



Cumulus Consultants Ltd

**High Nature Value farmland in
Rural Development policy**

South Devon Case Study

Report for

**European Forum on Nature Conservation
and Pastoralism**

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Report Prepared for

European Forum on Nature Conservation and Pastoralism

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Glossary

AES	Agri-Environment Scheme
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
CAP	Common Agricultural Policy
CSS	Countryside Stewardship Scheme
CWS	County Wildlife Site
DWT	Devon Wildlife Trust
ELS	Entry Level Stewardship
ENRD	European Network for Rural Development
EU	European Union
FBI	Farm Business Income
FBS	Farm Business Survey
FWAG	Farming and Wildlife Advisory Group
HAT	Holding Assessment Toolkit
HLS	Higher Level Stewardship
HNV	High Nature Value
HNVF	High Nature Value Farmland
LCT	Landscape Character Type
NE	Natural England
NNR	National Nature Reserve
OELS	Organic Entry Level Stewardship
RDPE	Rural Development Programme for England
RLR	Rural Land Register
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SPS	Single Payment Scheme
SSSI	Site of Special Scientific Interest

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Introduction

This case study is part of Phase 2 of the Devon High Nature Value (HNV) farming project. It is one of four case studies¹ that build on the work carried out in Phase 1 (see main report).

In Phase 1 the project aimed to clarify what is HNV farmland, where it is, and how much there is, in the case study areas. The project explored what data and methods can be used to identify this farmland, and its approximate location and extent, in the case study areas.

This was not intended to be a precise scientific exercise. Rather it was a process of trial and error, to see what can be done to identify broad areas of HNV farmland initially using nationally available data sources. Local data were to be used only where necessary. However, a strong input of local knowledge is needed for ground-truthing the assumptions used and the data available at national level.

The Phase 1 work considered different approaches to identifying HNV farmland, based on experience at national and EU levels and on the guidance produced by the European Evaluation Network for Rural Development Help Desk. These can be summarised as:

- The land-cover approach (identifying types and patterns of land cover that can be expected to support HNV).
- The habitats and species approach (mapping the location of concentrations of habitats and/or species of conservation concern).
- The farming systems approach (identifying and mapping farm types than have characteristics normally associated with HNV, such as low livestock densities).

The project partners concluded that these approaches, using existing databases, do not allow a sufficiently robust identification of HNV farmland in the Devon case study areas, for various reasons:

- Landcover UK 2000 is not produced at sufficiently high resolution; the 2007 version is much higher resolution but is not yet available.
- Habitat inventories include only Biodiversity Action Plan (BAP) priority habitats (there is a consensus among the project partners that such inventories do not represent the total extent of semi-natural farmland in its wider sense), and the data are often quite old.
- Species data are not sufficiently consistent either geographically or across taxa, and the spatial resolution is also too crude in most cases.
- Data on farming characteristics are not readily available at a sufficient spatial resolution and would need to be tested against an initial interpretation of which areas of farmland can be considered HNV on ecological grounds.

The project therefore turned to aerial photos to see if these would allow the identification of a wider spectrum of semi-natural farmland. The answer seems to be that they do, as the unimproved and semi-improved farmland has a distinct “rough” appearance on the

¹ Blackdown Hills, South Devon, Culm, Dartmoor

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photos. Local knowledge confirmed that the areas apparent from this visual interpretation of the photos correspond with farmland areas considered of most nature value. It was noted also that these semi-improved habitats linked many of the BAP priority habitat areas and/or were located in the same landscape units.

The project partners decided to produce indicative maps of HNV farmland for the case study areas on the basis of visual interpretation of aerial photos. These indicative maps aim to capture a contiguous area of HNV farmland for each case-study area. More details on the characteristics for the case study area are presented in this report.

Phase 1 was successful in establishing for the case study areas a “baseline” of HNV farmland, as intended under the EU indicator for monitoring rural development programmes.

Under the Phase 2 case studies, the project analysed the characteristics of farming on the HNV “baseline” area, the tendencies and needs of this farming from the perspective of maintaining nature values, and the effectiveness of current policies.

Thus the aim of Phase 2 was to address the following questions in each case study area:

- Can we characterise the different farming systems or farm types that currently support HNV farmland (e.g. in terms of production sector, production systems, management practices, farm size, ownership, etc.)?
- How are these farming systems or types likely to evolve in future e.g. intensification, abandonment, change of land use?
- What are the main factors influential in maintaining HNV farmland e.g. policy and socio-economic trends but also e.g. hobby farmers, tourism, personal motivation of certain farmers?
- What are the key issues that need to be addressed on the ground, in order for HNV farmland to be maintained? This includes social and economic questions, but also practical issues such as the availability of livestock to graze small, awkward fields, and how such activities can be organised and continued.
- To what extent does the current package of policy measures ensure the maintenance of HNV farmland e.g. Pillars 1 and 2 of CAP, BAP, NI197 etc.?
- Are current measures effective in maintaining the relevant farming types and practices and their associated nature values? Are the design, coverage, delivery and resources of measures sufficient?

In the final stage (Phase 3 – see main report) the project considered how current policies (especially RDPE) can be improved to ensure that nature values are maintained on farmland within the HNV baseline areas.

1 Farming and Environment in the South Devon AONB

1.1 Description of the South Devon Landscape and Environment

The South Devon Area of Outstanding Natural Beauty (AONB) covers 337 square kilometres (33,700 ha) of the South Devon coastline, estuaries and countryside. The South Devon AONB Management Plan 2009-2014 describes the area as follows:

“The South Devon AONB consists of an undeveloped ria coastline and rural hinterland with a fabulously diverse landscape ranging from windswept coastal plateaux, cliffs and beaches to river valleys and slopes, steeply sloping combes, intricate field patterns amongst rolling farmland, and settlements ranging from busy market towns to isolated farmsteads and villages”

The South Devon AONB contains a high concentration of significant wildlife habitat, relative to lowland farmed landscape of the South West peninsula as a whole. The distribution and character of this habitat is directly correlated with the limitations of the landscape for intensive farming, with the most biodiverse areas being associated with coastal plateaux and estuary valleys.

The key landscape and environmental features are set out in the South Devon AONB Management Plan 2009-2014. There are 12 Landscape Character Types (LCT) in the AONB, a summary of characteristic features of the LCTs, together with key farming and environmental characteristics relevant to this study are given in Table 1-1.

Ref	Landscape Character Type	Key Characteristics
LCT 1B	Open Coastal Plateaux	High, open plateaux up to 130m, dissected by combes and river valleys Windblown vegetation and limited deciduous woodland Regular medium to large field pattern Stone boundary walls and dense low hedges (often elm) with occasional hedgerow oaks Mixed land use, with frequent arable
LCT1D	Inland undulating uplands	Gently rolling upland plateau spine with fingers, sloping steeply towards edges Mixed cultivation, with grassland in a medium regular pattern on slopes and arable cultivation on flatter central areas, with low hedges and few hedgerow trees Wide low hedge banks with few hedgerow trees; pine and beech locally distinctive Small discrete conifer plantations and broadleaf woodlands High and open, with extensive views where hedge banks permit
LCT2B	Coastal scarp slope and combes	Narrow, steep valleys or more open shallow systems Coastal influence in exposure, vegetation and extensive views Unenclosed woodland and small to medium irregular fields Mixed cultivation with much grassland, wet pasture and scrub Wide earth banks, stone boundary walls and gateposts High, open and exhilarating on top slopes, grading to intimate and enclosed in lower valley
LCT2C	River valley slopes and combes	High slopes, rounded hills and small narrow valleys Mixed cultivation, predominantly pasture in variable fields with curving hedges and variable presence of hedgerow trees Broadleaf woodland to water's edge and discrete small woods elsewhere Very narrow stream valleys with rough pasture and dense field boundaries; rough grazing pasture near the river
LCT2E	Steep wooded settled scarp slopes	Land immediately below the plateau edge Unenclosed Well wooded Enclosed, with occasional long views out over adjoining valley Scrub and moorland at western end, showing coastal influence

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LCT3A	Upper farmed woodland slopes	Undulating upper valley slopes below the scarp slope Well treed pastoral farmland, with arable cultivation on lower slopes Small to medium size fields with irregular boundaries Deciduous woods and copses, especially on hilltops and upper slopes Very wide, usually low, species-rich hedges with many hedgerow trees An intimate and intricate landscape with views out confined by vegetation
LCT3B	Low rolling farmland and settled slopes	Gently rolling landform, sloping up from valley floor Variable size fields with wide, low boundaries and irregular pattern Pastoral land use, often with wooded appearance Many hedgerow trees, copses and streamside tree rows Streams and ditches
LCT4A	Unsettled farmed valley floor	Open flat landform, often with distinct vegetated floodplain edge Shallow watercourses screened by riparian vegetation Hedges, not banks, generally on the boundary with rising land Pastoral land use, with wet meadows and some arable, with variable field sizes Unsettled Open internally, with views out screened by boundary vegetation
LCT4B	Unsettled marine levels	Flat unsettled river valley, occasionally with sand or gravel bar at mouth Marine influence on terrestrial habitats, such as reedbed and saltmarsh Unsettled and unenclosed Traditional floodplain habitats of high biodiversity value Open water
LCT4C	Estuaries	Estuary mouth and lower river Large sandy bays with low headlands and rock outcrops to edge Open water and intertidal sands grading to mudflats and reed-bed upstream Enclosed and sheltered by low cliffs and woodland
LCT4D	Lowland Plains	Level to gently rolling plains Mixed farmland, with arable just dominant and many other land uses, including extensive extractive industry Irregular medium to large-scale field pattern Very treed field boundaries with low roadside hedges Small discrete woodlands and linear amenity planting
LCT5	Coastal Cliffs	Heavily incised near-vertical to steeply sloping cliffs Rock spurs and outcrops around sandy bays or small valleys Less steep upper slopes support scrub, heath and pastoral farmland Open and unenclosed, exposed to the weather Woodland and settlement in sheltered pockets

Source: South Devon AONB Management Plan 2009-2014

Table 1-1: Landscape Character Types and Key Characteristics

The geology, soils and hydrology of the area has shaped both the landscape and biodiversity seen today. South Devon is underlain by Devonian Sandstone, shale and slate with distinctive schists around Start Point and Prawle Point. Igneous rocks occur sporadically along the coast giving rise to prominent outcrops as weathered Tors including Sharp Tor at the mouth of Salcombe-Kingsbridge estuary and St Anchorite’s Rock near Mothecombe. Devonian limestone is evident at Berry Head east of Brixham.

Distinctive red-tinted soils are a particular feature of the area and are predominantly brown earths. The Rivers Dart, Avon, Erme and Yealm rising on Dartmoor to the north, have cut significant valleys through the landscape. Tidal and coastal influences are seen in the ria estuaries, the result of earlier sea level rise and subsequent inundation. Coastal processes continue to shape a largely undeveloped 97km of coastline.

The AONB is a “cultural landscape” shaped by millennia of maritime and farming traditions: an ancient tapestry of fields, Devon hedges and green lanes with an irreplaceable seam of historic and archaeological remains.

Key heritage features of the AONB include:

- Prehistoric field systems, drovers' tracks and ridgeways, burial mounds, earthworks, hut circles, settlement enclosures, Iron Age hillforts, farmsteads, deer parks, rabbit warrens, quarries and country estates. Many archaeological finds, such as stone and flint tools, also provide evidence of sites no longer surviving in earthwork form.
- The AONB has 61 Scheduled Monuments, 1,247 acres (505 hectares) of registered Historic Parkland at six sites, 42 historic Conservation Areas and 1,289 Listed Buildings.
- The majority of the AONB's villages and settlements date back to the 14th Century.
- The present day landscape still preserves field systems of exceptional interest and complexity.

This varied and high quality landscape supports a wide diversity of environmental features. The key features of the South Devon AONB are set out in the South Devon AONB Management Plan 2009-2014, which describes the area as *'supporting an outstanding range of habitats, wildlife and geological features – ranging from saltmarshes, reed beds and eelgrass to hedge banks, oak woodlands and coastal grasslands; and from sea arches, wave-cut platforms, crags and cliffs to dunes, shingle ridges and mudflats'* The diversity and intricacy of landscape types across a relatively small area supports 29 out of the 56 habitats of principle importance in England

The most significant of these – including BAP habitats and species - are shown in Table 1-2.

Habitat	Characteristic Species
Grassland and Heath	
Coastal and floodplain grazing marsh	Grazing marsh supports populations of wintering wildfowl including snipe, lapwing and curlew. In general the interest of grazing marsh lies in the water bodies and not particularly in the grassland, however the rarity dwarf-spiked rush, which appears on the threatened plants database, occurs within floodplain grazing marsh in South Devon. The ditches are especially rich in plants and invertebrates.
Lowland dry acid grassland	Characteristic plant species include Heath bedstraw, sheep's-fescue, common bent, sheep's sorrel, sand sedge, wavy hair-grass, bristle bent and tormentil. Bird species of conservation concern which utilise acid grassland for breeding or wintering include nightjar, skylark, green woodpecker, hen harrier and merlin. A number of rare and scarce invertebrate species are associated with the habitat, some of which are included on the UK Biodiversity Action Plan list of species of conservation concern.
Calcareous grassland	Lowland calcareous grasslands restricted to the Berry Head support a very rich flora including many nationally rare and scarce species such as bee orchid, small hare's ear, honewort, white rock rose and goldilocks aster. Typical species include meadow oat-grass, quaking grass, rockrose, salad burnet, stemless thistle and hawkweed. Invertebrate fauna is also diverse and includes the common blue butterfly. These grasslands also provide feeding or breeding habitat for a number of scarce or declining birds including skylark.

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Lowland Meadows	Includes most forms of unimproved neutral grassland across the enclosed lowland landscapes. Flowering plants include Dyer's greenweed, green-winged orchid, greater butterfly orchid and pepper saxifrage Silaum silaus. Lowland meadows and pastures are important habitats for skylark and a number of other farmland birds.
Lowland Heathland	Heathers and dwarf gorses predominate. Lowland heathland is a dynamic habitat which undergoes significant changes in different successional stages, from bare ground (e.g. after burning or tree clearing) and grassy stages, to mature, dense heath. These different stages often co-occur on a site. The presence and numbers of characteristic birds, reptiles, invertebrates, vascular plants, bryophytes and lichens are important indicators of habitat quality. The Silver-studded blue butterfly is a particular rarity associated with this habitat in South Devon.
Maritime and Estuary	
Cliffs and slopes.	The vegetation of maritime cliff and slopes varies according to several factors: the extent of exposure to wind and salt spray, the chemistry of the underlying rock, the water content and stability of the substrate. The dominant grass is red fescue however, on exposed hard cliffs giving little foothold to higher plants, lichens are often the predominant vegetation. Ledges on such cliffs support a specialised flora with species such as hairy bird's foot trefoil and Portland spurge, rock samphire, rock sea spurrey, maritime species such as thrift, sea plantain, buck's-horn plantain, wild carrot, autumn squill and bloody cranesbill. Maritime cliffs are often significant for their populations of breeding seabirds and Berry Head supports the largest breeding colony of guillemots along with shag, kittiwakes and fulmars. Birds favour cliff side nesting locations and peregrine falcons both nest and feed at numerous cliff sites along the South Devon coast.
Sand dunes, salt marsh and sea grass beds	Sand dune vegetation forms a number of zones, which support very few plant species, the most characteristic being marram grass. Saltmarsh vegetation consists of a limited number of halophytic (salt tolerant) species adapted to regular immersion by the tides. Saltmarshes are an important resource for wading birds and wildfowl. Three species of Zostera occur in the UK, Dwarf eelgrass is found highest on the shore, often adjacent to lower saltmarsh communities, narrow-leaved eelgrass on the mid to lower shore and eelgrass predominantly in the sublittoral. Eelgrass is an important source of food for wildfowl, particularly brent goose and widgeon which feed on intertidal beds, while the shelter provides habitats for many fish species.
Mud flats and reed beds	Mudflats are characterised by high biological productivity and abundance of organisms, but low diversity with few rare species. Mudflats are highly productive areas which, together with other intertidal habitats, support large numbers of predatory birds and fish. They provide feeding and resting areas for internationally important populations of migrant and wintering waterfowl, and are also important nursery areas for flatfish. Reedbeds are wetlands dominated by stands of the common reed. They support a distinctive breeding bird assemblage including nationally rare Red Data Birds the bittern, marsh harrier and Cetti's warbler. This habitat provides roosting and feeding sites for migratory species

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	(including the globally threatened aquatic warbler) and are used as roost sites for several raptor species in winter. Five GB Red Data Book invertebrates are also closely associated with reedbeds including red leopard moth and a rove beetle.
Woodland	
Lowland mixed deciduous woodland including Oak woodland and lowland beech and yew woodland.	Common tree species include oak, hazel, holly, rowan, beech yew, whilst ground flora often includes primrose, wood anemone, wood sorrel, bluebell, dogs mercury, cow-wheat and hard fern, particularly in ancient woodlands. Silver-washed fritillary used to be associated with the area, also using interconnected wooded hedgerows and sheltered lanes, but the species has seen a retreat to a few key locations over the last 100 years.
Wet woodland	Usually with alder, birch and willows as the predominant tree species, but sometimes including ash, oak, pine and beech on the drier riparian areas. There are a large number of invertebrates associated with alder, birch and willows. Otter may use wet woodlands for breeding sites.
Corridors	
Hedgerows and hedge banks	Blackthorn and hazel tend to dominate but hedgerows comprise a wide variety of woody species including ash, hazel, oak, hawthorn, spindle, holly and beech. Primrose dominate in early spring and a rich diversity of plants including wood anemone, early-purple orchid, green hellebore and black bryony flourish throughout the seasons occupying niches related to hedge bank height and aspect. Associated fauna includes the gatekeeper and brown hairstreak butterflies, glow-worms, great green bush cricket, common lizard, cirl bunting, bullfinch, bats and dormouse. The greater horseshoe bat is a particularly rarity with a strong reliance on a well connected hedgerow network for commuting and insect rich grasslands for feeding.
Cereal Field Margins	Supported species depends on type of margin but can include Nationally Scarce or Rare arable plant species such as fluellens, cornsalads and fumitories particularly in cultivated margins. Grassy field margins provide habitat for grey partridge, turtle dove.
Rivers and streams	The plant and animal assemblages of rivers and streams vary according to their geographical area, underlying geology and water quality. Species associated with rivers include chub, brown trout, bullhead, lamprey; kingfisher, dipper, grey wagtail; otter, water vole, Daubenton's bat

Source: South Devon AONB Management Plan 2009-2014.
 UK Biodiversity Action Plan; Priority Habitat Descriptions.BRIG (ed. Ant Maddock) 2008.

Table 1-2: Key Habitats and Species in the South Devon AONB

Key notable and BAP priority species associated with High Nature Value (HNV) farmland in the South Devon AONB include the cirl bunting, greater horseshoe bat, great green bush cricket, otter, dormouse, brown hare, slow worm and silver studded blue butterfly. For more information, see: An Atlas of the South Devon AONB.

In the context of this study, particular note should be given to the cirl bunting (see Figure 1-1), a nationally rare species, which aside from one site in Cornwall is wholly restricted in its distribution to South Devon, with nationally important populations in the farmland around Prawle Point (in the sample parishes of Chivelstone and East Portlemouth). This species requires areas that include low input arable land, an overlooked HNV habitat. This habitat also provides a home for several species of rare arable plants for which South Devon is also nationally important.

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In the summer the natural food of ciril bunting consists of invertebrates for example grasshoppers and crickets to feed their chicks. In the winter they feed on small seeds from over-wintered stubbles, fallow land, set-aside, and the over-winter feeding of stock with grain or hay. The nest is on the ground, within dense cover such as that provided by thick hedgerows and scrub. Therefore the ideal farmland habitat for ciril bunting is a mixture of grass and arable fields, divided by thick hedgerows with pockets of dense scrub.

The RSPB has been working with ciril buntings since the late 1980s; the research undertaken at this time was used to set up the RSPB Ciril Bunting Project in 1993, which has received financial support from English Nature since 1995. The Project Officer was able to give on-the-spot advice to farmers and landowners across South Devon to manage land for ciril buntings and other farmland wildlife. This management has been mainly funded by CSS and more recently AES schemes. Within this scheme there was a Ciril Bunting Special Project, growing spring barley with reduced pesticides, providing the 'weedy' stubbles that are vital to ensure ciril buntings find enough food over winter. This has been extremely popular with farmers in South Devon.



Male Ciril Bunting.
Andy Hay (rspb-images.com)



Scrub & gorse nesting habitat.

By providing habitats for ciril buntings, farmers are also benefiting other species. Rare arable plants, skylark and brown hare are all benefiting from the special project crops and many different farmland birds use the resulting stubbles. Hedges are beneficial for many species and are a wonderful habitat in their own right; providing links between other habitats and corridors for Greater Horseshoe bats and dormice.

Figure 1-1: RSPB Ciril Bunting Project

The South Devon AONB includes the following designations and sites:

- 17 Sites of Special Scientific Interest (SSSI) covering 2,296ha (around 6.8% of the AONB).
- 67% of the SSSI's were deemed to be in favourable or unfavourable recovering condition in 2008, an increase from 42% in 2003.
- Four Special Areas of Conservation (SAC) including the Plymouth Sound and Estuaries, Berry Head and parts of the South Devon shoreline.
- 75km (49m) or 77% of the AONB coastline is designated Heritage Coast.
- Two National Nature Reserves (NNR) at Slapton Ley and Berry Head in Brixham.

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- One Local Nature Reserve at the Salcombe-Kingsbridge estuary.
- 173 County Wildlife Sites (CWS) covering 14.5% of the AONB.
- 11 Geological Conservation Review Sites.
- 27 Regionally Important Geological Sites.



Figure 1-2: Prawle Point looking East, designated AONB, SAC, Heritage Coast, SSSI, Geological Conservation Review Site

1.2 High Nature Value Farmland in the South Devon AONB

HNV farmland (HNVF) in South Devon is widespread throughout the AONB but is strongly associated with the area's steep cliffs; coastal slopes; combe valley sides; wet valley bottoms; inland river valleys; estuary and plateau fringes; and around igneous rock outcrops along the coast. In these locations, blocks of HNVF are relatively large, fairly contiguous and typically sinuous. By contrast, areas of South Devon with a visibly lower density of HNVF are comprised of small remnant disparate patches of semi-natural habitat. Away from the coastline the presence of HNV woodland either adjacent to or within a short distance of HNV farmland is apparent, adding to overall connectivity and strength of the resource.

It is the constant variation in, and transition, between landscape types and their juxtaposition that creates the valuable mosaic 'Type 2 HNVF' (farmland with a mosaic of low intensity agriculture and natural and structural elements). This is further strengthened by the area's distinctive Devon hedge banks with substantial earth bases typically topped with dense woody material. When appropriately managed, these features create effective connections between larger areas of HNVF, particularly when coupled with dense basal growth and wide field margins. The significance of this mosaic

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is typified by the survival of greater horseshoe bat dependent upon sustenance zones, roost sites and flyways over much of the eastern part of the AONB.

An important part of the South Devon HNVF picture is that played by arable land within the context of the complex landscape scale habitat mosaic. South Devon is acknowledged as a particular stronghold for circl buntings and their requirements summarise this interrelationship between tall thick hedgerows, varied sward extensively managed grasslands, pockets of scrub and the winter seed source found within weedy winter stubbles. Ensuring that all aspects of this mix are provided for within territories naturally creates the ideal conditions for many other species to thrive including invertebrates such as the great green bush cricket and mammals such as brown hare.

HNVF, as defined and identified in this study, is estimated to cover 8,503 ha or 25% of the South Devon AONB. See **Note 1** for the methodology used to identify HNVF. This total comprises 6,662 ha of HNV farmland (78% of total) and 1,841 ha HNV woodland (22%), see Figure 1-3.

Of this HNV farmland and woodland, 717 ha (8% of HNVF) is designated SSSI and 4,215 ha (50% of HNVF) is designated as CWS, see Figure 1-4. The combined total designated area is 4,932 ha (58% of HNVF).

A breakdown of HNVF data for the South Devon AONB is shown in Table 1-3.

South Devon	Total	SAC	SSSI	CWS
HNV farmland	6,662 ha	270 ha	692 ha	3,096 ha
HNV woodland	1,841 ha	8 ha	25 ha	1,119 ha
HNV total	8,503 ha	278 ha	717 ha	4,215 ha

Source: Natural England 2011

Table 1-3: HNVF in the South Devon AONB

Strategic Nature Areas (SNA) have been identified across the SW of England. These represent biodiversity 'hotspots' and are priority areas for the management and restoration of wildlife habitats. The study area has a number of SNAs. A large proportion of HNV farmland and woodland in the study areas falls within these SNAs (see Figure 1-4).

The HNVF map captures most of the current distribution area of the circl bunting. This is partly because of the map methodology, which automatically includes all farmland CWS, some of which in South Devon are designated because of the circl bunting population. The mapping also picks up land cover types used for nesting and insect food, such as unimproved rough grassland, maritime gorse and scrub. Some circl bunting areas are not covered by CWS, e.g. lower Dart near Greenway, and here the arable land is also not picked up by the HNVF mapping. Based on circl bunting distribution data, this land could be incorporated following the Type 3 HNVF concept (farmland supporting rare species or a high proportion of European or World populations).

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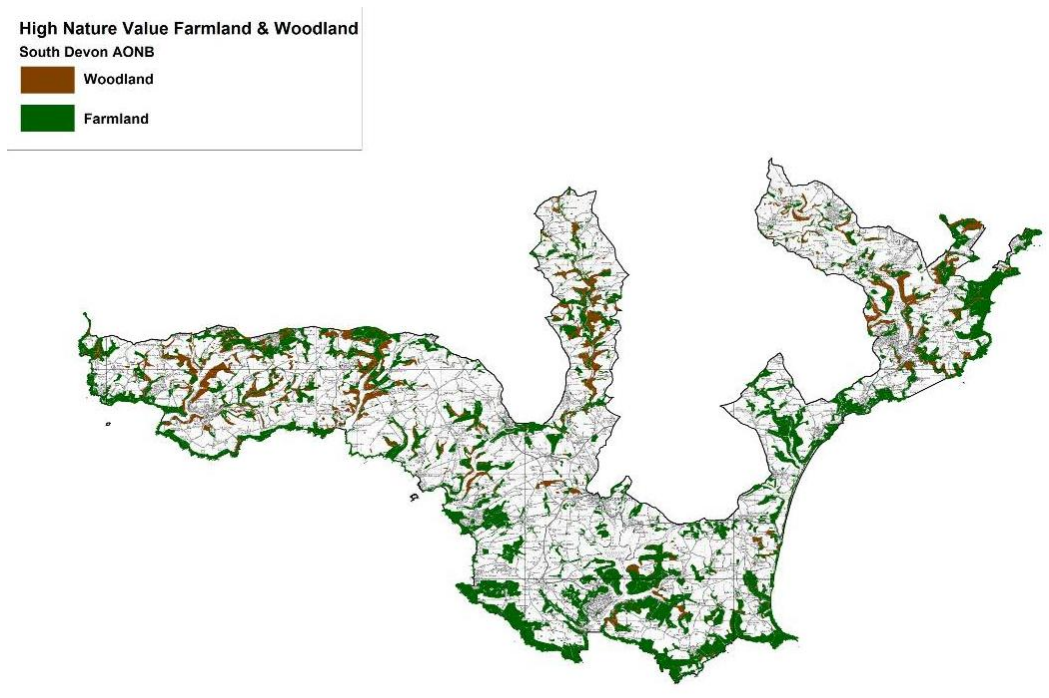


Figure 1-3: HNV Farmland and Woodland in the South Devon AONB

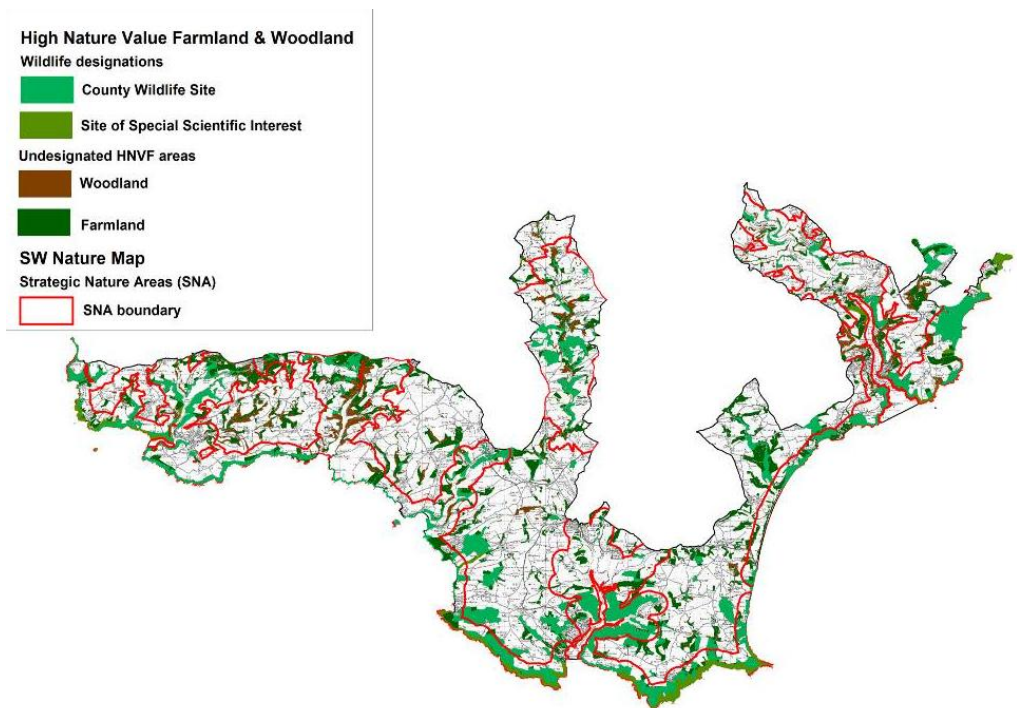


Figure 1-4: HNV Farmland and Woodland together with SSSI and CWS designations in the South Devon AONB

The following aerial photos illustrate typical patterns of habitats and landscapes where HNMF may occur in the South Devon AONB, taken from the example farms considered in more detail later in this study.

Figure 1-5: HNMF: Exposed and open arable fields adjacent to coastal cliffs

In this example, which shows part of the farm described in Section 2 as **Farm 1**, there are relatively large rectilinear arable fields, broken by hedge banks. Some of these arable fields are managed for ciril bunting habitat. HNMF semi-natural habitat is associated with valley slopes, with some scrub and woodland, and cliff top grassland dominated by gorse. There is close intermixing of small fields, thick hedge lines and small woodlands.



Figure 1-6: HNMF: medium sized fields with hedgerows running down to estuary

This example shows the area around **Farm 2** described in Section 2. It shows a mosaic pattern of fields with thick ancient hedgerows, running down to the tidal estuary. Land use is a mix of arable cropping, semi-improved grassland with small patches of less improved grassland, particularly on more sloping land. Ciril bunting is recorded in this area, utilising scrub, semi-improved grassland and low-input arable. Small woodland copses occur.



Figure 1-7: HNMF: Level plateau contrasting with wooded valley slope

This shows the landscape of **Farm 3**, inland from the coast, with a level plateau top with large arable fields and improved pasture and a valley slope with smaller irregular fields dissected by hedges and hedgerow trees. The valley slopes are occasionally wooded. Ciril bunting is unlikely to be supported on this farm given its inland location.



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A typical maritime cliff and slope is illustrated in Figure 1-8 below, showing a network of HNMF. On the top of the cliff is arable land and improved pasture (1), divided by stone walls, below which on the steepest part of the slope around rocky outcrops is secondary woodland, scrub and bracken (2). Below this are smaller fields situated on a marine terrace area, some of these areas have been reverted to unimproved pasture (3), with other areas under arable cropping for cirl bunting. There is also a transitional phase between cliff top and improved land, (4) which is exposed rough grazing of salt tolerant grasses and gorse scrub.



Figure 1-8: Coastal landscape near Prawle Point

The transitional landscape around estuarine valleys from semi-improved HNMF into semi-natural HNMF is shown in Figure 1-9 below. Intertidal mudflats are bounded by tree lined banks (1) leading up to undulating improved pasture (2). Some areas of less improved pasture remain (3), enhanced by thick hedges and wooded stream valleys (4). Intensive arable cropping (not HNMF) on larger gently sloping fields (5).



Figure 1-9: Improved and semi-improved pasture around South Pool estuary

1.3 Farming characteristics and trends in South Devon

This section is based on the best available farming data for the South Devon AONB at the time of writing: see **Note 2** for a description of sources used. The current state and trends relating to farming in the South Devon AONB are outlined and the impacts on farms with HNVF explored.

The patchwork landscape of the South Devon AONB has been created by farming and forestry over hundreds of years. Around 85% of the AONB is farmed covering 26,867ha, with a wide range of enterprises represented. 10% of the agricultural land in the AONB is classed as Grade 1 and 2 while 80% is grade 3. Arable cropping, beef and sheep livestock, dairying, and orchards all occur in the area, and are widely distributed according to landscape type. There has been a substantial growth in the number of smallholdings (<5ha) and a modest increase in larger farms (>50ha). This has been at the expense of medium sized holdings which have reduced in numbers by around half in the last 50 years.

The period of intensification both during and post-war saw the extent of HNVF contract across the AONB, as previously marginal land became utilised. Physical boundaries were pushed in line with the abilities of new machinery and other technological advancements. Since this time much of the same marginal land, typically located along the coastline and surrounding the area's estuaries, has seen a period of comparative abandonment. Today 8.3% of the AONB area is owned by either the National Trust or the Woodland Trust. Large tracts of coastal land totalling 47% of the AONB coastline now come under the protective ownership of the National Trust. This figure increases with the addition of land owned and or managed by the Torbay Coast and Countryside Trust, Whitley Wildlife Trust, Sharpham Trust and Devon Birdwatching and Preservation Society. New challenges and opportunities have also been created by a steady shift in ownership away from family run mixed farms toward farm management companies or smallholdings.

Current farm survey data (primarily based on the Defra June 2008 survey) and trend data for the period 2000-2008 (based on Defra June Survey for 2000-2008) indicates the state of farming in the South Devon AONB, see Table 1-4 and Table 1-5.

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<p>Summary: The survey data indicates that commercial holdings in the South Devon AONB are likely to be medium sized, and owned rather than rented. By number, holdings are more likely to be categorised as 'other' (holdings which either do not fit well with mainstream agriculture, such as specialist horses, or which are of limited economic importance, such as specialist set-aside, specialist grass and forage (no livestock) and non classifiable holdings) or grazing livestock. However grazing livestock, cereal and mixed farms account for the majority of the land area (65% in total). The predominant land use is permanent grass, followed by crops and fallow, and temporary grass. Cattle are the dominant livestock in terms of grazing livestock units, although there is a significant number of sheep.</p>	
<p>Agricultural land</p>	<p><i>Farm Survey June 2008:</i> Agricultural land in the AONB comprises 26,727 ha (79% of all AONB land).</p> <p><i>Trends 2000-2008:</i> 5% increase in the total area, which increased from 25,541ha to 26,727ha. The increase is primarily due to the registration of new holdings when SPS was introduced in 2005.</p>
<p>Farm holding number and size</p>	<p><i>Farm Survey June 2008:</i> There are 733 farm holdings in the AONB with an average holding size of 36.46 ha. Note the average size of commercial holdings in the AONB is 61.02 ha.</p> <p><i>Trends 2000-2008:</i> 32% increase in the number of farm holdings. Average holding size reduced from 45.94ha to 36.46ha.</p> <p><i>Note:</i> Commercial holdings are those which exceed the threshold for the census. This includes holdings with one or more of the following: >5ha; >10 bovines; >20 sheep.</p>
<p>Farm tenure</p>	<p><i>Farm Survey June 2008:</i> The tenure of farmland in the AONB is 62% owned and 38% rented (based on 2008 data). This compares with 75% owned in Devon and 68% owned in the South West region.</p>
<p>Farm categorisation</p>	<p><i>Farm Survey June 2008:</i> Grazing livestock farms account for 24% of holdings, with an average farm size of 36ha. Dairy farms account for 5% of holdings, mixed farming 7% and cereals 8%. The average farm sizes are 94ha, 110ha and 94ha respectively. 44% of farm holdings are classed as 'other' (see note) and have an average farm size of 6ha.</p> <p><i>Trends 2000-2008:</i> There has been a 40% decrease in the number of dairy farms, a 17% decrease in the number of mixed farms, a 109% increase in the number of 'other' farms and 7% increase in the number of grazing livestock farms. This shift out of dairying and an increase in 'other' holdings mirrors national and regional trends. The decrease in mixed farms may highlight a loss of arable in the South Devon area.</p> <p><i>Note:</i> Farms are categorised according to whether a particular enterprise accounts for two thirds or more of Standard Gross Margin (SGM). For example, cereal farms are those where cereals accounts for more than two thirds of the total SGM. 'Other' holdings are those which either do not fit well with mainstream agriculture, such as specialist horses, or which are of limited economic importance, such as specialist set-aside, specialist grass and forage (no livestock) and non classifiable holdings. The holdings categorised as 'other' and under 5ha in size are likely to be closely associated with one another. At least a proportion of these will fall in the category of 'non-farming' landowners, lifestyle farmers or similar.</p>
<p>Farm size distribution</p>	<p><i>Farm Survey June 2008:</i> Holdings over 50ha account for 81% of total area and 22% by number. At the other end of the scale, holdings under 20ha account for only 8% of area but 66% by number. These smaller holdings (45% by number are under 5ha) are likely to be 'other' holdings.</p> <p><i>Trends 2000-2008:</i> The number of farms in the smallest and largest farm size categories increased (the increase being greatest in the lower size categories), with medium sized farms decreasing in number. Under 5ha holdings were up 63% by number, 5 to 20ha up by 55%, 20 to 50ha down by 11%, 50-100ha down by 2% and</p>

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	over 100ha up by 16%.
Land uses	<p><i>Farm Survey June 2008:</i> The main land uses in the AONB are permanent grass (48%), crops and bare fallow (30%) and temporary grass (14%). The proportion of land in rough grazing and woodland was 3% each.</p> <p><i>Trends 2000-2008:</i> The area of permanent grass has increased by 12%, temporary grass increased by 13%, and crops and fallow increased by 5%. Rough grazing has decreased by 10%, potentially having an adverse impact on species favouring this type of habitat. Woodland increased by 18%.</p> <p><i>Note:</i> 'Permanent grassland' is defined as grassland more than 5 years old, 'temporary grassland' is grassland sown within the last 5 years; 'rough grazing' includes heathland, moors, mountain or hills where a farmer owns or has sole grazing rights (this measure excludes common grazing).</p>
Livestock numbers	<p><i>Farm Survey June 2008:</i> There are around 23,602 cattle, 58,447 sheep, 2,207 pigs, 7,147 poultry and 734 horses in the AONB. The percentage of holdings with different types of stock is as follows: cattle (26%); sheep (28%); Poultry (20%); Horses (21%) and Pigs (5%).</p> <p><i>Trends 2000-2007:</i> Cattle numbers are down 1% and the total number of holdings with cattle is down 23%. Sheep numbers are down 27% and holdings with sheep are up by 5%. Pig numbers are down 68% and holdings with pigs are up 25%. (Pig numbers can fluctuate significantly from year to year). There are no trend figures for horses but some of the increase in smaller farm holdings and increase in permanent grass area (for grazing or hay for horses) may be related to keeping horses.</p>
Farm labour	<p><i>Farm Survey June 2008:</i> The agricultural workforce in the AONB totals 1,036. 430 of these are full time employees, including farmers, farm managers and regular workers.</p> <p><i>Trends 2000-2008:</i> The total number of full-time workers (farmers, managers, male and female workers) is down 13% but the total number of part-time workers has increased by 16%. The casual workers have been worse hit with 67% fewer holdings employing casual workers. The total number employed in agriculture in the AONB is down 7% from 1,112 to 1,036</p>

Source: Defra/Natural England 15.9.10, 2.12.10 & 5.1.11

Table 1-4: Farm Survey Data for South Devon AONB

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ROBUST FARM TYPES	Number of holdings	%	Area (ha)	%
Cereals	61	8%	5,717	21%
General Cropping	24	3%	3,282	12%
Horticulture	40	5%	377	1%
Specialist Pigs	5	1%	50	0%
Specialist Poultry	19	3%	155	1%
Dairy	35	5%	3,292	12%
Grazing Livestock (LFA)	-	0%	-	0%
Grazing Livestock (lowland)	176	24%	6,394	24%
Mixed	49	7%	5,427	20%
Other	324	44%	2,034	8%

FARM SIZE				
<5ha	327	45%	424	2%
5<20ha	151	21%	1,573	6%
20<50ha	94	13%	3,177	12%
50<100ha	82	11%	5,780	22%
>=100ha	79	11%	15,773	59%

TOTAL HOLDINGS	733	100%	26,727	100%
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LAND USE				
Crops and bare fallow (A99)	204	28%	8,045	30%
Vegetables and salad for human consumption (B99)	26	4%	41	0%
Fruit (C99)	46	6%	40	0%
Temporary grass (G1)	192	26%	3,697	14%
Permanent grass (G2)	507	69%	12,831	48%
Rough grazing - sole rights (G5)	81	11%	862	3%
Woodland (G14)	170	23%	746	3%
All other land (G17)	173	24%	458	2%

LIVESTOCK	Number of holdings	%	Number of livestock	%
Cattle (K299)	192	26%	23,602	na
Pigs (L98)	39	5%	2,207	na
Sheep (M98)	207	28%	58,447	na
Poultry (N98)	143	20%	7,147	na
Horses (P90)	154	21%	734	na

Source: Defra / Natural England 16.6.10

Table 1-5: Farm Survey Data for the South Devon AONB - June 2008

The potential impacts of these farm characteristics and trends on HNMF and HNMF management are outlined below:

- There is an increasing number of smaller holdings (up to 20ha) and 'other' holdings in the AONB. These holdings will include some HNMF, which suggests an increasing proportion of HNMF on holdings owned by non-farming landowners.
- Larger holdings, those over 50ha, account for 81% of total area. These commercial units are important to influence in order to assure beneficial HNMF management.

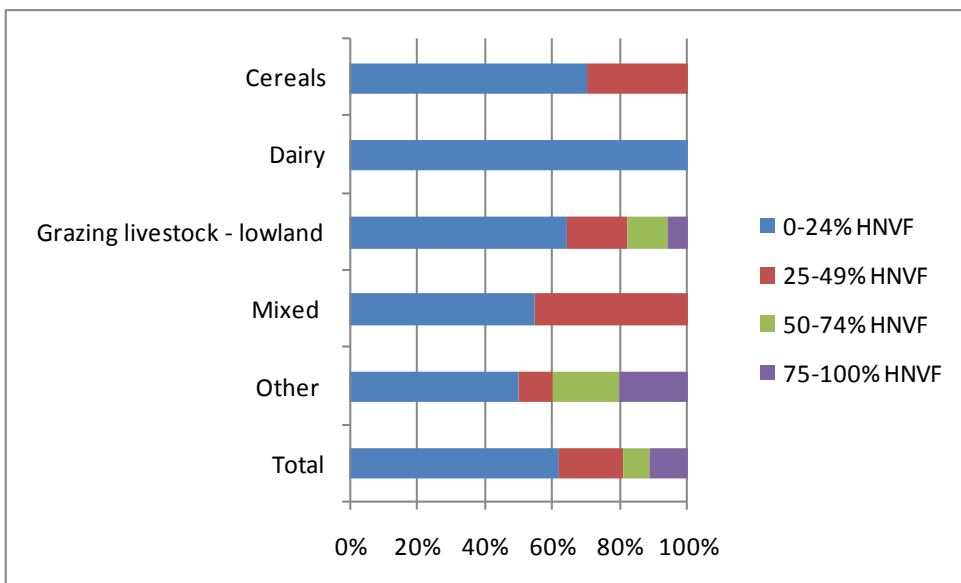
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- Grazing livestock farms predominate in terms of land area, followed closely by cereals and mixed farms. Farming systems associated with these farm types will continue to have a major influence on the way in which HNMF is managed.
- Permanent and temporary grassland is increasing as a proportion of total land use and, to a lesser extent, crops and fallow. Rough grazing has decreased as a proportion of land use, but woodland has increased. It is possible that this indicates some improvement (and/or planting) to rough grazing land (often associated with HNMF). However permanent grassland – improved, semi-improved and unimproved – will continue to be the main land use underpinning HNMF.
- Arable HNMF is also of significant importance in the South Devon area.
- Cattle numbers have decreased slightly in recent years, but sheep numbers have decreased more significantly. This suggests the continuing availability of cattle for beneficial grazing of HNMF grassland might become a problem in future.
- Less full time and more part time labour, and less casual labour, suggests that less farm labour is available for HNMF management now compared to previously. This trend is likely to continue.

Natural England data for holdings with HNMF in four sample parishes in the South Devon AONB (see Section 2 and see **Note 5** for more details) provides additional detail of the characteristics of holdings with HNMF:

HNMF as a proportion of total holding size varies according to farm type, see Figure 1-10.

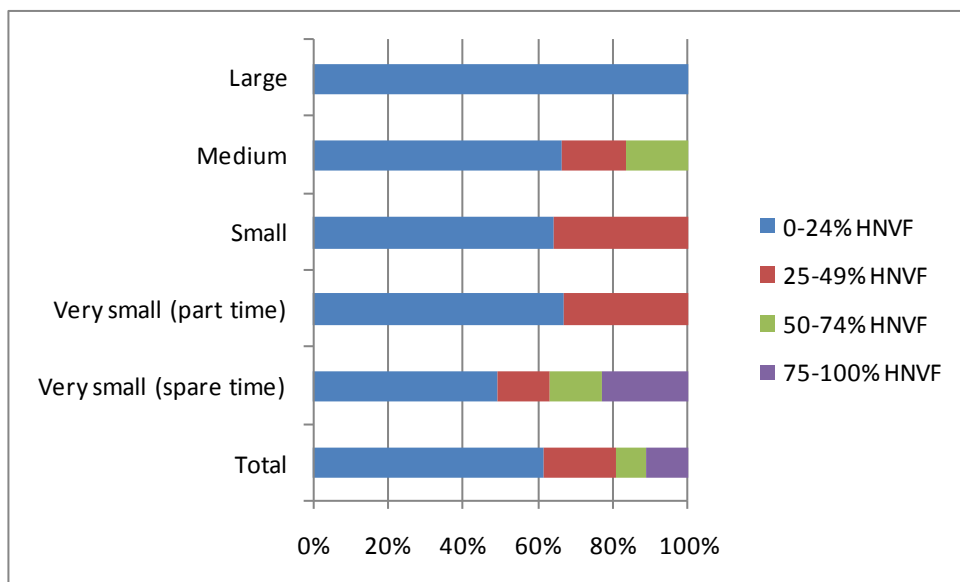
- Cereal farms and mixed farms tend to have a limited amount of HNMF (under 25%) as a proportion of holding size, but some have a higher amount especially mixed farms.
- Dairy farms all appear to have a limited amount of HNMF (under 25%) as a proportion of holding size.
- Grazing livestock farms have a greater variation of HNMF as a proportion of holding size.
- 'Other' holdings are the category with the highest percentage of holdings having a large proportion of HNMF. 40% of these holdings are more than 50% HNMF.
- Overall, 61% of holdings have 0-24% HNMF as a proportion of total holding size; a further 19% have 25-49% HNMF and the remaining 20% have more than 50% HNMF.



Source: Natural England 17.2.11

Figure 1-10: HNVF as % of Holding Size for Different Types of Farm with HNVF in the South Devon AONB Sample Parishes

HNVF as a proportion of total holding size also varies to a degree according to farm size, see Figure 1-11. There appears to be a weak negative correlation between farm size and % HNVF, with more small or very small holdings having a higher % HNVF than larger holdings. Very small spare time holdings are the most likely to have a large proportion of their land under HNVF.



Source: Natural England 17.2.11

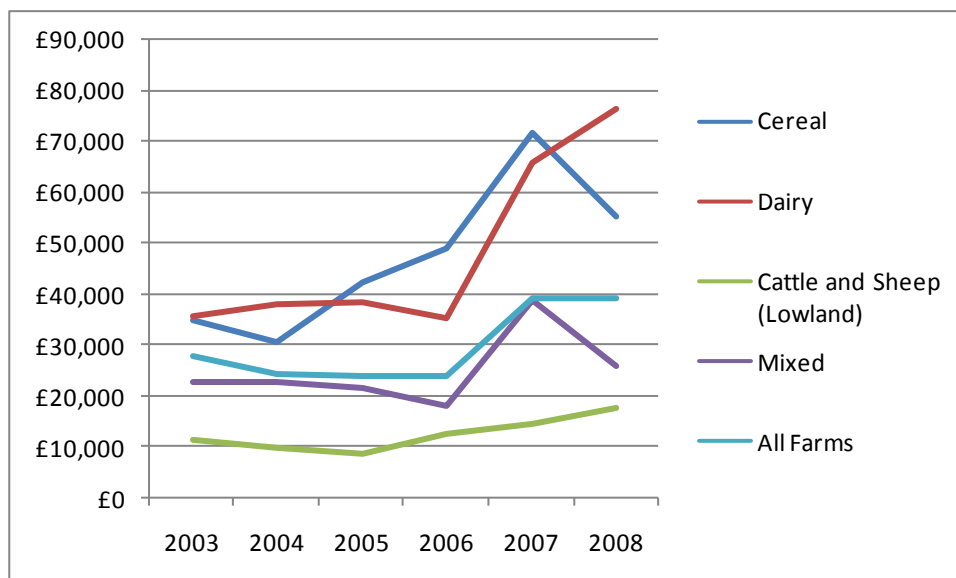
Figure 1-11: HNVF as % of Holding Size for Different Sizes of Farm with HNVF in the South Devon AONB Sample Parishes

84% of HNVF is registered on the Rural Land Register (RLR) – a pre-requisite for the receipt of support in the form of SPS and agri-environment scheme (AES) payments. The remaining 16% of HNVF would not be supported by such payments. This land is likely to include unregistered farmland (for example, on small amenity holdings) and unregistered woodland (there was initially no obligation on farmers to register woodland on the RLR although this is now required under SPS and AES rules).

1.4 Farm Business Income

There are no specific farm business income figures available for the South Devon AONB. However data can be drawn however from the Farm Business Survey (FBS) and relevant reports. Farm Business Income (FBI) is the key measure used. See **Note 3** for background on FBI and data sources.

Figure 1-12 indicates the Farm Business Income (FBI) for different farm types in SW England and shows how FBI has changed since 2003/4. Cereal and dairy farms have the highest FBI, followed by mixed farms and lastly lowland cattle and sheep farms, whose FBI in 2008/9 was £17,668. There has been an increase in FBI for all farm types. Dairy have experienced the greatest increase (115%), followed by cereal farms (60%), lowland cattle and sheep farms (59%) and mixed farms (15%). The decrease in cereal and mixed farm FBI from 2007/8 to 2008/9 is noticeable; this reflects the high commodity prices in 2007 and subsequent fall back.



Source: Farm Business Survey 2008. Adapted from Loblely et al (2009)

Figure 1-12: Farm Business Income – SW England – Trends

Table 1-6 shows the breakdown of FBI for different farm types in SW England. This shows for all farms that Single Payment Scheme (SPS) income accounts for a significant 53% of FBI, followed by agricultural output (21%), diversification (14%) and agri-environment payments (13%).

These totals mask big variations between farm types. Dairy farms obtain 68% of their FBI from milk and other agricultural products, 28% from SPS and only 3% agri-

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environment payments and 1% from diversification. Mixed farms on the other hand obtain a very significant 86% from SPS, 19% from agri-environment payments, 8% from diversification and -12% from agriculture. Lowland cattle and sheep farms are similar with 73% of FBI from SPS, 20% from diversification, 18% from agri-environment payments and -10% from agriculture. Cereal farms are also dependent SPS income (63%), diversification (24%) and agri-environment payments (14%) with agricultural outputs representing -1% of FBI (in 2007/8 this was 10%).

	Sources of Income									
	Agriculture	%	Agri-environment payments	%	Diversification	%	Single Payment Scheme	%	Farm Business Income	%
Cereal	-£430	-1%	£7,596	14%	£13,256	24%	£34,871	63%	£55,294	100%
Dairy	£52,005	68%	£2,630	3%	£400	1%	£21,382	28%	£76,417	100%
Cattle and Sheep (Lowland)	-£1,832	-10%	£3,174	18%	£3,502	20%	£12,823	73%	£17,668	100%
Mixed	-£3,186	-12%	£4,806	19%	£2,129	8%	£22,201	86%	£25,950	100%
All Farms	£8,146	21%	£4,953	13%	£5,364	14%	£20,696	53%	£39,082	100%

Source: Farm Business Survey 2008. Adapted from Lobley et al (2009).

Table 1-6: Farm Business Income – SW England - Sources of Income

It is important to note that the nature of farming in the South Devon will have some impact on FBI. South Devon commercial farms are similar in size to those in Devon as a whole and larger than those in the SW region. The area's red soils are reasonably productive and diversification is well established given the area's popularity for visitors. There is also very good uptake of agri-environment schemes. However, land by the coast can be exposed to the adverse effects of salt and wind, and access to/from farms can be restrictive. Overall, FBI in the AONB is likely to be broadly in line, if not a bit better, than regional figures derived from the FBS (on a £/ha basis). This applies as much to farms with HNVF as to those without.

To illustrate this, the physical and financial figures for the average lowland grazing livestock farm (one which typically may have HNVF) used in the FBS in 2008 have been adapted to reflect the farming characteristics of an average lowland grazing livestock farm in the South Devon AONB, see Table 1-7. This shows 'average' FBI or net profit of £14,402. SPS accounts for 72% of this net profit.

	South West		South Devon		Notes
	£/ha	£/Farm	£/ha	£/Farm	
Physical data					
Farm size	74.7 ha		61 ha est.		
UAA	69.2 ha		57 ha est.		
Perm. grass + rough grazing (% of UAA)	77%		77%		
Stocking	75.3 LU				
Stocking density	1.09 LU/ha		1 LU/ha		
Financial data					
Agriculture	-£24	-£1,832	-£24	-£1,464	Similar productive land (100%)
Agri-environment payments	£42	£3,174	£46	£2,818	More agri-environment scheme income (110%)
Diversification	£39	£3,502	£43	£2,617	More diversification income (110%)
Single Payment Scheme	£171	£12,823	£171	£10,431	Similar SPS income (100% regional area payment by 2012)
Farm Business Income	£228	£17,668	£236	£14,402	

Source: base data from Farm Business Survey 2008.

Table 1-7: Farm Business Income – Lowland Grazing Livestock Farm – South Devon

1.5 Agri-environment scheme participation

A total of 22,398ha of land in the South Devon AONB is in some form of agri-environment scheme. This is equivalent to 66% of total area and 84% of total agricultural area. Environmental Stewardship accounts for 75% of total agri-environment agreement area, with Classic Scheme participation accounting for the other 25%.

4,670 ha (70%) of HNV farmland in the study area is under some form of agri-environment scheme agreement. Environmental Stewardship accounts 63% of this, including 35% in ELS or OELS and 28% in some form of HLS agreement. Classic schemes (CSS) accounts for the remaining 37% of HNV farmland under agri-environment scheme agreement. It is worth noting that 19% (1,295 ha) of HNV farmland in the South Devon AONB is under some form of HLS agreement.

A breakdown of agri-environment scheme participation is shown in Table 1-8 and the maps shown in Figure 1-13.

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South Devon AONB (total HNVF farmland 6,662ha)	Area of land under agreement in AONB boundary (ha)	HNVF under agreement (ha)	HNVF under agreement (%)	% of total HNVF
HLS only	688	314	7%	5%
ELS+HLS	2,707	625	13%	9%
OELS+OHLS	1,414	356	8%	5%
ELS only	10,552	1,442	31%	22%
OELS only	1,495	191	4%	3%
Env.Stewardship sub-total	16,856	2,928	63%	44%
ESA	n/a	n/a	n/a	n/a
CSS	5,542	1,742	37%	26%
Classic schemes sub-total	5,542	1,742	37%	26%
Total	22,398	4670	100%	70%

Source: Natural England 2011

Table 1-8: Agri-environment Scheme Participation in the South Devon AONB

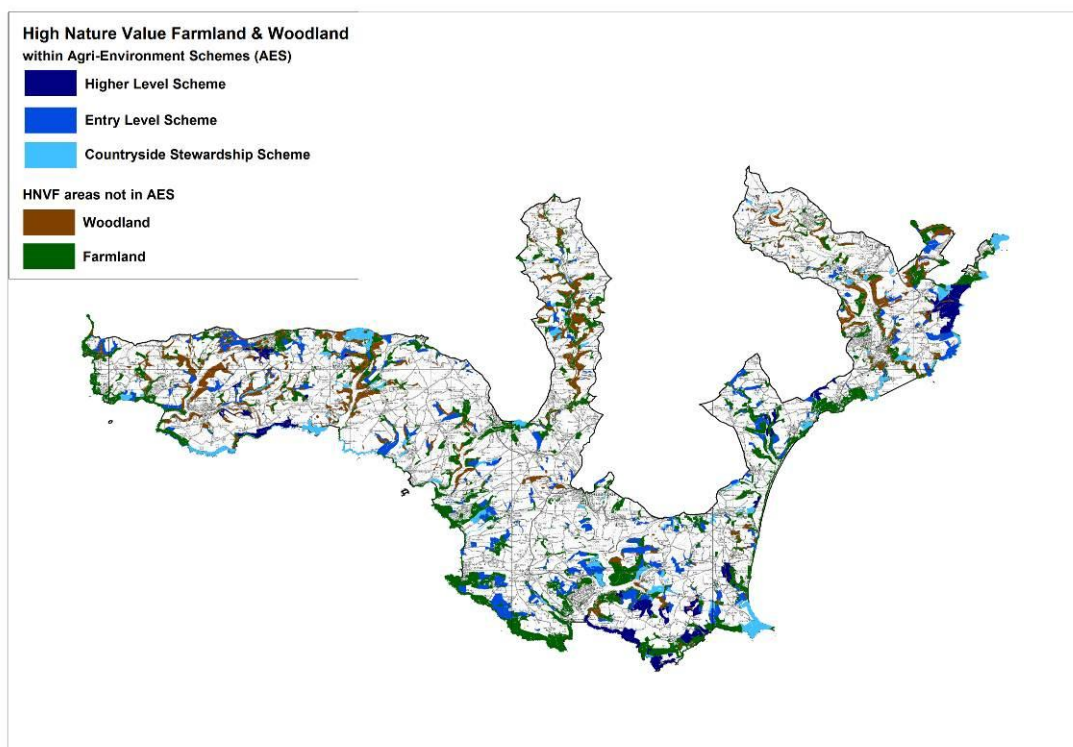


Figure 1-13: HNVF in Agri-Environment Schemes in the South Devon AONB

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The Natural England Holding Assessment Toolkit (HAT) scores - which indicate the extent to which individual holdings address or have the potential to address particular environmental priorities under HLS were not available for the South Devon area at the time of reporting (with the exception of HAT data for farms surveyed, see Section 2.3). It can be assumed however that farms offering high quality agreements would be of high priority as the AONB is within Natural England's South Devon Coast and River Valleys HLS Target Area. Within this target area nationally important areas for rare arable plants and nationally important populations of the rare ciril bunting occur. Important areas for biodiversity including, wetlands, species-rich grasslands, coastal habitats, and ancient semi-natural woodlands are also present. Resource protection issues include diffuse pollution on farmland affecting the valuable wetland habitats within the River Yealm, Erme, Slapton Ley and Salcombe to Kingsbridge catchments.

Data on the effect of agri-environment schemes on HNVF is not available at the time of writing, but anecdotal and individual case experience suggests the following:

- Much of the management of low intensity arable land, a habitat of particular importance for the ciril bunting, has been maintained and increased through options under CSS and HLS. As such it is unlikely that low intensity management of arable HNVF would be continued without the subsidy of agri-environment schemes.
- The CSS scheme helped to maintain and restore features such as hedgerows, ditches and field margins. Grassland habitats were maintained or restored where present, but CSS had a limited impact on creation of new or linking habitats.
- ELS is likely to be continuing the trend of maintaining habitats, particularly boundaries and low input grassland, where the majority of points can be gained at least cost; but generally does not go far enough to ensure the future management of HNVF due to the relatively short timescale (5 year agreements) in which it will be managed, and the low level of payments.
- Where HLS has been applied to substantial areas or whole farms, it is helping to maintain a complex mosaic of HNVF features. HLS has also been more targeted in creating habitats or restoring larger areas of habitat.
- The South Devon area has been the subject of focussed and targeted effort to assist ciril bunting recovery through a number of projects, which have promoted both CSS and now HLS management to farmers and landowners, resulting in positive uptake and management of both arable and grassland HNVF where farmers have opted for multi-objective agreements.
- The restoration of Devon hedge banks is currently funded under HLS agreements or expiring CSS agreements, and whilst positive on those farms in such schemes, other hedge banks on land outside such schemes will not have been restored.

2 Farming with High Nature Value Farmland in the South Devon AONB – Findings from Interviews and Literature Review

2.1 Introduction

This section sets out the findings from interviews with farmers and other stakeholders, complemented by a review of relevant literature, with the aim of better understanding how HNMF is farmed in the South Devon AONB and key issues now and in the future.

Farm interviews

The main element was a series of interviews with a selection of farmers owning or managing farms with HNMF in the South Devon AONB. The purpose of the farm interviews was to gather information on the range of farming systems and practices which support HNMF, the farm socio-economic context and trends, use of HNMF, motivation, obstacles to managing HNMF and future trends and consequences. The farms were selected following identification of a representative sample of parishes in the South Devon AONB and the development of a HNMF farm typology for the area, see **Note 5** for more details and Figures 2-1, 2-2 and 2-3 for the location of the farms surveyed.

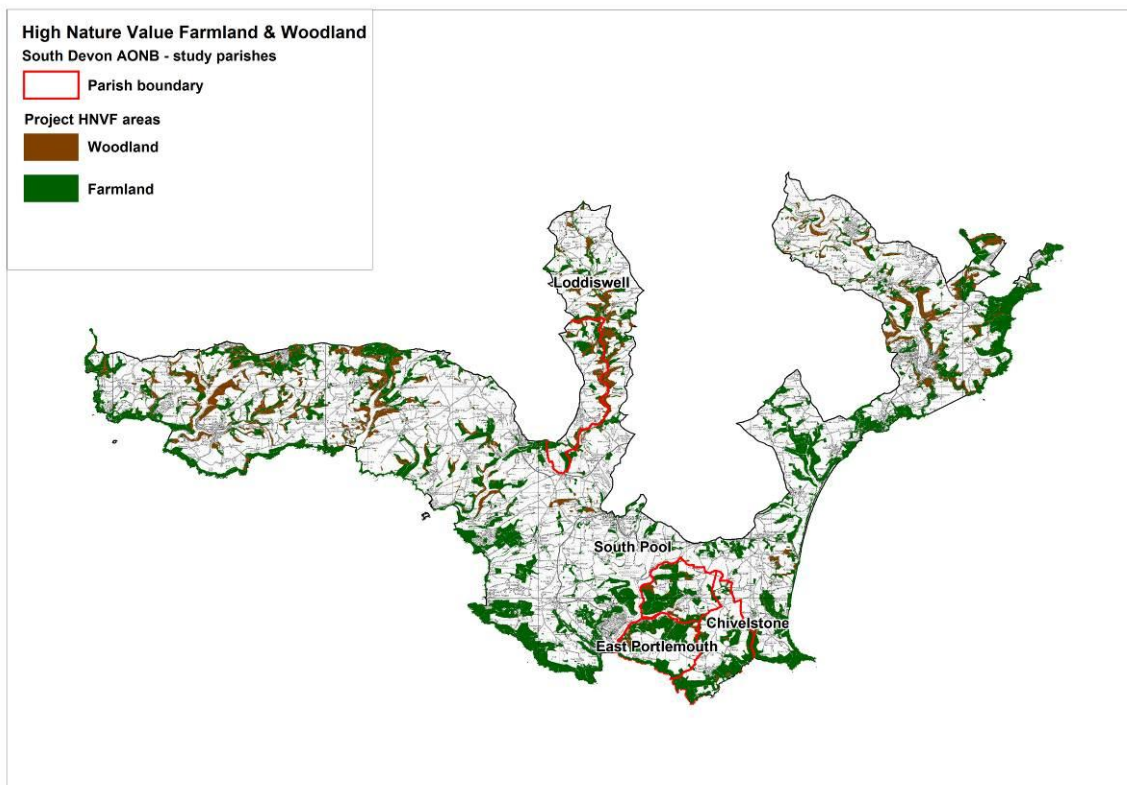


Figure 2-1: Sample Parishes in the South Devon AONB

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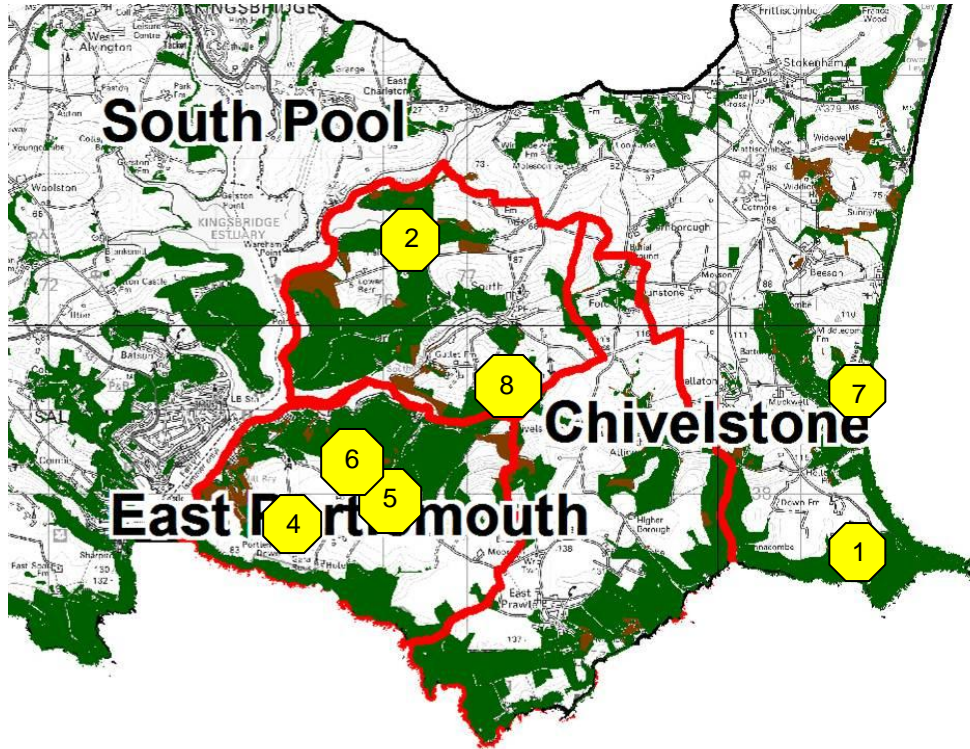


Figure 2-2: Location of farms surveyed, 1, 2, 4 - 8.

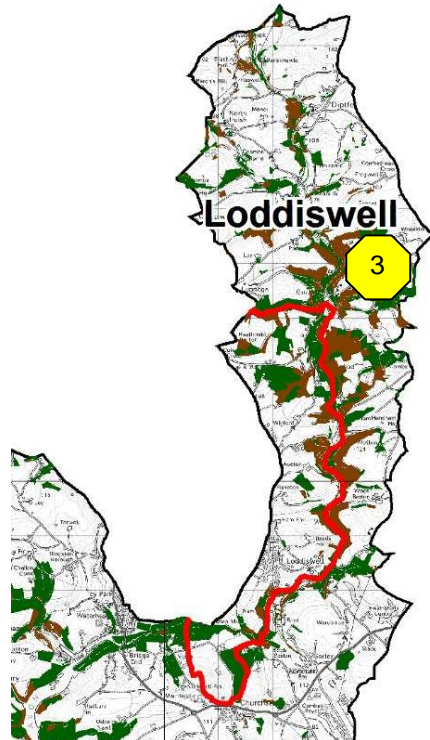


Figure 2-3: Location of Farm 3

Given the relatively short time available for arranging and carrying out interviews, a pragmatic approach was taken which involved comparing the set of farm types derived in the farm typology with the map of estimated locations of HNMF, and looking for farms which fitted each of the types, and which were also already known to project steering group members. This latter factor allowed for interviews to be much more relaxed and open, and hence more extensive, than interviews based on cold-calling farmers with whom the interviewer had no existing relationship. The existing relationships which were used for this purpose stemmed from professional interactions through the South Devon AONB partnership and the RSPB Cirl Bunting project. The negative impact of this method was that the majority of farms were proactive towards HNMF management, often in agri-environment schemes, to add dimension to the results it would have been preferable to include some larger, more commercial farms to ascertain their attitude to and management of HNMF.

Please note the tables referred to in this section - Tables A1 to A5 - are located in Appendix 1 due to their size and format.

Stakeholder interviews and additional evidence

Feedback from interviews with a range of stakeholders and additional evidence from relevant reports and studies is included under the relevant headings below. A bibliography showing reports and studies referred to is shown in Appendix 3.

2.2 Farm descriptions

The eight farms are described in Table A1 in Appendix 1. The farms cover a reasonably typical range of livestock and mixed farms with HNMF farmland in South Devon. They include family farms, smallholdings and units owned by non-farming owners. There are both conventional and organically managed holdings. Farm size ranges from 4ha to 367ha. There is a mix of designations (including SSSIs, CWS, LNR and Heritage Coast) and agri-environment scheme participation varies (2 ELS/HLS, 2 OELS/HLS, 2 CSS and 2 no agreement). A brief summary of each farm and its HNMF is set out in Table 2-1 by way of introduction:

<p>Farm 1 –A medium sized predominantly arable holding, undergoing organic conversion</p>	<p>The farm sits in a fairly exposed position, covering a total of 140ha, with the majority of the land being managed under a (virtually) stockless arable rotation, currently under organic conversion. A clover ley is included in the rotation, which is let out with the rest of the grassland to be grazed by cattle, and some sheep. The farm has entered a HLS scheme providing habitat for cirl bunting, protecting Devon banks, protecting archaeology, mitigating soil erosion and maintaining a traditional orchard.</p>
<p>Farm 2 - A tenanted National Trust farm running sheep, with additional land owned.</p>	<p>The mainly tenanted holding comprises 101ha around the head of a sheltered creek. The farm is mostly pasture (one arable bird mix under HLS), the majority of which is improved or semi-improved grassland, grazed and cut for silage and hay. There is an area of unimproved grassland and a marshy, wet woodland area. The farm has been in a CSS scheme and is now entering a HLS scheme.</p>

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<p>Farm 3 –a larger mixed livestock and arable holding made up of 3 farms, run both organically and conventionally.</p>	<p>This farm comprises three holdings totalling 367ha; the main home farm of 64ha is conventional and relatively intensive with animals housed and silage and arable land. Two rented outlying farms are managed extensively, under stewardship. One is conventional and around 100ha; the other is organic and around 200ha. The rented holdings have SSSI designation along the cliff tops. This is the main area of semi-natural HNMF, along with areas of rough grazing; there is also low input arable land managed for cirl buntings.</p>
<p>Farm 4 – a medium sized coastal farm, with arable cropping undergoing organic conversion and grazing let out.</p>	<p>This farm covers 196ha, of which 135ha is owned. Presently the arable area of 134ha is being converted to organic, with a rotation of clover, spring wheat and spring barley. The grazing is let under licence between March and November with pasture grazed by cattle. The farm has entered an OELS/HLS scheme, with HLS options included to provide cirl bunting habitat, restore Devon banks, arable reversion to reduce soil erosion and orchard maintenance. There is also protection of important archaeology, a scheduled monument and ancient field patterns on the Commons. Educational access is being offered to demonstrate conservation and organic farming.</p>
<p>Farm 5–a smallholding with a variety of non-commercial enterprises.</p>	<p>This holding is a 4ha smallholding which includes 2.5ha of unimproved permanent pasture grazed by ponies. The remaining land includes permanent pasture with a scheduled monument and 6 poly-tunnels. The tunnels have previously been used for flower and salad crops, the tunnels and area is now used to allow local people on low incomes to have access to land for vegetable and fruit growing, chicken keeping and equine therapy.</p>
<p>Farm 6–a smallholding with permanent pasture and daffodil field.</p>	<p>Positioned on the top of the coastal plateau, the majority of this 5ha holding is permanent pasture grazed by sheep on tack with some areas sown with wildflower mixes, some rough pasture and some used for amenity with a camping and caravanning area. There is also a small field used for growing daffodils for the flower market.</p>
<p>Farm 7 –is a medium sized organic holding, with beef, arable cropping for HLS, vegetable growing and a Discovery Centre</p>	<p>The holding covers 64ha of steep, banky ground in a coastal valley. Around 40ha is owned and the rest is tenanted. The grassland is species-rich, grazed by cattle and in HLS. The arable cropping includes spring oats and barley, grown organically under HLS options, with grains fed to stock. There is also wild bird mix, margins and fallow under HLS. The organic vegetables have in the past covered 6ha, including cabbages and cauliflowers, however these have lost money for the past 3 years so are being reduced to just 0.5ha for the local village market. The Discovery Centre has developed over the past few years, supported by HLS educational funding and is taking more time, with the owner involved in school visits, tree planting, green woodworking, sustainable energy and general educational visits. The farm also produces sustainable logs from coppicing for the local village market and has a small campsite.</p>
<p>Farm 8–a mixed arable, beef and vegetable growing farm with additional tenanted land.</p>	<p>The farms sit on steeply undulating, light land. The main owned holding covers around 54ha with permanent pasture, temporary grass lays and arable land. An additional 59ha is rented with mixed cropping and permanent pasture. Both holdings are in CSS with low input grassland and arable options. The farm has a vegetable growing and trading business, accounting for the majority of turnover. HNMF comprises unimproved wildflower meadows, rough grazing and low input arable for cirl bunting.</p>

Table 2-1: Description of Farms Surveyed

2.3 HNV farmland and features

For each farm, the nature, extent, density and context of HNVF habitats and landscape features is set out in Table A2 in Appendix 1.

The predominant open-ground HNVF habitats vary according to coastal proximity, with unimproved lowland meadows and rush pasture inland, marsh and reedbeds along estuaries, semi-improved grassland and unimproved grassland on steeper banks and valley sides; and rough maritime grassland, scrubby gorse and bracken along cliff tops. Mixed deciduous and/or wet woodland is also present within these habitats. Devon hedge banks form significant HNV corridors across much of the area. HNVF landscape features also include rivers, streams, in-field trees, ponds and field margins. In the South Devon context, low input spring barley being grown for the benefit of cirl buntings can also be considered HNV farmland. For details on management please refer to the HLS management prescription in Appendix 4. In most instances, the higher quality semi-natural habitats are buffered by progressively more improved land.

There is no simple rule for judging when semi-improved land can be classed as HNVF, and an element of subjective judgement is necessary. Generally, where semi-improved land occurs as part of a continuum between fully improved land and semi-natural land, the semi-improved is logically regarded as being part of the HNVF whole. In these situations semi-improved land will be used and influenced by some of the wildlife present on adjacent semi-natural land, and helps to buffer that higher quality land. By contrast, where semi-improved land occurs as isolated tracts surrounded by improved land (for example as a small area of steeper land in an otherwise gently sloping field, or a small corner of a larger field) it is more logical not to regard it as HNVF. Due to the South Devon area being a stronghold for the cirl bunting it is logical to regard low input arable spring cereals in this area as HNVF, and as such this crop has been included in the % of farms comprising HNVF.

Using this distinction, the proportions of HNVF on the eight farms ranges from 20% to 90%. Five of the farms have a high density of HNVF landscape features. The three other farms have a medium density % of HNVF landscape features.

Natural England Holding Assessment Toolkit (HAT) data is available for six out of the eight farms (excluding Farms 3 and 5). See **Note 4** for more detail on HAT criteria and scoring. Three farms (Farms 1, 2 and 8) scored A (highest), one farm (Farm 4) scored B and two farms (Farms 6 and 7) scored C (the lowest score possible is E). All six farms scored highly for biodiversity; four farms (Farms 2, 4, 7 and 8) scored highly for resource protection; and three farms scored highly for historic environment (Farms 4, 6 and 8).

2.4 Management of HNV farmland and features and link to farming system

For each of the eight farms, the farm circumstances and approach to HNVF management are set out in Table A3 in Appendix 1.

On all of the farms HNVF is managed positively, on one farm as a result of the farm philosophy and on five farms as a result of the incentive provided by agri-environment schemes - most of them also have a personal interest in conservation and the environment. Farms 5 and 6 are managed by non-farming landowners who value the HNVF and maintain it out of their own motivation and as an asset to their tourism

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businesses but its management is not funded by agri-environment scheme (AES) payments.

The farmers' attitude to HNVF landscape features, their management, the effect of agri-environment schemes on this management, and the relevance/integration of HNVF to the farm business is set out in Table A3. Farmers' attitudes are generally positive; in most cases management is seen as part of general farm maintenance.

HNVF grassland habitats are generally light-moderately grazed with beef cattle or sheep. Grazing units are mainly defined by AES scheme prescriptions, and depending on habitat is year-round grazing or winter stock removal. On one farm ponies are grazed all year on the cliff tops as a management tool. For all the farms in HLS, entry of the land into the scheme has resulted in a positive change, through specified grazing or scrub and bracken management.

The relevance to or integration of the HNVF into the main farm business varies between farms and depends on the range of enterprises. On Farms 1, 3 and 4, HNVF (with HLS support) is fully integrated into the farm business. On Farms 2 and 8, HNVF is not key to the main farm business but management through AES is seen as an added diversification. On Farm 7 the HNVF is key to sustainable management upon which the ethos of the business is based. The two smallholdings integrate HNVF into adding value to their tourism, but the land is not used as a farm business.

Woodland is generally not directly relevant to farming practice, and is managed separately for conservation or timber (Farm 4), fuel (Farm 7) or in most cases not at all.

2.5 Benefits of farming systems and practices for nature values

A brief summary of HNVF management prescriptions and condition is set out in Table A4 in Appendix 1.

In the majority of cases, the HNVF grassland habitats are in fair to good condition (and in some cases recovering) as a result of grazing prescriptions under CSS or HLS. On Farm 5, the smallholding, HNVF grassland is subject to both under and over-grazing, although there are pockets in good condition. On Farm 3 grazing with ponies and native breed cattle is benefitting the cliff-top grassland, scrub and bracken. The grassland on the other smallholding is let to a grazier with sheep so is generally better. The spring cereals managed for curl buntings is by its very nature in good condition as it is specifically managed for the purpose of providing feeding habitat for this species.

HNVF landscape features such as hedges and woodland are in varying condition. Hedges are generally managed by trimming each year or every other year. The farms in CSS or HLS generally include a programme of capital works to restore or create new boundary features. On Farms 5 and 6, the two smallholdings with no schemes, hedgerow management has been undertaken without subsidy as part of the general land management. There appears to be no or minimal woodland management, with the exception of Farm 4 (restoration work) and Farm 7 (coppiced for firewood)

Additional evidence

Agri-environment scheme uptake has been successful in the area, through targeted projects and Natural England's own targeting.

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The RSPB has been running the Cirl Bunting Special Project, encouraging the growing of spring barley with reduced pesticides, providing the 'weedy' stubbles that are vital to ensure cirl buntings find enough food over winter. The project has given advice and support to farmers and landowners across South Devon and there are now over 200 AES agreements, with options benefitting cirl buntings and other species, including:

- Overwintered 'weedy' stubble - vital as a cirl bunting winter food source;
- Low intensity grassland - i.e. managed with no fertilisers or pesticides - to provide insect-rich areas as important summer food sources;
- Uncropped arable field margins - these are an extremely rich source of insects;
- Restoration of old orchards - and associated grassland rich in insects;
- An extensive network of sympathetically managed, restored and planted hedges - providing important nest sites.

HNVF landscape features have been positively managed in South Devon through supplementary capital grant schemes such as the Heritage Lottery Fund supported Landscape Heritage scheme under the 'Life into Landscapes' project. This included advising 217 farmers and landowners; and providing 116 capital grants to conserve and enhance the landscape heritage of South Devon. The project proved particularly important for those smaller landowners across the area enabling access to assistance that had previously been unavailable

Anecdotal evidence would suggest that under-grazing of HNVF is still an issue around the South Devon area; however the predominance of mixed farms means this may be less of an issue than elsewhere in the county.

Other comments made by stakeholders include that whilst areas of high conservation value have been targeted for management and preserved, many areas with the potential to have value, or that are not species-focussed, have been missed by many of the targeted projects, so may have degraded or been lost completely. For example, many farms in the north of the AONB fall out of the HLS target areas, and without SSSIs the land has low priority for AES. However these areas still have HNVF habitats such as unimproved grassland on steep valley sides or wet, floodplain grassland in the valley bottoms.

2.6 Socio-economic context of farms and HNV farmland management

The socio-economic context of each of the eight farms is set out in Table A5 in Appendix 1.

On the six farms with AES, the net cost of HNVF management is generally absorbed by the option payments. There is some disagreement as to whether the grassland payments reflect the cost of stocking, with Farm 7 estimating that only 50% of the cost is covered due to reduced stocking rates and reduced yields as a consequence of restricted inputs. Farm 8 has a similar view. Others use the payments to subsidise the stock enterprise. On Farm 3, HLS payments on extremely marginal land, (but of high conservation value) enable grazing to take place: without payments it would not be viable. On the remaining two farms (Farms 5 and 6), HNVF is managed by the non-farming landowners and therefore subsidised by either off-farm income or tourism income.

On four farms (Farms 1, 3, 4 and 7) the HNVF is regarded as a net asset to their farm business, due to the HLS payments which appear to result in a net profit from the land.

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Farm 3 has additionally built up a herd of traditional breed cattle, suited to grazing the unimproved pastures; these are marketed to local pubs and restaurants to add value to the meat. On Farms 2 and 8 the HNMF is largely irrelevant to main farm business but regarded as an asset due to HLS. HNMF on the two smallholdings is regarded as an asset through personal interest and from a tourism marketing objective. On all the farms in stewardship there is recognition that profitable HNMF management is highly dependent on HLS payments. It can also be assumed that dependency on AES means that whilst secure in the short to medium term (up to 10 years) the long term management of HNMF is particularly uncertain.

Examples of HNMF cost-benefits

Two examples of cost-benefits of specific HNMF approaches/practices arising on the visited farms are set out below.

The physical and financial figures shown are based on estimates, but are informed by actual data collected from the farms visited.

The cost-benefits of managing low input spring cereal for curl buntings when subsidised by agri-environment schemes, compared to conventional cropping is considered in Table 2-2. This broadly reflects the position for Farm 4, although the example given assumes that the cropping is conventional as opposed to organic. Our partial budget indicates that the low input spring barley plus HLS option (HF15) yields an estimated additional £125/ha or £4,375 each year. This excludes any fixed cost savings which could arise with reduced field operations associated with spring cropping. In an organic system, there may additional income, but costs could also be higher. It is worth noting that commodity price changes can and do have an impact on the relative profitability of different cropping options.

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195 ha medium-sized, mixed farm – arable management for ciril bunting			
	ha	£/ha	£/farm
HNVF permanent grassland and woodland	62		
HNVF arable – HLS Option HF15	35		
HNVF arable – HLS Other Options (in-field and margins)	25		
Other arable including temporary leys	73		
<i>Total area</i>	195		
Current (spring barley (reduced herbicide) followed by overwintered stubble – HF15)			
Spring barley			
Output: 5.0t/ha x £135/t (malting)		£675	
Less variable costs:		-£185	
<i>Gross margin</i>		£490	
HLS HF15 Payment		£195	
Net income (excluding SPS, ELS etc)		£685	£23,975
Notes:			
<ul style="list-style-type: none"> Assumes reduced yield and variable costs Assumes no changes to fixed costs, but savings may arise from reduced spray applications etc. 			
Alternative (winter wheat)			
Winter wheat			
Output: 7.0t/ha x £135/t (milling)		£945	
Less variable costs:		-£385	
<i>Gross margin</i>		£560	
Net income (excluding SPS, ELS etc)		£560	£19,600
Difference		£125	£4,375

Table 2-2: Cost-benefit: 195ha mixed farm – arable management for ciril bunting

A second example considers extensive grassland management with the benefit of HLS payments compared to conventional, commercial management of the same land outside the scheme, see Table 2-3. This broadly reflects the position for Farm 2, which runs a pedigree sheep enterprise largely on semi-improved grassland, but also on some more semi-natural habitat. Our partial budget indicates that the extensive grassland management, with an average stocking rate of around 1.0 LU/ha and plus HLS payments (HK6) yields an estimated additional £110/ha or £1,650 each year. Fixed cost savings are likely to be very limited. The relative profitability of the two approaches will vary according to output prices, variable costs and stocking rate differentials. Other important factors include suitability of stock, quality of extensive managed stock (from a market perspective), timing of grazing and availability of forage.

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100 ha medium-sized, livestock farm – extensive grassland management			
	ha	£/ha	£/farm
HNVF permanent grassland	15		
HNVF woodland, inter-tidal, estuarine land etc	5		
Other land, mainly semi-improved grassland	80		
<i>Total area</i>	<i>100</i>		
Current (extensive sheep grazing on species-rich, semi-natural grassland – HK6)			
Lowland spring lambing			
Gross margin: 7 ewes/ha x £30/ewe		£210	
HLS HK6 Payment		£200	
Net income (excluding SPS, ELS etc)		£410	£6,150
Notes:			
<ul style="list-style-type: none"> Assumes average 1.0 LU/ha stocking rate over year, compared to more commercial 1.6 LU/ha (10 ewes/ha, including lambs at foot). Gross margin is after forage costs deducted. Assumes no changes to fixed costs, but some minor savings may arise (e.g. reduced labour) . 			
Alternative (commercial sheep grazing)			
Lowland spring lambing			
Gross margin: 10 ewes/ha x £30/ewe		£300	
Net income (excluding SPS, ELS etc)		£300	£4,500
Difference		£110	£1,650

Table 2-3: Cost-benefit: 100 ha livestock farm – extensive grassland management

Additional evidence

The farm business income evidence indicates generally low profitability for lowland livestock and mixed farms, and better profitability for cereal farms. FBI in South Devon is likely to be broadly similar to the SW average due to farm size, productivity, good agri-environment scheme uptake and diversification. This income is highly dependent on SPS, agri-environment schemes and also tourism diversification; hence the economic importance for these farms of maximising subsidy receipts from SPS and agri-environment scheme payments. It is worth noting that on two of the farms surveyed, the profit for the past year was equivalent to the payment from HLS.

Other anecdotal socio-economic evidence gained from stakeholder interviews in relation to South Devon includes the following:

- There is a wider social mix of farmers and landowners in South Devon than in many other parts of the country. These include modern commercial farmers, more conservative traditional farmers, and non-farming landowners (which include ‘good-lifers’ and ‘lifestyle’ farmers).
- The natural beauty and lifestyle of the area has attracted incomers with alternative ways of thinking, and hence produced the range of different types of farmers and landowners now present.
- The incomers have often purchased land being sold off from larger farms creating many small holdings or lifestyle holdings. Some incomers are from bigger farms up country, often retiring to the South West for a slower paced lifestyle.

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- At the other end of the scale, larger farms have bought up land, creating larger, more commercial farms, often with larger machinery causing difficulties with access on narrow, steep lanes.
- The National Trust is a large landowner in the region, particularly on coastal land.
- Tourism is important. This means farmers engage with the general public and there is also an important, additional income stream for some farms

2.7 Obstacles to managing HNV farmland

In order to maintain and manage HNVF, basic needs - from a farmer's perspective - include the availability of suitable livestock, machinery and suitably qualified labour and sufficient returns to cover costs and generate an element of profit.

A range of obstacles to managing HNVF were identified from the farms visited; to a degree, these reflect the extent to which basic needs are being met in South Devon but also highlight a number of other problematic issues:

Interest and awareness

- Lack of awareness of the value of HNVF and lack of knowledge in terms of appropriate management and how to implement this. This particularly applies to the non-farming landowners.
- Irrelevance of HNVF to the core farming business, only managed because of availability of HLS payments.

Practicalities

- HNVF is considered marginal in terms of grazing productivity
- Livestock health issues, in particular TB can be barrier to grazing sites, particularly if HNVF is near badger setts. This also causes movement restrictions.

Profitability

- The view that farming is too reliant on subsidies and should be market led.
- Concern over reduced subsidy, and over-dependency of subsidy.
- Cheap labour in the 1960's enabled management of the landscape as part of the farm, now too costly when labour is stretched.

Schemes

- HLS has enabled management, but prescriptions are sometimes too onerous or rigid. Farmers often need advice and guidance but visits are few and far between from relevant Natural England advisors. Rely on external guidance from charities and other NGOs.
- Some prescriptions do not take account of the traditional farm management which has created the valuable habitat in the first place!
- The scheme requirements of summer grazing do not take into account that livestock needs year-round forage and/or housing overwinter.
- No or insufficient management of hedges and woodland –capital works payments under CSS or HLS do not pay enough.
- Some tenanted farms are compromised in their ability to manage HNVF due to AES payments being taken by the landlord, or have challenging rental costs on marginal/HNVF land.
- HNVF areas are sometimes too small to qualify for HLS and are hence undermanaged, particularly on the smallholdings.

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- The perception that scientists and specialists would do well to talk to farmers with experience of practical management.
- Some farmers feel that government agencies and NGO's have 'tunnel vision' and need to look at the bigger picture.

Farmers also had positive comments regarding managing HNMF, including:

- Environmental management is important – we ignore nature at our peril!
- Work with the ecosystem around us, co-existing is way forward.
- Scope in the South Devon area to enhance the ecosystem.
- Likes to farm 'the old way' as it suits the farm and benefits the environment.
- HLS has improved HNMF management compared to CSS, as it is more tailored to the farm.
- Farming extensively with HLS means land can be farmed with less labour input, reducing costs.

Additional evidence

Other issues mentioned by stakeholders include the following:

- Complexity of schemes means farmers are often daunted or put off by CSS or HLS, and need detailed guidance from advisors such as FWAG, DWT or RSPB.
- The Cirl Bunting project has been key in involving farmers in AES along the South Devon Coastline and has delivered results.
- Fragmented land ownership, with old estates being sold off in smaller lots - often to lifestyle buyers with a lack of management knowledge.
- Negative grazing with horses; 'horsiculture' is common across the area, often grassland is overgrazed, weedy and poached.
- Lack of funding available to people not eligible for agri-environment schemes with capital works payments- hence many features, particularly Devon banks become degraded.
- Survey data available to identify HNMF is not up-to-date in South Devon, including data used by NE to target AES, consequently areas could be under-rated and therefore missed.
- Outside of the cirl bunting target area, the presence of AES schemes to manage HNMF can be sparse, resulting in the occasional 'oasis' of habitat. Corridors and linkages between these 'oases' are lacking.
- Dependence on AES to fund management on HNMF is not sustainable in the long term.

2.8 Future trends and consequences for nature values

Future trends in the interviewed farmers' approach to HNMF and the potential vulnerability of HNMF as a result of these trends are set out in Table A5 in Appendix 1.

The owner of Farm 7 is committed to the conservation of the HNMF through his sustainable ethos, so it should be secure for as long as it remains in his ownership. That said, there is uncertainty attached to the management of the land following the end of the HLS, at which point he wishes to retire. Options for the farm may be to sell the beef herd and rent out the grazing.

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For the farms in HLS (Farms 1, 3, 4, and 7) the scheme should secure consistent, positive management of HNVF for the remainder of the agreement term (up to 10 years). The future beyond that is less clear, although on two of the farms, there are potentially sustainable beef enterprises, tourism and diversification enterprises which should keep the farms going. On the three farms with SSSI designation over part of the land, this element of HNVF should be secure for the long term under its statutory designation, although designation does not necessarily ensure good condition. The owners of Farm 6 are not reliant on income from HNVF so it should be secure in the medium term. The future of management on Farm 5 is uncertain in that the owners would like to take up some kind of stewardship, but the small size of the farm means it is unlikely to attract any subsidies other than ELS. The current personal motivation will continue, and there is scope for the altruistic projects to be done on a more sustainable scale.

HNVF on Farm 8 is currently managed under CSS, with the agreement expiring next year, some areas are likely to be maintained, such as unimproved wildflower meadows and field margins, out of the owner's own commitment but some semi-improved grassland may be improved or stocking rates increased at the end of the scheme. Much of the management would be dependent upon entry into the HLS scheme, at the moment although HLS budgets are reducing, the presence of cirl bunting on the farm should make it a priority agreement.

The management of HNV landscape features such as hedges is likely to be generally static or improving.

In terms of the vulnerability of HNVF in light of the above trends, Farm 1, 2, 3 and 4 are secure for the remainder of the HLS agreement. However, on Farm 2, the increase in rent since having an agreement means that, at the end of the HLS term, continuing to rent the farm may not be viable. Some of the land on Farm 3 is owned by the National Trust so is secure under their ownership, regardless of tenancy. On Farms 5 and 6 the management is likely to be continued for the foreseeable future under their ownership. On Farm 7 the HLS and sustainable ethos is likely to ensure future management of HNVF although retirement may impact on possible management. HNVF on the last farm (Farm 8) is possibly secure depending on entry into HLS.

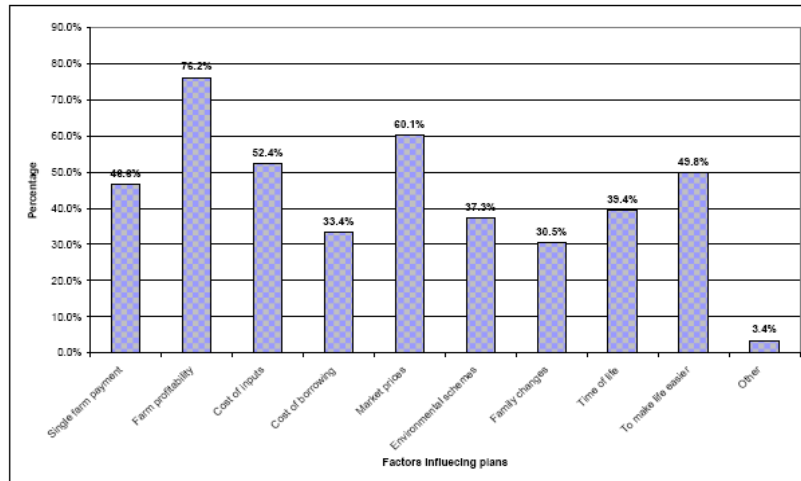
Additional evidence

There is a range of additional evidence available from studies and stakeholder interviews which provide some indication of future trends for farms with HNVF. Butler et al (2007) undertook a postal survey of 598 Devon farmers in late 2006 in part to ascertain farmer intentions and drivers of future plans. Key findings relevant to this study (albeit from a now dated survey) were as follows:

- 82.1% of farms will continue under the management of the same family over the next five years. This includes 62.9% of who intend to be managing their farm as they are now or with increased production or increased diversification activities and a proportion who intend to retire or semi-retire and have identified a successor to take over the family business.
- 30.7% of farms will increase livestock numbers but conversely 24.8% will reduce numbers. This reflects gradual structural adjustment in the sector. This figure is likely to have changed in more recent years, with sheep prices in particular increasing. Beef producers are facing increased costs from market volatility in the cereals sector, leading to feed prices increasing.

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- The majority (76.2%) of Devon farmers consider farm profitability to be the main influencing factor affecting future farm plans. This includes agricultural enterprises, as well as schemes and other activities. Other factors include market prices (60.1%), cost of inputs (52.4%), ‘to make life easier’ (49.8%), SPS (46.6%), time of life (39.4%) and environmental schemes (37.3%), see Figure 2-4.



Source: Butler et al (2007) using Devon sample from SW farm survey CRPR 2006

Figure 2-4: Factors that influence farm planning

Aside from farmer views, it is important to note the following general trends and drivers likely to affect farming and land management in South Devon. These are based on a review of various studies and reports including Cumulus (2007) and Andersons (2010), together with stakeholder comments:

- **Market volatility.** There is likely to continue to be market volatility as cereal, dairy, beef and sheep products are influenced by a range of global, European and domestic factors. The cereals market has been affected by poor prices in 2009, followed by improvements in 2010. The underlying longer term position may be more promising, particularly if the predictions for world population and the change in diets and eating behaviour come to fruition. After a difficult 2009, dairy farmers are becoming increasingly confident with dedicated supply chains and recent better prices. Most dairy farmers (75%) plan to stay in the sector for the next ten years and many will invest and expand (Dairy Co (2010) Farmer Intentions Survey). Beef farmers have experienced fairly stable prices recently and no real change in profitability, although for most this profit is highly dependent on SPS income. In the medium term, ‘Mercosur’ trade talks could result in downward pressure on beef prices. In the meantime, no significant increase or decrease in the size of the beef herd is expected locally.
- **Local markets.** There continues to be an interest from consumers in locally-sourced food. A recent survey of 1000 shoppers in the UK by IGD (IGD (2010) Shopper Trends Report, see article on www.thefoodnetwork.co.uk) showed 30% had specifically bought local food in the last month (up from 15% in 2006) and 54% said they wanted to support local producers (up from 28%). This would suggest a continued place for the production and marketing of local foods even in the current recession - “shoppers are looking for both value and values”.

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- **Input prices.** Prices of inputs such as fertilisers and fuel are expected to continue to increase gradually over the years ahead, indicating continued need to make efficiencies to maintain profitability.
- **Single Payment.** The regional average payment is expected to increase to around £220/ha by 2012. Thereafter, CAP reform can be expected to result in a reduction in and re-targeting of support payments (possibly linked to the delivery of public goods / ecosystem services). Some estimate that the average Single Payment could be halved by 2020, although land of high environmental value could be protected from the worst of the cuts.
- **Agri-environment Schemes.** Environmental Stewardship will continue however it seems inevitable that it will be under budgetary pressure in the future. Existing ELS and HLS agreements are probably secure for the remainder of their agreement term, but prospects for new HLS agreements in terms of number and total payments could become more limited up to the end of 2012 and beyond. There is no absolute guarantee the scheme will be available in any RDPE after 2013.
- **Other rural development expenditure** is similarly likely to be curtailed over the remainder of the 2007-2013 period, reducing investment in farm business, farm diversification and rural community projects.
- **Exchange rate.** A weak sterling over the past two years has benefited farming via improved export prospects and increased support payments. This may change if the pound strengthens (as a result of current government policies and the performance of the economy), with a resultant reduction having an adverse impact on farm profitability.
- **Animal health and welfare.** TB and other animal diseases will continue to adversely affect livestock farming in the SW (including South Devon) both in terms of profitability and confidence.
- **Climate change.** In the medium-long term, livestock producers in the county will need to adapt to warmer summers and winters, reduced summer rainfall, more heavy rainfall events and a generally less predictable climate. These changes may result in changes in stock types, reduced stocking rates, different grazing regimes and changes in forage crops grown.
- **Land market/land values.** In general, agricultural land values are expected to increase over the next few years on the back of growing population, demand for food and other products from the land, and rising commodity prices (Savills (2010) Agricultural Land Market Survey 2010). A premium is expected to continue to attach to land in South Devon, particularly for smaller holdings attractive to incomers (i.e. prospective smallholders or non-farming landowners).
- **General economic circumstances.** Reduced public expenditure, reduced consumption of certain goods and services, and increased unemployment could all adversely affect income from on-farm diversified (tourism and other) enterprises and off-farm income, reducing farm profitability.

If these trends are applied to HNVF in South Devon, key points about the future to highlight include the following:

- The prospects for cereal, dairy, beef/sheep and mixed farms which support HNVF are uncertain in the short term, although the underlying trends for agriculture in terms of commodity and local markets are generally positive in the medium-long term.
- Commercial arable farms in the area will be mindful of better, longer term prospects for commodity crops in the future and will scrutinise options carefully on expiry of current HLS agreements; this may have adverse impact on arable

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habitats. Improving productivity will however require future investment (in technology, equipment, scale etc) which some will be unwilling or unable to make.

- Commercial dairy farms, and to a much lesser extent commercial beef farms, look set to continue to invest and potentially expand individual herds. This should mean a continued supply of commercial graziers for HNPF.
- Beef and sheep farms are particularly vulnerable to a decrease in SPS income over the next CAP period to 2020, and also a reduction in agri-environment scheme and diversification income. This is likely to adversely affect farm profitability resulting in further restructuring (ie. fewer farmers and farms being responsible for the grazing of more land).
- Livestock numbers are vulnerable not only to underlying enterprise profitability but also animal disease risks.
- Traditional breed livestock appear likely to continue to play a small, but important part in grazing in South Devon, where the beef is being sold to local markets, with the traditional breeds adding value.
- Environmental outcomes will be dependent, to an extent, on the continued availability of agri-environment scheme income. However future budget cuts could limit the area under HLS in particular, even though South Devon is a priority area for HLS.
- The sale of smaller units to non-farming landowners and larger blocks to commercial farmers also seems likely to continue.
- The increasing polarisation of between large farms highly dependent on agriculture as an income source and groups of smaller farms where agricultural income is supplemented by a variety of sources such as pensions, rental income and income from diversification and off-farm working, appears to apply as much in South Devon as it does elsewhere in Devon.

3 Conclusions

Our conclusions from this case study are as follows:

- HNMF is estimated to cover 8,503 ha or 25% of the South Devon AONB. This includes a mosaic of habitats and features such as maritime grassland, scrub and gorse on cliffs and slopes, calcareous grassland, lowland meadow, lowland heathland, (buffering and linking) semi-improved grassland, hedges, mixed deciduous woodland, wet woodland and watercourses. Low intensity arable cropping is also an important HNMF habitat in South Devon, when in a mosaic with these other habitats. 58% of this HNMF is designated SSSI or CWS and 70% is under some form of agri-environment scheme (mainly Environmental Stewardship).
- HNMF occurs in a spectrum of farming situations. The farms surveyed represent most of this range, including very small holdings with a high proportion of HNMF owned by non-farming landowners, through to medium-sized and larger holdings managed by commercial farmers. Due to the nature of contacts in the area, we were unable to include any large commercial farmers with only a small area of HNMF. Even on the most habitat-rich holdings, HNMF is only a component of the farm; there were no farms surveyed which entirely comprised of semi-natural vegetation. In South Devon, the nature value of, arable habitat for curl bunting, meant that the percentage areas of HNMF were higher than it might be otherwise. HNMF varied from 20% to 90% of total farm area on those farms visited. It should be noted that estimating the percentage area of HNMF is not an exact science.
- HNMF is regarded by the farmers surveyed as being both secondary/peripheral to their business and a key asset due to HLS payments; all of the farmers surveyed had a personal interest/motivation in HNMF or conservation and the environment. On two of the farms, profitability was dependent on HLS payments, on two others the main farm business did not depend on HNMF, although the agri-environment scheme payments benefited the farm as a whole. The two smallholdings regarded HNMF as a net asset, but mainly due to personal motivation and as adding value to their tourism enterprises. One farm used the HNMF to add value to its native breed beef enterprise.
- HNMF management is influenced by the beef rearing and finishing, and sheep systems which predominate in the South Devon AONB, as well as more extensive arable systems. In the majority of the farms visited, HNMF grazed habitats are in fair to good condition as a result of light-moderate spring and summer grazing and HNMF features such as hedges and hedge banks are in satisfactory to good condition. On one farm, ponies are being used as a management tool on the coastal HNMF. On one of the small holdings, pony grazing was creating areas of deteriorating HNMF due to under- or over-grazing, due to the health requirements of the ponies.
- Farm business profitability for many farms with HNMF in the South Devon AONB is relatively low and dependent on SPS income. Lowland grazing (beef and sheep) farms will be particularly vulnerable to subsidy cuts which are expected to occur as part of CAP reform from 2013 onwards. All commercial farms with HNMF (including cereal, dairy, beef and sheep, and mixed farms) are subject to financial pressures arising from (often short term) market volatility; this affects output and input prices, profitability and ultimately land use and land management decisions.

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- The profitability of HNMF management *per se* is generally positive, but this is heavily reliant on SPS and agri-environment scheme income. This is positive in the sense that it shows that policy is having an important effect. However, agri-environment schemes are, in some cases, enabling HNMF management only on an artificial, temporary basis which may not be sustainable after the end of an agreement. Reduced income from SPS and agri-environment schemes could lead to a change of management of HNMF. This is likely to have mainly negative impacts arising from abandonment, under management and in some cases (e.g. on arable, dairy and more intensive beef units) intensification.
- Aside from financial pressures, there is a range of other obstacles to managing HNMF. These include lack of interest and awareness, animal health and welfare concerns, and eligibility for and the commitments involved with HLS.
- Key policy messages from the case study include the following:
 - The sustained and focused effort to assist cirl bunting recovery along the South Devon coast led by the RSPB has been very positive; it has raised awareness of the species and appropriate habitat management, helped wider HNMF management, and ensured good uptake of targeted agri-environment schemes. For other areas of HNMF in the AONB, there is a continued need for advice, guidance and encouragement to support HNMF management.
 - There is generally low profitability for lowland livestock and mixed farms in South Devon, and better profitability for cereal farms. The profitability of livestock and mixed farms with HNMF is particularly dependent on SPS and agri-environment scheme income and vulnerable to changes in scheme design and payment rates. Cereal farms and arable HNMF will also be influenced by commodity price fluctuations, especially on renewal of agri-environment scheme agreements.
 - SPS will evolve with CAP reform, but where farms provide valuable public benefits via HNMF management, scheme payments should be sustained to avoid significant, adverse effects on farm profitability and hence HNMF management.
 - Agri-environment schemes are very beneficial for HNMF in South Devon but could be improved. HLS needs to be made simpler, more flexible and more user-friendly, harnessing the knowledge and experience of farmers. HLS should not overlook HNMF in smaller parcels, in the ownership of non-farming landowners and/or located outside the cirl bunting target area.
 - Ecosystem services provide an opportunity for additional/alternative income sources for HNMF; however appropriate payment mechanisms and markets need to be developed.
 - There is evidence of some integration of HNMF into farm and tourism related businesses in South Devon. This should be encouraged to help improve the long term sustainability of HNMF management.
 - There is still a need to address some of the practical obstacles associated with managing HNMF including: livestock health; management with horses etc.

The implications of these findings for policy and for future conservation of HNMF will be developed in the report for Phase 3 of this project.

Appendix 1: Farm Interview Findings – Summary Tables

	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8
Categorisation	Medium sized Mixed livestock and cropping. Organic conversion Family farm	Medium sized. Pedigree Sheep enterprise. Family farm	Large beef and arable cropping. Part organic. Family farm	Medium sized. Organic arable cropping. Beef and sheep grazing.	Smallholding, pony grazing, poly-tunnels. Non-farming landowners	Smallholding, sheep grazing let out, holiday cottage. Non-farming landowners	Medium sized organic arable and beef. Family farm	Medium sized Commercial beef and vegetable growing farm. Family farm
Holding area /ha	140	101	367	196	4.4	5ha	64	113
Tenure	Tenanted	16ha Freehold 85ha tenanted	64ha Freehold 303ha Tenanted	135ha Freehold 61ha Tenanted	Freehold	Freehold	40ha Freehold 24ha tenanted	54ha Freehold 59ha Tenanted
Enterprises	Beef and sheep. Arable cropping and Forage crops. Bed & Breakfast and Holiday cottage	Pedigree Sheep	Traditional Beef Arable cereal and fodder cropping Cattle housed overwinter from grazing projects. Meat cutting plant. Sheep on tack.	Organic arable rotation, clover ley grazed. Conventional Perm pasture grazed by neighbour on grazing licence. Holiday lets.	Poly-tunnels open to locals for food growing, ponies as hobby and for equine therapy for disabled people. Holiday cottage. Camp site	Rented out sheep grazing. Holiday cottages Caravan site Daffodil field for cut flowers	Organic beef Organic vegetable Organic Cereals in HLS. Discovery centre Educational visits	Beef rearing Vegetable growing and trading (10% grown on farm-high value crops e.g herbs, lettuce) Cereals grown under CSS
Designations	Part SSSI	Part SSSI	Part SSSI	Scheduled monument	None	Possible CWS	None	2 CWS
Agri-env participation	ELS/HLS (undergoing organic conversion-OELS)	CSS/ELS HLS from April 2011	ELS/ HLS	OELS/HLS	None	None	OELS/HLS	CSS

Table A1: Description of Sample Farms

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	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8
HNVF habitats²	<ul style="list-style-type: none"> Unimproved rough grassland Gorse, bracken & Scrub Maritime grassland, cliffs and slopes Low input spring barley for ciril bunting. Wet woodland 	<ul style="list-style-type: none"> Lowland unimproved grassland Wet willow & reedbed Intertidal Estuarine habitats 	<ul style="list-style-type: none"> Maritime grassland Gorse & bracken scrub Unimproved rough grassland Low input spring barley for ciril bunting. Orchard Lowland mixed decid. woodland 	<ul style="list-style-type: none"> Cereal habitat for ciril bunting Scrub Unimproved grassland Orchard Lowland mixed deciduous woodland Maritime cliffs and slopes 	<ul style="list-style-type: none"> Rough unimproved grassland. Wet woodland Semi-improved grassland extensively managed 	<ul style="list-style-type: none"> Rough unimproved grassland. Semi-improved grassland extensively managed Orchard Wildflower meadow 	<ul style="list-style-type: none"> Low input spring barley for ciril bunting. Species rich grassland Marsh/wetland 	<ul style="list-style-type: none"> Low input spring cereal for ciril bunting Species-rich unimproved wildflower meadows Semi-improved grassland, some on steep rough banks Scrub
HNVF habitats as % of farm	40%	20%	65%	60%	75%	90%	90%	75%
Context of HN VF– S/I land³	Low input arable habitats integrated with main cropping. HN VF habitats on steeper valley slopes, cliffs and cliff slopes. Some S/I land.	Almost all other land is effectively improved grassland	Large blocks of rough grazing and maritime grassland adjoins arable and improved grassland.	HN VF semi-natural habitats located to margins of farm. These about cereal/temporary clover leys. Very little S/I grassland.	Land is adjoined by other extensively managed smallholding and intensive arable cropping	Land is adjoined by other extensively managed smallholding and intensive arable cropping	Organic arable under HLS options integrated with organic grassland HN VF. Farm surrounded by convention, intensive farming	S/I grassland extensively managed under CSS. Arable HLS integrated with vegetable crops. Adjoins improved and S/I land
HN VF landscape features	Devon hedge banks Stream valley Field margins	Devon hedge banks. Springs & Streams	Hedge banks Woodlands streams	Hedgerows Hedge banks Field margins Woodland Streams	Ancient hedges, Green lanes Devon banks stream	Hedge banks	Hedge banks Streams Field margins Copses	Hedge banks Streams Field margins Copses
Density of HN VF landscape features⁴	Low density in improved plateau part of farm. Higher in valleys.	Variable – high on steeper slopes and in valley bottom.	Variable–higher within valley bottoms, low on plateau.	Variable – high density on valley sides, low density on plateau	High density – small field size	High density – small field size	High density	Medium density

Table A2: HN VF Farmland and Features on Sample Farms

² Habitat composition of main areas of semi-natural vegetation on the farm

³ Are the semi-natural habitats in isolation amongst improved land, or is there a 'buffer' of semi-improved (S/I) land around them – a progression from semi-natural, through semi-improved, to improved?

⁴ Higher density of HN VF landscape features suggests greater ecological connectivity across the holding

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	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8
Attitude to HNVF habitats	Positive through personal motivation and HLS incentive.	Positive and interested, led by HLS incentive	Positive on rented land (viable farming unlikely without HLS) Interested but less proactive on more intensive home farm	Positive, very interested through personal motivation and HLS incentive. Current management fits personal circs.	Positive and interested, motivated by personal interest & tourism benefit	Fairly positive, enjoys the environment, benefit to tourism	Very positive, organic, sustainable ethos motivates, with HLS subsidising management.	Mostly positive, HLS is an incentive. Feels some area need to be more improved/fertile to increase profitability
Attitude to HNVF landscape features	Positive towards maintaining features but not happy with capital works payments.	Positive and interested, has fenced off hedge banks to protect from sheep	Positive maintenance, through CSS and now ELS/HLS	All hedge management done by contractor, flailed. Hedge banks restored under HLS	Positive, has restored and created new hedge bank. Stream fenced off	Maintains and protects the hedge banks	Positive, places importance on corridor habitat linkages. Actively manages features.	Traditional attitude to good hedgerow management
Method of management	Summer cattle grazing, scrub management through cutting.	Sheep grazing all year, topping and brash/scrub cutting	Rare breed beef grazing, (wintered inside), sheep (Dec-April). Ponies year round on cliffs.	Grazing with beef cattle and sheep	Light pony grazing	Sheep grazing March to December	Beef grazing. Housed in winter. Runs 12 sheep	Summer grazing with cross-breed beef cattle
Effect of a-e scheme	AE enables traditional farming with suits land and area. HLS better than old CSS as prescriptions can be tailored to suit	CSS has enabled management of scrub and gorse which would otherwise have been left.	Positive effect under CSS and HLS, farming cliff top grassland is marginal without subsidy.	AE assists along with organic farming helps to balance physical limitations of farm	No agreement	No agreement	HLS pays for arable farming and stock grazing, substantially funded education centre. (has also used SPS subsidy to fund discovery centre)	CSS has enabled management of unimproved land, however too much S/I was put into restricted low input options. Will look at HLS but may not include so much.
Relevance to/integration with main farm business	Managing HNVF through HLS is vital to farm business, by subsidising stock grazing and arable payments	HNVF does not really affect sheep business, although scheme stocking rates and available land limit flock expansion	Farming HNVF extensively with HLS support means can manage with no labour, keep costs down. Does limit stocking rates	HNVF is well integrated to farm business, both through organic management and HLS	Land is not used as a farm business, but supported by outside employment.	No specific need for land, retirement hobby. Uses meadows as feature for holiday cottage/caravan site marketing	HNVF is key to sustainable management upon which business is based.	Integrated through CSS scheme, continues to be grazed by beef herd. Not relevant to veg business.

Table A3: Farmer attitude to HNVF, management, scheme effect and relevance to farm business on Sample Farms

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	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8
HNVF habitats								
Stocking level	Moderate: 1.7 LU/ha over 80ha. prescribed by HLS (increased from original prescription after discussion)	Moderate: 1.6 LU/ha	Light on cliff land – 0.77LU/ha. Moderate to high on home farm (brother's dairy cows graze)	Light to moderate on permanent grassland. Heavier on white clover leys	Light	Light, ewes & lambs or stores lambs, moved regularly to avoid overgrazing	Light to moderate cattle grazing, prescribed by HLS	Light to moderate, prescribed by CSS. (thought to be too low)
Timing of grazing	Summer, Autumn.	Year round. (in lamb ewes housed Jan/Feb for lambing)	Cattle – spring, summer, autumn. Sheep –Dec-April Ponies – year round	Spring, summer, autumn	Year round, on rotation	March to Dec	Spring, summer, autumn	Spring, summer, autumn
Resulting condition of HNVF habitats	Largely favourable, some scrub areas on cliff SSSI unfavourable-recovering	Grassland in good condition managed under CSS. Wet woodland in fair condition.	Largely favourable, ponies have done good job of bracken/scrub control.	Good, favourable condition, some areas of bracken, ragwort (being tackled).	Some over grazed areas, some undergrazed areas. Generally fair condition	Generally good condition. Rough bank unfenced so undergrazed	Good condition. Some weed problems in arable HNVF	Good condition
HNVF landscape features								
Management of linear features	Hedge bank restoration through capital works	Hedges layed on rotation, fenced.	Flailing every other year, and some hedge bank restoration	Flailing on rotation. Devon banks restored and replaced	Mostly good, some restoration. Flailed as required	Flailed, hedge banks fenced from stock	Laying/coppicing	Flailing, restoration as required
Woodland	Minimal	Minimally managed for conservation.	Minimal	Minimal. Some clearing taking place.	Some tree planting done	none	Coppicing for log fuel sales.	On rented ground but not rented. Unmanaged
Resulting condition of HNVF landscape features	Generally good.	Thick hedges, good condition, willow may need more management.	Generally good, most have been managed under CSS for last 10years.	Hedges are generally OK. Woodland in recovering condition.	Generally ok.	Generally well managed	Good, well managed thick hedges	Generally good

Table A4: HNV Management Prescriptions and Condition on Sample Farms

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	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5	Farm 6	Farm 7	Farm 8
HNVF habitats								
HNVF costs being met, absorbed or rejected	Costs now being met through HLS, previously through CSS. Winter housing of stock not covered.	Costs had been mainly met by CSS, ELS does not pay. May be met by HLS but after asking for 10year tenancy rent has increased by 50% so may not be worthwhile!	Costs met by getting HLS payments - key to viable management. Previously CSS payments had gone to landlord.	Costs generally being met by HLS. Farm managed under contract which helps i.e. limited fixed costs.	HNVF costs being absorbed in general land management, income from outside of farming.	Absorbed within land management, funded by tourism income	HLS does not cover cost of grassland management, due to reduced forage yield and stocking rates. Arable costs met by HLS, but build-up of problems where options don't fit organic rotation	Costs being met in part by CSS payments, reduced profitability due to too much land in low input CSS restricting stock, hence stock do not make profit.
Is the HNVF an asset, burden or irrelevance to the farm business?	HLS makes it a net asset for the next few years, but dependency on HLS will remain high	HNVF is largely irrelevant to farm business, managed under CSS/ HLS it looks after itself.	HLS makes it an asset, would not be at all viable without HLS however	HLS, organic farming makes HNVF an asset to farm business	Generally an asset, not used for main business but adds value to holiday cottage. Tourists can use land for general enjoyment	Asset to tourism business	HLS makes it a net asset, also an educational asset for discovery centre business	Accepted as an asset through CSS.
Trends in approach to HNVF	HLS and organic conversion means HNVF on the farm should remain positively managed. The SSSI designation secures maritime habitat.	HNVF will be managed under HLS for next 10 years.	HLS will improve condition, and lack of reliance on the land for income should make it secure for medium term	HLS should improve condition with grazing prescriptions	Uncertain – would like to manage more but restricted by lack of budget	General management will remain the same, more fencing over time. Creating more HNVF from daffodil field	Continued management under HLS. Reducing vegetable enterprise will be replaced by arable HNVF.	Some areas of low input S/I may be subject to improvement following end of CSS. Species-rich will be managed a current. Possible HLS may offer greater variety of arable HNVF.
Vulnerability of HNVF resulting from above	Secure for short term (10 years) Long term on SSSI.	Secure for the remaining tenure of the current tenants.	Secure for tenancy and duration of HLS. Sustainable land management goal of landlord.	Secure for duration of HLS. However poor organic returns may mean pulling out of organic.	Variable- secure with current owners attitude, but vulnerable through lack of management	Secure for foreseeable future	Secure for remainder of HLS, vulnerable after depending on retirement	Fairly secure for short term on some areas, S/I areas vulnerable to improvement

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HNVF landscape features – hedges and other linear features, ponds etc								
HNVF costs being met, absorbed or rejected	Met in part by HLS, otherwise absorbed. (missed increased capital works payments)	Partly met by CSS but subsidised by owner	Capital works covers half, more when work done by farmer. Rest absorbed.	Met in part by HLS capital works, otherwise absorbed within general farm maintenance	Absorbed by land management	Absorbed by land managed funded by tourism business	Met in part by HLS, management being used as educational resource	Met in part by CSS, otherwise absorbed
Is the HNVF an asset, burden or irrelevance to the farm business?	Minimal asset and hence part of normal farm maintenance	Fairly irrelevant to business, management is part of farm maintenance.	Irrelevant to business	Generally irrelevant to business but part of farm maintenance	An irrelevance to business.	Part of normal farm maintenance	Asset to educational aspect of business	Regarded as normal part of farm maintenance
Trends in approach to HNVF	Static	Static	Static	General programme of restoration.	Static	Static	Proactive for short term	Static
Vulnerability of HNVF resulting from above	Safe whilst under HLS	Safe for period of current tenure	Safe for period of current tenure	Safe whilst under current ownership	Vulnerable due to lack of budget	Safe	Safe whilst under current ownership	Safe whilst under current ownership/tenancy

Table A5: Socio-economic Context for HNV Management – Relevance, Trends and Vulnerability – on Sample Farms

Appendix 2: Notes

NOTE 1: METHODOLOGY FOR DERIVING THE DRAFT MAP OF HNMF EXTENT

The following data were used to produce the map:

- OS Mastermap (used as the base map from which HNMF land parcels were copied)
- Sites of Special Scientific Interest
- County Wildlife Sites
- Semi-natural vegetation
- Topography/slope
- Field size
- Landscape character
- Aerial photographs

The HNMF layer consists of copied OS Mastermap polygons. These polygons are taken from the Topo_Boundary layer. To facilitate selection and copying of the polygons the OS Mastermap layer was simplified to white polygon outline so that aerial photography could be seen beneath them.

The process for identifying HNMF was as follows:

1. The first stage was to digitise those OS Mastermap polygons which are co-located with SSSI and CWS.
2. The next stage was to work systematically across the AONB, using up to date aerial photographs, and digitise every instance of what appeared to be, from the aerial photographs, semi-natural vegetation (scrub, rough grazing, ponds etc.).
3. Another set of criteria for selection into the HNMF layer were agglomerations of small fields (high density of hedgerows), areas of orchard, small farm woodlands (broadleaved or mixed only – pure conifer plantation was excluded) and in some cases larger arable or grassland fields.
4. Finally, woodlands were brought in as High Nature Value Forestry is an aspect of the HNMF project.

Critique of effectiveness of aerial photograph analysis

Aerial photograph analysis varies in its ability to identify these categories of HNMF occurrence. HNMF on steep slopes or on cliff tops and maritime slopes is easily identified remotely. Lowland meadows (neutral grassland) tends to occur in fields which have been partially improved in the past, and have a more even, smooth texture from the air, which can easily be overlooked. Riparian wetland is usually rough in texture and can be identified. It is not possible to identify low input arable, a Type 3 HNMF through this method. Hedgerow and hedge bank corridors can be identified relatively easily from aerial analysis.

Hence aerial photograph analysis can (provided it is carried out by a trained individual) identify a large proportion of HNMF in this type of landscape, but difficulties include the following:

- Good quality semi/unimproved neutral grassland, where not identified as SSSI or CWS, are almost impossible to identify from aerial photography. Rough/scrubby

grassland is quite obvious. Some semi-improved rush pasture may also be overlooked.

- Arable land is problematic. CWS/SSSI do not generally represent good quality arable (i.e. rare plant/bird interest), though some CWS are designated for bird interest (South Devon Cirl Bunting CWSs). Stubbles or other cropland could also be mis-identified as being heath/tussock, given their similar rough texture
- Field patterns are not necessarily an indicator of high nature value.

NOTE 2: DATA SOURCES FOR FARMING CHARACTERISTICS AND TRENDS

Farming characteristics and trends in the case study area can be analysed through the following data sources:

- Farm Survey data (from the latest Defra June Survey). This data is available for the AONB and the sample parishes. For the sample parishes, some limited data for holdings with HNPF has also been obtained from Natural England. More detailed data on the farming characteristics of holdings with HNPF is unfortunately not available.
- Rural Land Register data (from the Rural Payments Agency). For the sample parishes, some limited RLR data for holdings with HNPF has been obtained from Natural England. More detailed data (e.g. RLR holding size, field size etc) is unfortunately not available.
- Single Payment Scheme data (from the Rural Payments Agency). This has the potential to show, by individual holding, land use, stock type present and other data. Unfortunately, this data was unavailable to review and analyse.

NOTE 3: DATA SOURCES FOR FARM BUSINESS INCOME

Farm Business Income (FBI) data is collated for Defra by Duchy College in the SW region. It provides robust financial data for a sample of farms in the SW region however it is not possible to extract a sub-sample for farms in the AONB, let alone farms with HNPF in the AONB.

The Farm Business Income section also draws on reports produced by the Centre for Rural Policy Research for Devon County Council. These include 'Farm Incomes in Devon 2007/8' (Lobley et al, 2009), which has been updated to include the latest available FBS data for South West England (2008/9). FBI is Defra's preferred measure of farm income and represents the return to all unpaid labour (farmers, spouses and others with an entrepreneurial interest in the farm business) and to all their capital invested in the farm business including land and farm buildings. This is essentially the same as net profit. Note only farms capable of supporting at least 0.5 labour unit are included in the FBS (for lowland grazing livestock farms, this equates to 30 suckler cows and progeny, equivalent to a 75 acre farm at an average stocking density).

NOTE 4: NATURAL ENGLAND HOLDING ASSESSMENT TOOLKIT SCORING

Natural England uses the Holding Assessment Toolkit (HAT) to score individual holdings in terms of the presence of particular features, designations or other characteristics in order to prioritise holdings for HLS funding. The criteria include:

- Target areas and theme areas
- Access, including
 - Public rights of way
 - CROW (Countryside and Rights of Way Act 2000) designated land
- Biodiversity, including
 - SSSI and other designations
 - BAP habitats
 - Rare species
- Historic Environment, including
 - Scheduled Monuments
 - Undesignated sites/features
- Landscape, including
 - AONB
- Resource Protection, including
 - Catchment Sensitive Farming area
 - Flood risk

There are five categories of HAT score: A (highest), B, C, D and E (lowest).

Not all holdings have been HAT scored.

NOTE 5: HNV FARM TYPOLOGY

A number of studies have attempted to identify farming systems associated with HNV farmland. These include Anderson et al (2003) and IEEP (2007) which both set out HNV farming systems typologies. Simplified versions of the more recent IEEP typology is set out below, showing those HNV farming systems potentially relevant to the Devon case studies.

Broad Category	HNV Farming System
Potential HNV cattle systems (beef and dairy)	Extensive systems using semi-natural pastures
	Extensive grass based systems
	Extensive grass/arable systems
Potential HNV sheep and goat systems	Sedentary low-intensity systems on semi-natural grassland
Potential HNV arable crop systems	Semi-intensive arable systems
Potential HNV permanent crop systems	Traditional orchards

Source: adapted from IEEP (2007)

Table A6: HNV Farm Typology - IEEP

When scoping potential farms to be surveyed, a number of categories were identified by the project team as representing the range of farms in South Devon likely to have HNV farmland – essentially a local HNV farm typology. This typology was based on an analysis of Defra farm survey data for the AONB and sample parishes, and a review by the project team of farming systems known and likely to support HNV farmland. The typology provides a number of sub-categories reflecting the extent of HNV land and the nature of the ownership. The local typology is shown in Table A7 alongside the relevant IEEP categories and Defra farm types (using our best estimates).

HNV farm type (South Devon)	HNV farm type (IEEP)	Defra farm type
Cereals - small amount of HNV	Semi-intensive arable systems	Cereals
Cereals - medium/high amount of HNV	Semi-intensive arable systems	Cereals
Mixed farm – small amount of HNV	Extensive grass/arable systems	Mixed farm
Mixed farm – medium/high amount of HNV	Extensive grass/arable systems	Mixed farm
Lowland grazing livestock farm (beef/sheep) – small amount of HNV	Extensive grass based systems	Grazing livestock (lowland)
Lowland grazing livestock farm (beef/sheep) - high amount of HNV	Extensive grass based systems	Grazing livestock (lowland)
Dairy farm – small amount of HNV	Extensive grass based systems	Dairy
Dairy farm – medium/high amount of HNV	Extensive grass based systems	Dairy
Non-farming landowner – small amount of HNV	Extensive grass based systems	Other
Non-farming landowner – high amount of HNV	Extensive grass based systems	Other
Large estate	Extensive grass/ arable systems	Other/Mixed

Table A7: HNV Farm Typology – Local

Sample Parishes

A series of four sample parishes in the South Devon AONB were identified at the outset of the case study in order to provide a manageable area as the basis for analysing detailed RPA/NE data including RLR and SPS data. These parishes were also used to identify suitable farms for survey using the local typology referred to above. The sample parishes – South Pool, East Portlemouth, Chivelstone and Loddiswell - are broadly characteristic of the AONB as a whole.

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Appendix 4: HLS prescriptions for low input spring cereal habitat suitable for Cirl Bunting

HF15 - Low herbicide cereal preceding winter stubble and a spring crop

Land parcels and associated features managed under this option:

This option is rotational or non-rotational and can be placed within the following arable fields (*this option may be fixed in some fields eg 1 year in every 3, if particularly important for cirl bunting*):

RLR Field Numbers: ...

General description of the management required:

A spring barley crop is grown following an agreed herbicide programme. After harvest, the stubbles are retained until the following spring. These conditions will provide opportunities for a wide spectrum of arable plants to grow, possibly including some rare species, and will provide food for nectar-feeding insects. They will also provide foraging and breeding territory for declining farmland birds such as cirl bunting and other insect-eating animals.

This management is specifically intended to benefit the following features:

- To leave _ ha of stubbles, the ideal winter foraging habitat for cirl bunting and other farmland birds. Cirl bunting prefer an open stubble with near bushy hedges where they can rest up and escape predators. Spilt barley grain and small seeds from arable plants are picked from the ground.

Indicators of Success

- There should be between 5% and 50 % cover of low growing desirable broad-leaved plants.
- Seed eating farmland birds are seen using the stubble.
- The cirl bunting population in the area is retained.

Management Prescriptions; the dos and don'ts of management

The following rules apply across the whole area being managed under this option.

- Establish a spring barley crop.
- Do not undersow
- Severe infestations of stoloniferous grasses, such as couch grass, may be controlled by glyphosate application prior to crop establishment. Such glyphosate application should only occur when the land is heavily infested with such grasses and should not be part of the routine annual management.
- The following grass weed herbicides may be applied at any time during the growing season (such as Black-grass, wild-oats, meadow-grass, sterile brome etc.): Pinoxaden and cloquintocet-mexyl (always use with ADIGOR adjuvant); Tralkoxydim; Fenoxaprop-p-ethyl; Tri-allate.
- Severe infestations of cleavers, charlock and other problematic broad-leaved weeds may be controlled by Amidosulfuron herbicide but not later in the year than 31 March and not exceeding an application rate of 30 g/ha.
- Control undesirable species such as Creeping Thistle, Spear Thistle, Curled Dock,

Broad-leaved Dock, Common Ragwort and Common Nettle as required by herbicide application with a knapsack sprayer.

- There should be no other herbicide treatments unless authorised by your Natural England adviser.
- Fungicides and insecticides may be applied as required.
- Do not apply any pre-harvest desiccant in the cereal crop under management.
- Bale or chop and spread straw after harvest.
- Following cereal crop harvest, maintain the stubble until 31st March (ideally this should be 31 March and no earlier than the 15th March - but depends on what other food sources are on the farm on how critical this is),. Do not graze. If the stubble is relatively clean, light cultivations can be carried out in the first month following harvest to encourage germination. If the stubble is already weedy, do not cultivate.
- In the stubble phase, do not apply any pesticides, fertilisers, manures or lime before 14 March.