key characteristics	Traditional Hereford	Galloway	Dexter	Shetland	Red Poll	Water Buffalo
	as other forage decreases.	herbs and grasses		some situations	graze through water on marshes.	sheep rather than tearing like cattle.
Marketability	Traditional, popular meat breed, fattens readily on semi-natural swards. Branded scheme exists (Waitrose)	Able to produce lean tasty meat off rough pasture, may need to be fattened on improved pasture to finish within 30 months	Excellent quality marbled meat. May need good keep to fatten readily.	Good flavour. Good growth rates on good grazing	Produces tender and well flavoured beef. Likely to need supplementary feed to finish by 30 months if on poor swards	Increasing niche market for buffalo meat. Very lean with "rich old fashioned flavour"