YORKSHIRE DALES
National Park Authority

# High Nature Value Farming in the Yorkshire Dales

## Buckden parish case study

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NORTHERN UPLAND CHAIN
Local Nature Partnership

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## Executive summary

The High Nature Value Farming (HNVF) concept recognises that many habitats found in the uplands of the UK are of high nature conservation value and are associated with the continuation of specific low-intensity farming systems. However, these systems are under threat from a variety of issues:

i. Market, agricultural policy and social pressures are increasingly making such HNV farming systems economically unviable
ii. Any resulting intensification or abandonment of such farming systems would adversely impact on the associated HNV

There is therefore a justifiable case to be made for directing additional public financial support to these farming systems to help maintain the HNV. (McCracken, 2011)

A farmer-led group, facilitated by the Yorkshire Dales National Park Authority, have reviewed their own High Nature Value farming systems in order to contextualise the true cost of managing the land for environmental purposes.

The study carried out an economic survey with 12 of the farmers within the project area reviewing financial margins, impact of subsidies and schemes, quantifying the unpaid for aspects of environmental management and detailing their own perspective on the work they carry out.

The survey found the following headline traits:

i. Farmers derived nearly 55% of their income from livestock sales, with the balance made up through subsidies.

ii. Profits are marginal with a reliance on family labour.
iii. Majority of farms are tenanted and these farmers are unable to justify investing in new infrastructure or long term cost saving projects such as green energy production.
iv. The farmers recognised they farmed in a High Nature Value area and want to take more control over the management of the habitats and species.
v. Guidance and training is required to enable this to happen.

The study also investigated the impact the farming techniques are having on the habitats and species in Buckden parish:

i. The study area contains 13 UKBAP habitats and 29 UKBAP species making up 45% of the landscape.
ii. Condition of the habitats, particularly the designated ones is very good with trends indicate an improving picture in the condition of the non designated habitats.
iii. Species are stable or marginally increasing.
iv. Ecological networks are relatively strong but there is potential to do more to connect fragmented habitats.

The farmers are interested in pursuing a new way of working with Government bodies like Natural England, to see if they can have more control over how they manage the habitats on their holdings and at a landscape scale. They are keen to investigate ways of drawing down funding for the management of the ecosystem services the study area provides and to improve the efficiency of their farm businesses. Farmers feel that this approach will help improve the public perception of them.

The report concludes with a number of recommendations that will ensure the future of the traditional farming system, development of robust, sustainable farm businesses and a resilient ecosystem. In particular the following are seen as the most important to facilitate this:

1. Continued environmental support through Pillar 2 within High Nature Value Farming regions.

2. Develop landscape scale schemes bringing the farming community and interested organisations together for a commonly agreed aim.

3. Incentives to landowners to make farm holdings available to new entrants and an increase in the level of support paid to new entrants to enable them to become more competitive in the tendering.

## 1.0 Introduction:

*'The natural environment provides us with a range of benefits – ecosystem services including food, water, materials, flood defences and carbon sequestration – and biodiversity underpins most, if not all, of them. The pressures on our land and water are likely to continue to increase and we need to learn how to manage these resources in ways which deliver multiple benefits, for example, achieving profitable and productive farming while also adopting practices which enhance carbon storage, improve flood water management and support wildlife.'* (Lawton Review 2010)

The uplands of Britain provide an impressive array of 'ecosystem services' or public goods. Some of our most important natural resources, habitats and wildlife can be found in the uplands. These assets are managed by a host of different people from farmers to private estates, conservation bodies and charities. Management of this landscape is not easy and takes generations to fully understand its complexities.

Farming is the major land use within the uplands with farmers using their knowledge and skills to produce high-quality food, conserve habitats and species and provide a fantastic landscape that the local communities and wider public benefit from. However, farming as a business is constrained by the climate, environment and remoteness giving farmers little opportunity to capitalise on these assets. It is well known that farm incomes in upland areas are nowhere near their lowland counterparts, and in a number of cases, the farm businesses are not sustainable.

A recent report for the RSPB found there had been significant declines in livestock numbers in the uplands, with a 21% reduction in cattle and sheep numbers between 2000 and 2010 (Silcock et al 2012). This has implications for extensive farming systems, habitats and species.

EU and Government support in the form of agri-environment schemes go some way to supporting the work farmers undertake, but as a whole, the market does not adequately repay the providers of these public goods for their services. There is a desire in Government and locally to find new ways to better capture their value and develop mechanisms for income to flow in future to those who manage these vital natural assets.

This report will look in detail at the natural value and farm economics of the parish of Buckden within the Yorkshire Dales National Park. It will identify key High Nature Value Farming (HNVF) indicators, their extent and condition. It will detail the farming systems used to manage this landscape and the economic pressures these systems are facing. The report will also look forward and highlight ways that the landscape can be managed in a more collaborative way between farmers, local organisations and national government bodies with a strong focus on ensuring farm businesses are more resilient and efficient.

### 1.1 Policy Background

The European Unions 2006 Sustainable Development Strategy (EU SDS) (DOC 10917/06) made a commitment that all member states needed to make attempts to halt the loss of biodiversity. Conservation on agricultural land was seen as critical to

achieving this and is an explicit objective of the Pan-European Biodiversity and Landscape Strategy (PEBLDS), the Bern Convention, the European Landscape Convention, and, at EU level, the Habitats and Birds Directives and Rural Development Policy (Community Strategic Guidelines for Rural Development, Programming Period 2007-2013).

In response to this, the UK Government commissioned the Lawton Review 'Making Space for Nature. The review was a step change in the way we looked at biodiversity, our natural resource. It painted depressing news about the loss of biodiversity and our inability to slow down this loss. It did highlight that some habitats and species were adapting better than others but it was fragmentation that was having the most damaging effects on the habitats themselves and the species they support.

Its keystone message was to ensure that ecological networks were given space to develop, to become more resilient to climate change and to encourage greater diversity.

In June 2011, Defra published The Natural Environment White Paper, The Natural Choice, an ambitious statement outlining the Government's vision for the natural environment over the next 50 years, including practical action to deliver that vision. It set out five objectives:

i. Protecting and improving our natural environment - facilitating greater local action to protect and improve nature;
ii. Growing a green economy - in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature
iii. Reconnecting people and nature - strengthening the connections between people and nature to the benefit of both;
iv. International and EU leadership - showing leadership in the European Union and internationally, to protect and enhance natural assets globally.
v. Monitoring and reporting progress

Since 2011, 50 Local Nature Partnerships (LNPs) and 12 Nature Improvement Areas (NIAs) have been set up across the country to help deliver local action for the environment. LNPs include policy makers, government bodies, local authorities, specialist interest groups and local business forums. Their focus is to raise awareness about the services and benefits of a healthy natural environment and they will contribute to the green economy and complement Local Enterprise Partnerships.

## 1.2 Project background

With the first and second objective in mind, the Northern Upland Chain Local Nature Partnership (LNP) has instigated a collaborative project between the four protected areas of the Northumberland National Park, the North Pennines AONB, the Yorkshire Dales National Park and the Nidderdale AONB.

The LNP HNV farming working group has agreed the following aim, objectives and actions for the project.

Aim:
To build a shared vision with the farming community for safeguarding the future of extensive farming and the wildlife it supports (i.e. High Nature Value Farming) within the Northern Upland Chain Protected Areas - Nidderdale AONB, North Pennines AONB, Northumberland National Park, Yorkshire Dales National Park.

Objectives:
Work with, and through, four groups of farmers in the four Protected Areas to:

i. Celebrate and raise awareness of the importance of extensive upland farming to nature conservation and the provision of other public goods such as beautiful historic landscapes, production of high quality water and food, carbon storage.
ii. Identify and increase understanding of the threats to these extensive or 'High Nature Value' (HNV) farming systems.
iii. Identify opportunities for securing a long term future for these farming systems.
iv. Explore and test some of the approaches identified with a view to informing future land management policy and support measures including agri-environment schemes.

The project aims to raise awareness of policymakers, the public and the wider rural community about the challenges facing farmers in upland areas, the value they bring to society as a whole, the natural resource that they manage and the potential to deliver a more resilient ecosystem in tangent with a resilient farm business.

To enable this project to be farming focussed, it was decided very early on for it to be 'farmer led' with a group of farmers having control over the direction of the project, the decision making and how the project budget was spent. The Yorkshire Dales National Park Authority (YDNPA) organised a meeting for the farmers at which they unanimously agreed to go forward with the project. The farmers felt strongly that the work had to involve data gathering related to the economic vulnerability of the farming systems they run and specifically the 'unpaid' for aspects of farm management that helped maintain the natural value of the area.

A farmer representative was voted in, who would sit on the HNVF working group. An economic and farming systems survey was developed by the YDNPA, with help from Northumberland National Park Authority and the RSPB, and edited by the Buckden parish farmer group. The survey work was contracted out to the local land agents (as chosen by the farmer group).

### 1.3 The project area – Buckden parish

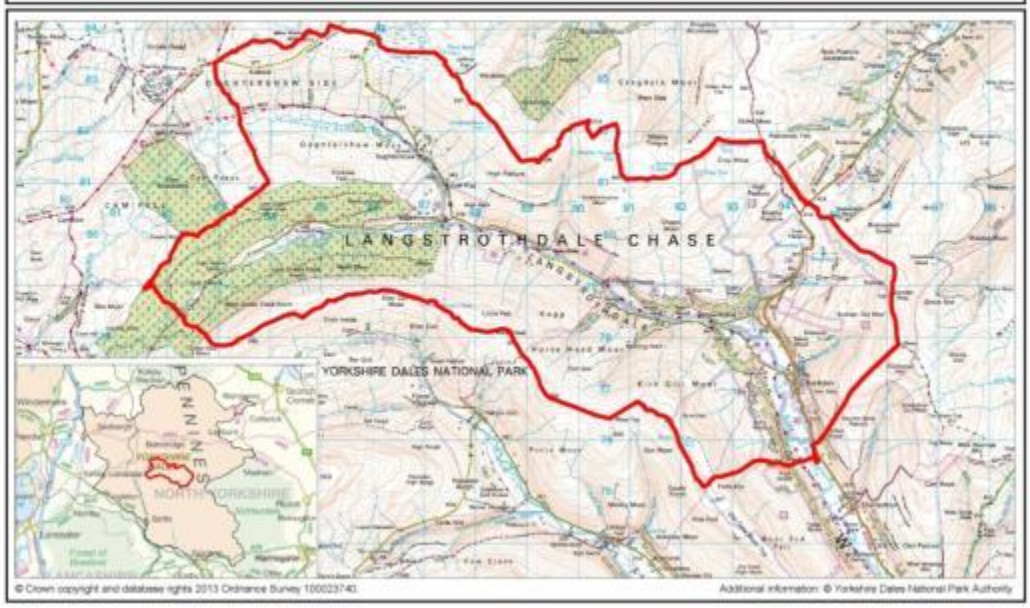
Farming is an extremely important element to the economic, cultural and community well - being of the Yorkshire Dales National Park (YDNP). It provides jobs, environmental management, income streams for other businesses and a community base that is vital for this rural area. Within the YDNP, the majority of farm holdings are of High Nature Value in varying degrees with the highest value holdings found predominantly at catchment heads where terrain, climate and a history of agri-environment schemes have resulted in the farms being managed less intensively.

Buckden, found in the upper part of Wharfedale and encompassing Langstrothdale is home to an array of nationally and internationally important habitats and wildlife, including upland hay meadow, blanket bog, upland ash woodland, black grouse and red squirrel. This area of Upper Wharfedale (from the village of Buckden up to the catchment head at Fleet Moss) is of great scenic value. Farming is typically traditional in order to cope with the terrain, soils and climate, with methods passed down from generation to generation. Change in farming practice is slow, though mechanisation has eased the burden of some of the tasks.

The parish contains the following key components that suggest that it is a High Nature Value Farming area:

1. Very high proportion of semi-natural, unimproved habitats – nationally important upland hay meadows, calcareous grassland, upland ash woodland, blanket bog, heath and mire.
2. Associated plant and animal species – Black Grouse, Red Squirrel, Otter, Yellow Wagtail, rare Orchids, Globe Flower, Northern Brown Argus, Common Rock Rose.
3. Habitats and species managed by a traditional, extensive, livestock farming system, heavily influenced by the steep terrain, poor soils, high rainfall and restricted growing season
4. Farmers who are proud of their area and the contribution they make to the landscape and culture of the parish
5. As a result of this, the landscape is of the highest scenic value

**Fig 1. Map showing Buckden Parish**



### 1.3.1 Landscape and climate

Langstrothdale is an elevated winding steeply sloping v-shaped limestone dale forming the wilder, higher reaches of upper Wharfedale. Walled sloping dale side pastures and hay meadows grazed by Swaledale and Dalesbred sheep alternate with areas of moorland vegetation (including rough grass and bracken) extending down the dale sides. The valley becomes increasingly wild, remote, open and exposed towards its upper reaches with moorland vegetation types becoming dominant. At its lowest point near Buckden the land sits at 220m above sea level rising very steeply to 702m at Buckden Pike and to 596m above sea level on Cam High Road to the North West of the parish. The river forms the focal point of the dale. It has a stepped and platformed rocky bed; shallow pools; small waterfalls; occasional steep and rocky banks and small scale historic bridges.

Ancient woodland dominated by ash, hazel and hawthorn clings to the banded rocky outcrops of the steep northern upper dale sides. Trees line the river banks (e.g. below Oughtershaw) and mark the presence of hamlets and scattered farms.

Occasional plantings of Scots pine and exotic conifers are at odds with the character of the dale. Extensive and blocky plantations of coniferous trees in the area of Langstrothdale Chase to the west of the upper valley reaches are uncharacteristic in the context of the otherwise wild open landscape of the surrounding moors and fells.

There are a few small traditional hamlets sited facing out across the dale mostly on lower south facing dale sides. Barns, occasionally falling into disrepair, are scattered within these walled pastures and are occasional features in the lower reaches of the dale although more frequent above Deepdale. (YDNPA Landscape Character Assessment 2001).

On average, this part of the Yorkshire Dales receives in excess of 184 days of precipitation (rain and snow), producing 61 inches or 1550 mm of rainfall and snowfall. The average daily temperatures vary from an average daily high of 11c (55f) in the summer months, down to an average daily low of 4c (40f) in the winter. (source Met office UK Climate Averages 1981 – 2010, Malham Tarn weather reading).

Low temperatures tend to last well into April and it is not unheard of to have snowfall in May. This year saw record high and low temperatures within the dale with 35c recorded at Oughtershaw on the 9th July and -13c recorded at Yockenthwaite on the 16th January.

### 1.3.2 Cultural development

For the last 500 years sheep and dairy farming has been the dominant land use in Buckden parish, utilising valley bottom grazing, lower valley side hay meadows, valley slope hay meadows and pastures and rough grazing on the higher ground. The proportion of land devoted to hay production would have varied; in large part dependent upon the state of the wider agricultural economy as would the numbers of both cattle and sheep. Cattle would have been kept indoors during the winter months within stone buildings variously referred to as field barns, cow houses or laithes either close to the farm house or dispersed within the fields. These traditional farm buildings were

constructed with materials found in the area – sandstone and limestone for the walls, sandstone flags for the roof covering and local timbers, oak and ash, for the roofing timbers. Most of the surviving buildings were built or rebuilt in the period 1750 – 1850, perhaps replacing earlier heather thatched buildings, although one unusually late example at Oughtershaw is dated 1926.

Activity around and within these field barns varied through the year. During the winter the cattle housed in the barn would be visited by the farmer at least once, and sometimes as many as three times a day, to be fed on the hay stored in the barn, given or led to water to drink and, where necessary, helped to calve and milked. The accumulated muck would periodically be shovelled out to an adjacent midden and spread on the surrounding field, particularly in January and February. In May, six months after they had been taken inside, the cattle would be let out and taken to the grazing areas on the upper valley sides and moorland. Sheep, which may have been grazing on the higher ground or moor for much of the year, would have been brought down to the meadows in Spring for lambing but led back to higher ground when the meadows were shut up in May and the grass encouraged to grow almost to seed. Between late July and September, depending on the weather, the grass would be cut with a scythe and left to dry in the sun, the drying process being aided by occasional turning, originally using wooden hand rakes, before being swept up and taken to the barns to provide fodder for the coming winter. Most field barns are now redundant but some still retain their wooden boskins or cattle stalls where the cattle were tethered.

Unlike the parishes lower down Wharfedale, there is very little evidence for arable farming in Buckden, just a few lynchets around Buckden village which suggest a small area of medieval arable field and some traces of ploughing on the valley bottom between Cray and Hubberholme although it is possible that the latter represents an attempt at ploughing during the Second World War or possibly the Napoleonic Wars. This may be due to the tenurial history of the area: Langstrothdale Chase was a medieval hunting forest. 8 lodges in the Chase are mentioned in 1241, 11 between 1499 and 1579. The lodges probably also functioned as cattle farms and developed into some of today's farms and settlements.

Organised deer hunting had largely ceased by the sixteenth century. Most of the hunting ground would not have been forested but large areas of ancient/semi–natural broadleaved woodland survive on some of the steeper slopes on the valley sides. This woodland was managed for timber and fuel: the remains of chop kilns identified in some woods show they were producing an industrial fuel, white coal, for use in lead smelting. Lead mining and processing is recorded between the seventeenth and early nineteenth centuries, but may have begun earlier: the Buckden Gavel smelt mill and lead mine is one of five scheduled monuments in the parish.

Some of the lodges in the Chase may have developed out of much earlier settlements. The remains of late Iron Age/Romano -British buildings have been found on the edge of Buckden village. Other prehistoric settlements, some associated with former fields or stock enclosures, most now only recognisable as very low grass covered stony banks can be traced on the valley sides, although stone built hut circles, surviving upto 1m high, can be seen at the Deepdale settlement, another scheduled monument. A Bronze Age burial cairn stands in a prominent position at the head of the valley and there is a prehistoric stone circle, also a scheduled monument, close to the river, just above Deepdale, both of which suggest human activity some 5000 years ago.

Large areas of Buckden parish were formally enclosed between 1831 and 1852 but there are still extensive areas of common land, particularly to the north and south of Deepdale. The fields created through formal enclosure can generally be easily recognised by their ruler straight stone walls which contrast with the more irregular shape of fields developed around the older settlements but this relationship is not so clearly shown in the distribution of field barns. Farms such as Swarthgyll and Netherghyll were formed on allotments and it is noticeable that they have very few outlying field barns but field barns were also built on many of the smaller allotments closer to Buckden.

The two largest settlements in the parish, Buckden and Hubberholme, are both designated as Conservation Areas because of their architectural and historic interest. They too consist of mainly vernacular buildings, some dating back to the seventeenth century, but most of the former agricultural buildings within them have been converted in recent years to domestic or holiday use.

The historic landscape of Buckden is typical of much of the Yorkshire Dales. Because of the dominant pastoral land use in recent years the evidence for over 2000 years of farming activity survives but can be overlooked amongst the drystone walls, field barns and farm houses constructed from locally quarried materials over the last half millennium. These add so much character to the present day landscape they conspire to give an almost timeless feel.

### 1.3.3 The community

The civil parish includes the village of Buckden as well as the hamlets of Cray, Hubberholme, Raisgill, Yockenthwaite, Deepdale, Beckermonds, Oughtershaw and Greenfield. According to the 2001 census it had a population of 184.

There is a thriving local community, with the local economy based largely on farming and tourism. There are three pubs within the Parish and a small village shop which is well used by locals and visitors. A range of social activities take place in the Institute, including quizzes, whist, dances, an art club and many more. One highlight of the year is the annual Gala, held on the third Saturday in June.

The church St Michael and All Angels, Hubberholme, is a focal point of the community. The farthest church up the dale, it was originally a Forest Chapel of the Norman hunting forest of Langstrothdale Chase, and dates from the 12th century. St Michael's was originally dedicated to the Northumbrian St Oswald, and was given to the monks of Coverham Abbey in 1241. Regular services are given along with the Harvest Festival and Lambing Festival and of course, christenings, funerals and weddings.

## 2.0 High Nature Value Farming

The concept of HNVF was established in the early 1990s (Baldock 1993, Beaufoy 1994) and describes those types of farming activity and farmland that can be expected to support high levels of biodiversity or species and habitats of conservation concern.

The three main categories of HNV farmland are (adapted from Andersen et al., 2003):

Type 1: farmland with a high proportion of semi-natural vegetation;
Type 2: farmland with a mosaic of low-intensity agriculture and natural and structural elements, such as field margins, hedgerows, stone walls, patches of woodland or scrub, and small rivers;
Type 3: farmland supporting rare species or a high proportion of European or world populations.

Using these categories you can begin to identify areas of land that could be called HNVF. Europe has significant areas of HNVF, which provide habitats for a wide range of species. A recent study in 2008 by the European Environment Agency provided a first estimate of the distribution of HNVF across the European Union. Figure 2 shows the distribution of HNVF in Europe. Just over 5 million hectares of the UK is considered to be HNVF which is 26.7% of the Utilisable Agricultural Area (UAA). In Europe as a whole, nearly 32% of the agricultural area is deemed HNVF. (Paracchini et al 2008) See Appendix 1 for further detail.

A common trait of HNVF areas is the limited scope for change in the farm enterprise as a result of location, climate, topography and the nature of the area and this has a direct bearing on how the land is managed. The most valued type of farming is low intensity livestock farming (with a typical livestock unit between 0.1 and 0.3 LU/ha (Beuafoy & Cooper 2007)) of cattle and sheep that are locally adapted (native) to the area. Fertiliser use is low or non existent, forage is cut late, out wintering of livestock is common place.

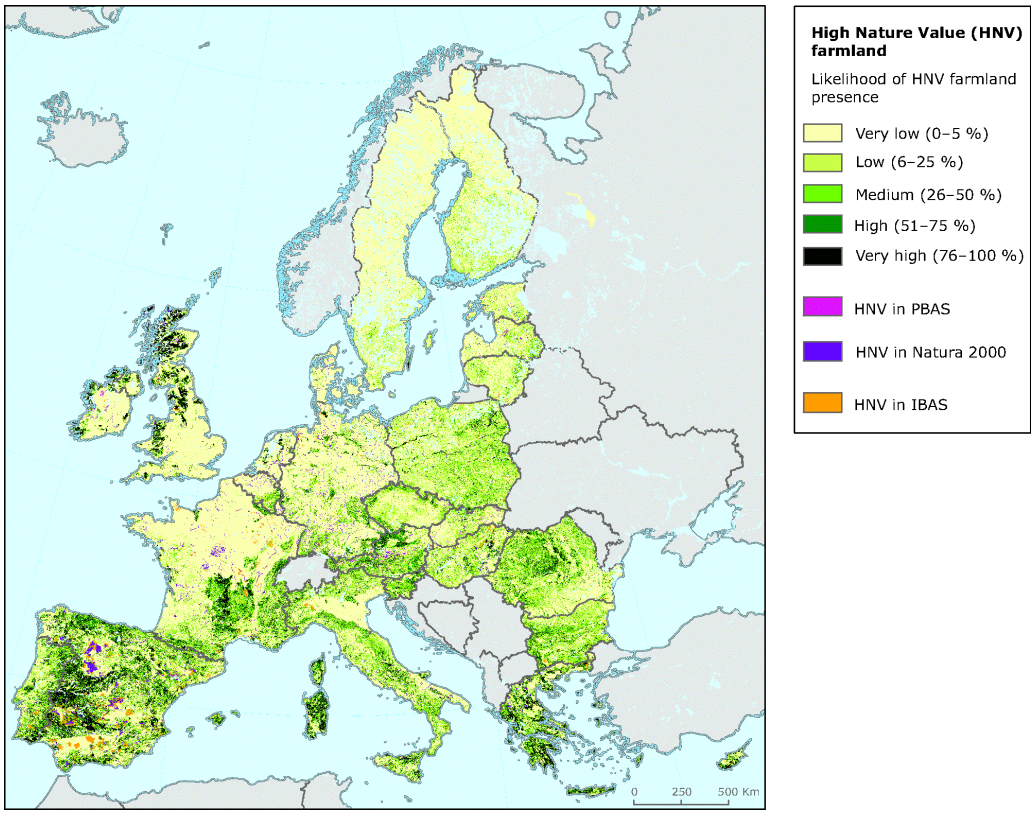
## 3.0 Quantifying the High Nature Value Farming indicators in Buckden parish

Many of the indicators described in the previous section can be used to describe the Buckden parish project area. There is a need, however, to quantify these elements in order to prove and illustrate how important the project area is. The European Commission has produced guidance on the development of High Nature Value Farming and Forestry (HNVFF) indicators for Rural Development Programmes – 'The Application of the High Nature Value Impact Indicator' (Beaufoy & Cooper 2007). In our report we will use the criteria cited in the guidance that specifically relates to describing and characterising the main types of HNVF within an upland setting and build on it using local datasets and a locally delivered economic survey of the farming systems.

The three different types of HNVF indicator criteria used are:

i. Land cover
ii. Farming systems
iii. Biodiversity value

*Figure 2 – Likelihood of the presence of High Nature Value Farmland in Europe*




## 3.1 Land cover

As is typical of an upland area within the UK, Buckden parish land cover is dominated by moorland habitats of heath, bog, acid grassland and rush pasture. These are generally found on the highest parts of the dale rising from 300m to 700m above sea level. High rainfall, short growing season and deep peat soils influence the vegetation type ranging from a blanket mire of cotton grass, cross - leaved heath and heather, through to tufted hair grass, soft rush and bilberry allotments. At sharp breaks of slope and in gills, exposed limestone rock and scree can be found. However, there are a few areas where limestone pavement has been exposed – generally at 340 m above sea level and mainly to the eastern part of the parish.

A further dominating land cover is Greenfield Plantation Forestry which covers just over 800ha of land. The forestry is being felled over a period of 18 years from 2011, and will be replaced with a different planting scheme that will incorporate greater areas of open space and a larger volume of hard wood planting. The woodland supports a population of red squirrel – one of the most southerly groups in the UK. Work is being undertaken on surrounding privately owned land to increase tree cover prior to the total removal of the forestry. When Greenfield was planted in the 1970's, black grouse were seen in large numbers feeding off the young trees, and lekking in the open spaces. As the forestry matured the black grouse moved to other areas of the National Park or were taken as game.

*Photograph 1 Upper Wharfedale* ©W Benson

Other woodland areas are found on the steeper sides of the dale and range from upland ash woodland, mixed broadleaf plantations and silver birch dominated scrub woodlands to open hazel and hawthorn scrub. Scrub areas tend to be found with significant areas of semi natural grassland, in particular calcareous grassland.

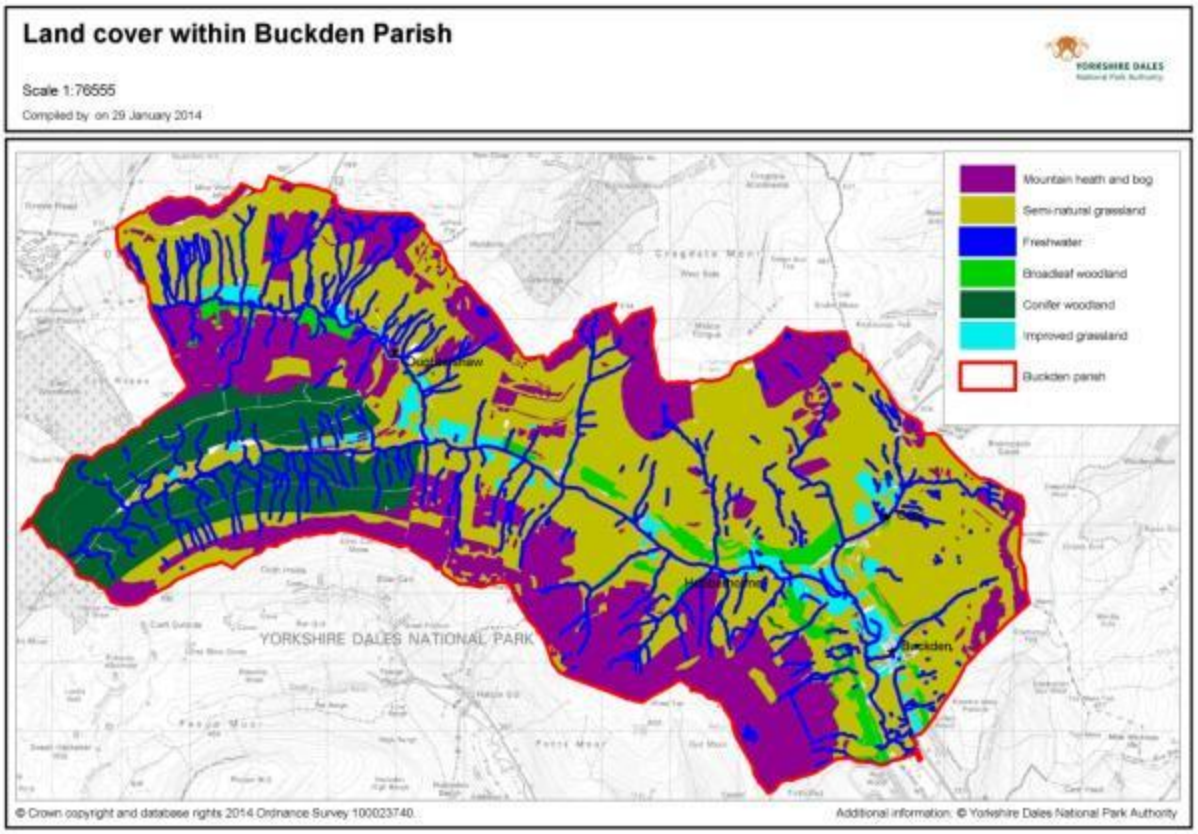
The large area of semi natural grassland incorporates the large acidic grassland allotments, the steep calcareous grassland slopes and the semi to unimproved hay meadows. These areas are where the majority of grazing takes place on each farm.

*Table 1 – Land cover*

| Land cover | Area (Ha) | % of parish |
|---|---|---|
| Improved grassland | 181.65 | 2.8% |
| Semi natural grassland | 3061.97 | 47.2% |
| Broadleaf woodland | 248.52 | 3.8% |
| Conifer woodland | 810.45 | 12.5% |
| Mountain, heath and bog | 2036.00 | 31.4% |
| Freshwater | Ponds = 5.48ha Rivers and streams = 197.02km | est 1% |
| Built up areas and gardens | 84.25 | 1.3% |
| Total | 6481Ha | |

Semi-natural habitats cover 86% of the parish suggesting that this area could be of high nature value due to the lack of agricultural improvement.

*Figure 3 Land cover map*




## 3.2 Farming systems

### 3.2.1 Farm type

Farming within Upper Wharfedale and Langstrothdale Chase has always predominantly been livestock farming with sheep being the dominant stock class. Originally sheep were kept for their wool dating back to the 11th Century but now they are kept for meat production and for breeding stock that is sold to producers in lowland areas. The upper dale has long been grazed by Dalesbred sheep, a breed founded in 1925. Now, while the Dalesbred is still popular, the Swaledale breed has become dominant driven by the demand for the North of England Mule. Generally there is very little prime stock produced in the upper dale without concentrate feeding. Producers either sell their lamb crop as stores, house them for finishing or send them away onto grass keeps for finishing.

Most people run a nucleus of pure bred sheep either Dalesbred or Swaledale ewes and then cross breed a proportion with a Blue Faced Leicester ram. The resultant progeny known as a North of England Mule is a very prolific sheep that is sought after by lowland producers. Each year in September, hill producers sell the Mule gimmer lambs for breeding and these represent the main cash crop. Wool is now of very little value and not a consideration when selecting breed; wool produced from of a flock of 1,000 Swaledale ewes has a value somewhere in the region of £600 which, when compared to contract shearing charges of over £1,000 for this number of ewes, demonstrates that

wool production is an uneconomic part of the business although essential for welfare and management purposes.

Cattle breeds in the upper dale have changed markedly over the last hundred years. The Dairy Shorthorn was a multipurpose breed that was very popular across the Dales from the late 18th century. These cattle were milked and also produced a good quality beef calf. In the 1970's most people stopped keeping milking cows when dairy hygiene regulations were introduced and there was a move towards cross-bred suckler cattle. As the markets developed suckler cattle got a larger continental influence and now most herds in the upper dale are continental-crosses. These are larger cows with a greater maintenance requirement but produce a higher value calf.

Farms in the upper dale are predominantly tenanted holdings. The National Trust is a major landowner within Langstrothdale Chase and Upper Wharfedale. The National Trust estate comprised 9 farms and totals 6,100 acres and a further 2,000 acres of common land. The majority of the Estate was gifted to the National Trust by Graham Watson MBC JP MA in 1988. The National Trust added to the estate when they bought Heber Farm, Buckden in June 1994 for £534,000. The majority of the farms are let on Agricultural Holdings Act (AHA) tenancies though there are some Farm Business Tenancies as well. There are a number of privately owned farms, some of which are owner-occupied and some let on AHA tenancies.

The farms are generally only modestly equipped with buildings. Most have a set of sheep handling facilities which often incorporate a dipping system. The farmhouses often have a barn attached which would once have housed cattle but is now more often used as storage facilities. Most farmsteads have a number of traditional stone barns within the yard, used for storage of hay and straw, and also a modest range of portal frame buildings. These portal frame buildings are used for the housing of cattle over winter, and to provide some limited housing space for sheep at lambing time. It is not common practice to house sheep at lambing but problem cases are brought in to given individual attention.

Tight planning controls, limited capital funds and predominantly tenanted holdings mean that there has only been limited investment in modern farm buildings in the last 20 years. This is a constraint to the adaptability and modernisation of farming systems in the upper dale but has maintained the traditional appeal in the area. The National Trust has invested approximately £600,000 since 2003 on improvements to the farming infrastructure on their estate. Sheep handling and cattle handling areas have been updated, yards have been repaired, a limited number of new buildings erected and existing stone barns repaired. They have also focused investment on septic tanks and oil tanks in order to comply with EA regulations.

### 3.2.2 Farming calendar of the upper dale

Farming in Upper Wharfedale is dictated by the seasons with all sheep farmers operating to a similar farming calendar:

Ewes are brought down to the in-bye meadows and pasture in mid-November to run with the rams at 'tupping-time'. Once tupped, ewes are then returned to the hill pasture

and moorland fells through until early April when they are then brought back down to the in-bye meadows and pasture to lamb.

Most ewes have lambed by late May and all the sheep are turned out of the meadows back onto higher ground to allow the hay meadows to be closed up for a period of at least eight weeks to grow the hay crop.

*Photograph 2 – Swaledale sheep* © J Akrigg

The hay crop is taken in July and August and the meadows are then left to freshen up before newly weaned lambs are introduced in September.

The breeding flock spend most of the year on the hill pasture and moorland fells, with the exception of tupping and lambing time. This is largely due to the very restricted supply of improved grazing and the heavy reliance of the farming system to conserve forage during summer to feed livestock throughout the prolonged winter period.

With cattle the system generally revolves around spring calving: The cows calve in May, when the grass growth starts, and are turned straight out onto pastures. They are then run with the bull again from late July and then grazed out on hill pastures until late October. The cattle are then brought back to the homestead to be housed in modest production buildings and fed grass silage or hay until the following spring. The calves are generally sold straight off the cows in autumn or, where housing is available, are taken into the New Year.
The system of farming in the upper dale is generally labour intensive and not well mechanised. Most farms have a quad bike which is fundamental to accessing the hill pastures and moorland fells and a modest range of machinery for hay-making because, due to the very tight weather window for gathering the hay crop, it is not practical for

people to share equipment or rely on contractors as everyone is trying to do the same job at the same time.

Farming practices here are steeped in tradition and the landscape tells this story. Farmers are constrained by the natural environment and weather and therefore farm to the seasons. Winters can be long and harsh and snow cover can persist on the hills from November through to April.

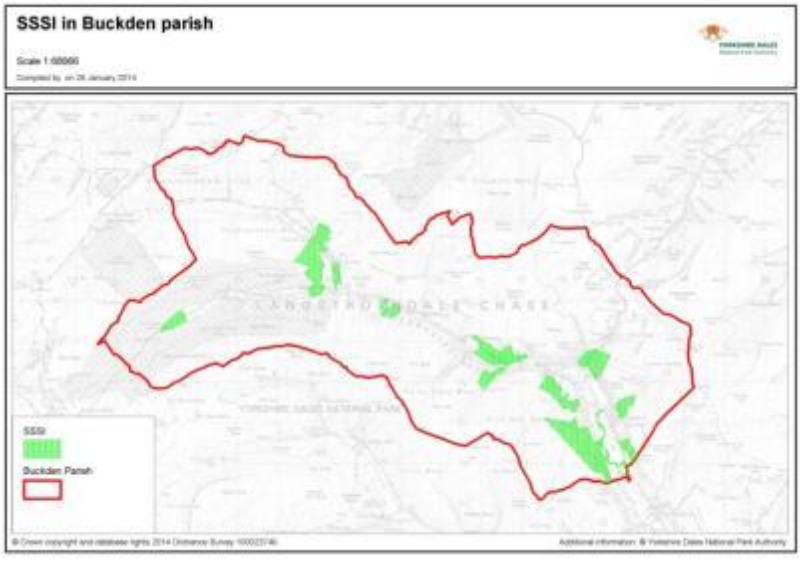
## 3.3 Biodiversity value

Buckden parish contains an impressive array of nationally and internationally important habitats and species. Overall the area contains 13 Biodiversity Action Plan (BAP) habitats and 29 BAP species. The habitats account for 45% of the total area of the parish, many of which are of the highest quality within the National Park. Key note habitats that are focused on within this report include blanket bog, calcareous grassland, upland hay meadow, native woodland and freshwater. These habitats are not only important for the plant species that inhabit them, but also for the array of invertebrates, mammals, birds and fish that rely on the habitat and the network of interconnected micro habitats linking them together.

### 3.3.1 Designated sites

Within the parish there are eight Sites of Special Scientific Interest (SSSI) covering 328 ha (5% of the parish) of meadows, woodland, river bed, cave systems, calcareous grassland and mire habitats. Figure 4 below shows the distribution across the upper dale. Two SSSIs are geological designations for the limestone cave systems of Birk Fell and Strans Gill – both are in good condition. The remainder are biological SSSIs. All of the sites are managed by the farmers, some of which have been managed by the same family for three or four generations. Beckermonds, Deepdale and Yockenthwaite meadows form part of the wider North Pennine Dales Meadows Special Area of Conservation. Deepdale and Yockenthwaite meadows are considered to be the best meadows within the National Park due to the range of neutral and calcareous grassland species.

*Figure 4*



An assessment of Natural England's SSSI data reveals a very positive picture of the management of these habitats. Within the six biological SSSIs, there are 30 individual management units. Of these 30 units, 19 are in favourable condition and 10 are in recovering condition. Only the condition of the River Wharfe SSSI – of which two thirds of the SSSI is outside of the parish area – remains unfavourable. Natural England are working with farmers who manage the riverside land to help them improve the condition of the river. The table below shows how the parish compares with the national and regional picture of SSSI condition.

| **Condition** | **Buckden Parish** | **Yorkshire & Humber** | **National** |
|---|---|---|---|
| Favourable | 63.3% | 13.66% | 37.46% |
| Unfavourable recovering | 33.3% | 84.11% | 58.78% |
| Unfavourable no change | 3.3% | 1.65% | 2.2% |

*Table 2 SSSI condition to National Level (Regional and National level data NE Dec 2013)*

The regional and national picture places the majority of the SSSIs in recovering condition, whereas for the parish, the majority are in favourable condition. This is testament to the farmers continued commitment to the management of these sites, in some cases, management techniques that have remained unchanged for over 50 years.

**Limestone Pavement Orders**

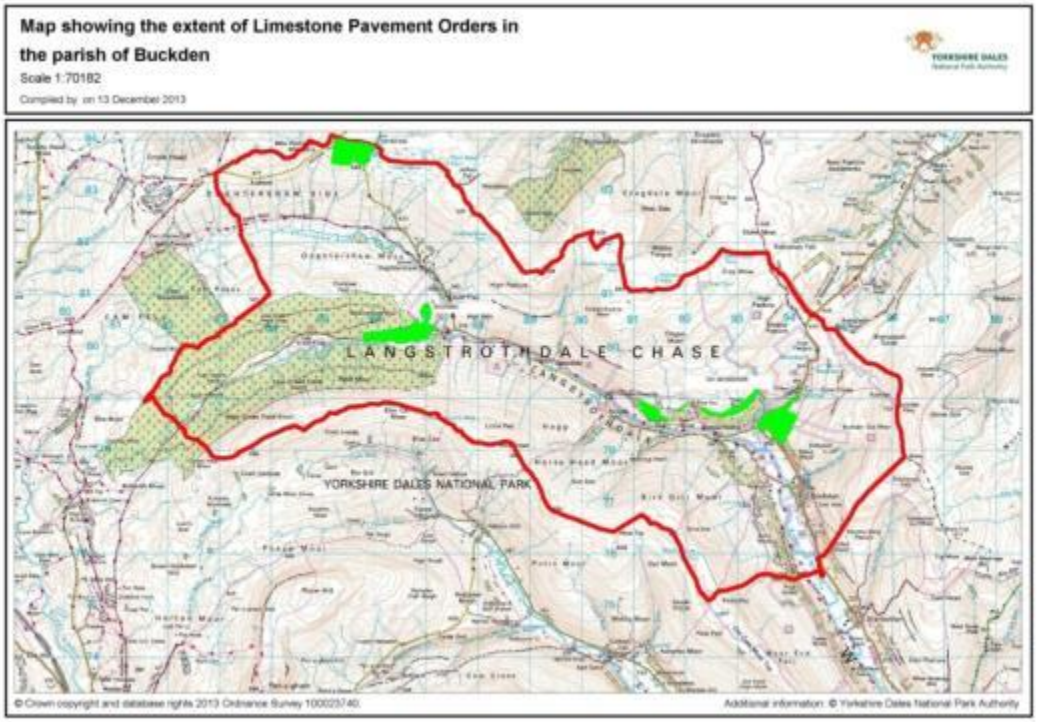
Under the Wildlife and Countryside Act (1981) limestone pavement is subject to protection measures known as Limestone Pavement Orders (LPOs). Limestone pavements are of very high biodiversity importance in the Yorkshire Dales National Park, are protected by Limestone Pavement Orders and continue to be on the UK and local list of priority habitats for biodiversity.

Within Buckden parish there are three LPOs covering 175.4 ha of limestone pavement and associated habitat. Core pavement areas have been expanded to include steep calcareous grassland hillsides, rock outcrops and high calcareous grassland allotment. See table 3 and figure 5 for further details.

| **Name of LPO** | **Location** | **Year of designation** | **Area** |
|---|---|---|---|
| Cray & Hubberholme | SD913787, SD938784, SD930787, SD919788. | 1999 | 60.2 Ha |
| Beckermonds | SD865802 | 1993 | 40.1 Ha |
| Cam High Road | SD855837 | 1999 | 75.1 Ha |

*Table 3 Limestone Pavement Order for Buckden parish*

*Fig. 5:*

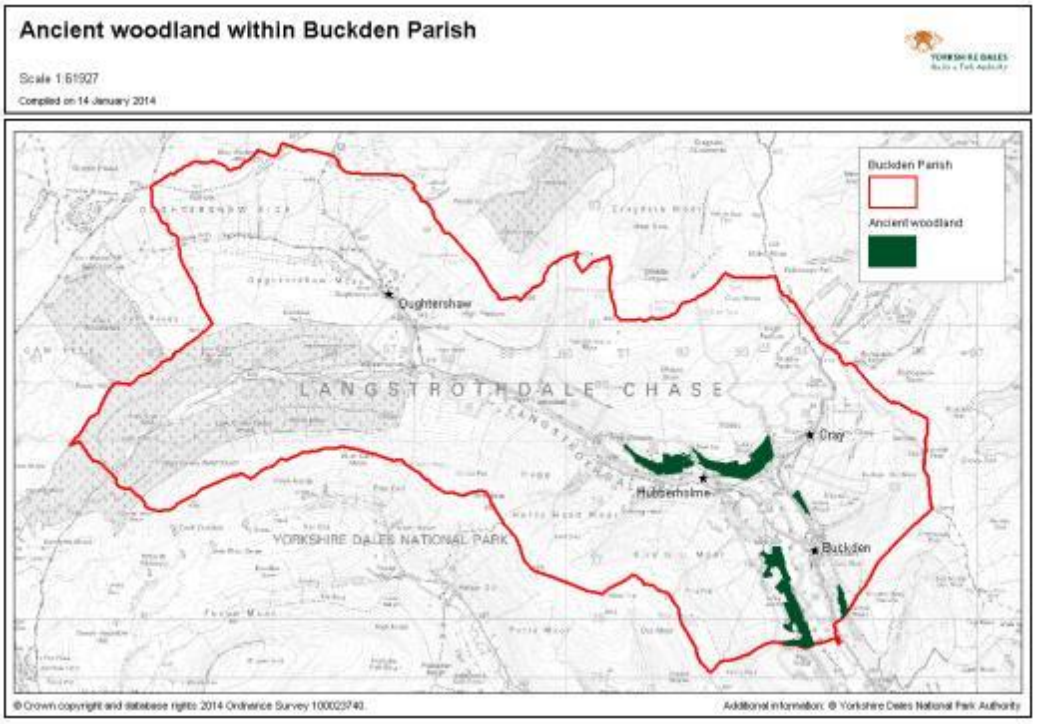



**Ancient woodland sites**

Ancient woodland is a term used specifically for woodland dating back to 1600 or before in England and Wales. Before this, planting of new woodland was uncommon, so a wood present in 1600 was likely to have developed naturally (Hibbs, Thom & Fawcett 2010). Studies show the woodlands are typically more ecologically diverse and of higher nature conservation value than those that have developed recently or those where woodland cover on the site has been intermittent. They may also be culturally important.

Within the parish there is just over 106 ha of ancient woodland, mainly found in the lower part of the dale, above and below Buckden itself – see figure six for distribution. The majority of this ancient woodland is upland mixed ash woodland which is a priority UK BAP habitat. Additional habitat and condition data can be found at section 3.3.2.

*Figure 6:*




3.3.2 History of agri-environment schemes in the parish

**ESA**

Upper Wharfedale and Langstrothdale have formed part of the Pennine Dales ESA since its initial designation in 1987. Agreements, authorised by MAFF, were simple, paid a flat rate of £100/ha/year, and applied to all inbye pasture and meadow below the moorland line. Agreements were only 5 years long during the first phase of the scheme, lengthening to 10 years from 1992 onwards. From 1992 onwards, 59% of the farmers took on the longer agreements with variation in payment rates reflecting whether it was pasture, meadow, woodland or allotment and the management requirements for species rich grassland. Capital payments for wall restoration, traditional farm building restoration and fencing were taken up by all farmers in the scheme, resulting in many hundreds of kilometres of walling being maintained and tens of barns restored, all of which contributed significantly to the local economy. This was a particularly successful element of the ESA scheme. By 1994, all eligible farms had an ESA agreement covering 1319 Ha of the parish. All farms subsequently renewed their ESA agreement for a further 10 years. The last ESA agreement in the parish ended in 2013. Figure 7 shows the coverage of ESA and CSS agreements and table 4 shows the break down of management tiers across the parish.

| **Tier** | **Area (Ha)** |
|---|---|
| 1 A – improved grassland and arable | 5.95 Ha |
| 1B pasture | 677.48 Ha |
| 1B meadow | 248.52 Ha |
| 1B allotment | 75.28 |
| 2A meadow | 90.91 Ha |
| 2B species rich pasture / allotment | 28.27 Ha |

| | |
|---|---|
| 2C woodland | 4.29 Ha |
| Other land use | 30.10 Ha |
| Non tier woodland | 158.11 Ha |
| **TOTAL** | **1319 Ha** |

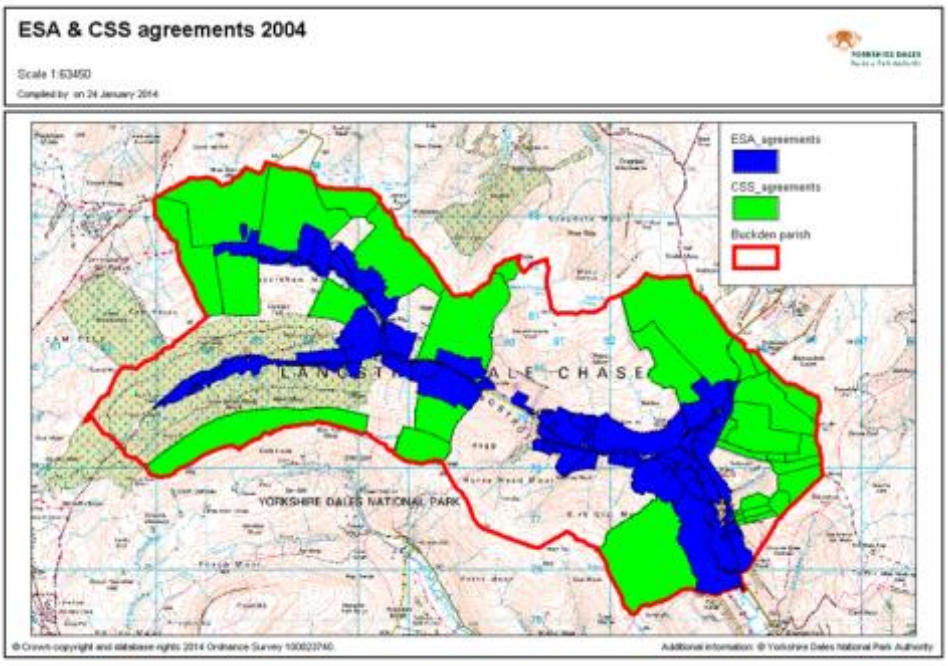
NE data 2004

*Table 4 ESA management tiers in Buckden parish*

**CSS**

In 1991 the Countryside Commissions Countryside Stewardship Scheme was launched offering a 10 year agreement with varying payments according to land type. Uptake was slower for this scheme with four of the 17 farmers signing up to mainly allotment and moorland management agreements aimed at increasing heather cover and habitat for breeding waders. Numbers of agreements gradually increased up to 20 by 2004, covering 1651 Ha of moorland and allotment in the parish.

*Figure 7:*

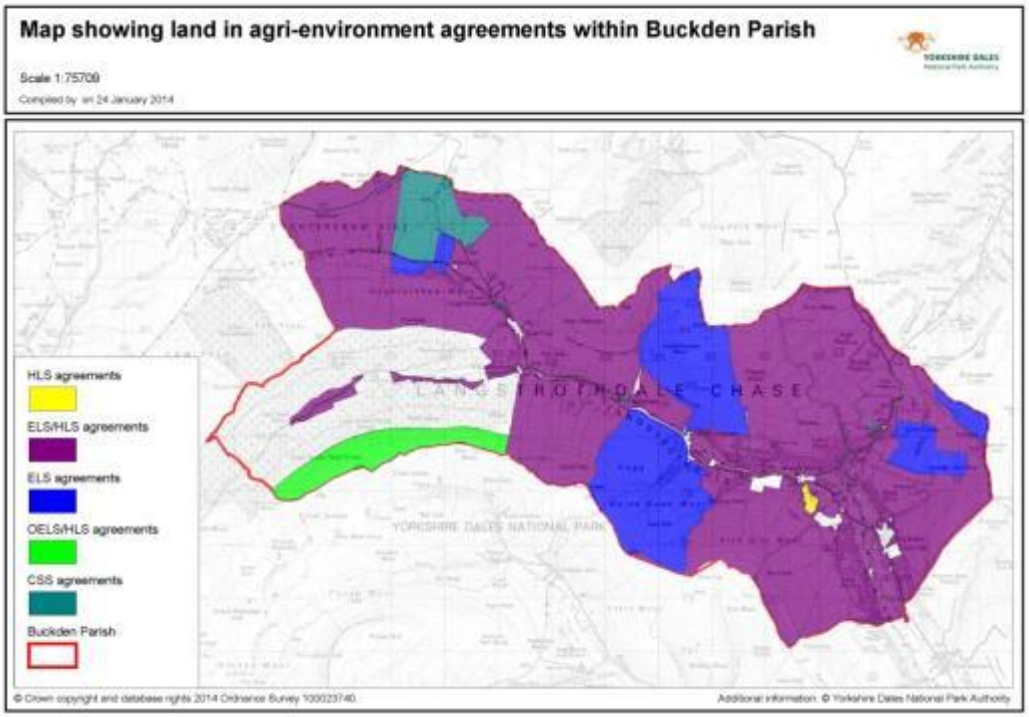



Prior to the launch of the Environmental Stewardship Scheme (ESS) in 2005, 46% of the total area of the parish was covered by the 'classic' agri-environment schemes. Removing Greenfield plantation from the calculation, results in 53% of the parish being under CSS or ESA.

**ESS**

Since 2005, there has been a steady uptake of ESS within the parish, with the vast majority of farms being entered into ELS and HLS. Two commons and three other parcels of land are in ELS only and there is one remaining block of land still in CSS until September 2014. In total, 96% of eligible land is under an agri-environment scheme (or 84% of the parish area). Common land management options for the HLS agreements include restoration of moorland, hay meadow, native woodland and breeding wader habitat plus maintenance options for hay meadow and woodland.

*Figure 8:*




### 3.3.3 Habitats & species

The focus is on a selection of the more prominent habitats and species found within the parish with information taken from a number Yorkshire Dales National Park data sets. The habitats and species that have been chosen are intrinsically linked with one another with the range of habitats producing an ecological network allowing species to move up and down the dale. The data that has been used is by no means complete; however, what has been used provides a snap shot of the condition of the habitats and species. Detailed habitat and species descriptions can be found at Appendix II.

**Condition and extent of upland hay meadows**

Within the parish there is an estimated 77 ha of upland hay meadow and 42 ha of lowland hay meadow. Table 5 shows the condition of the meadows. Non SSSI condition has been taken from the 2011 YDNPA Habitat Survey for Upper Wharfedale where 12 sites were surveyed within the parish. The size of the survey sites is relatively small but can be used to provide a snap shot of the overall condition of the hay meadows within the parish. Appendix III shows the extent and methodology of the survey work within the parish.

*Table 5 Condition of upland hay meadow*

| Condition | Buckden parish SSSI | Buckden parish non- SSSI |
|---|---|---|
| Favourable | 96.3% (24.42 Ha) | |
| Unfavourable – recovering | 3.7% (0.91 Ha) | |
| Unfavourable – no change | 0 | |
| Unfavourable - declining | 0 | |
| Partially destroyed | 0 | |
| Unknown | 0 | |
| FEP condition A | | 30.7% |
| FEP condition B | | 23.1% |
| FEP condition C | | 46.2 |
| Unknown condition | | |

The designated sites are in excellent condition with a very small area of SSSI that is in recovering condition. Deepdale meadows SSSI contains an extremely rich and diverse flora including Field Gentians, Fragrant, Northern Marsh and Common Twayblade orchids, Grass of Parnassus and Globe Flower. On the non-protected sites, a healthy 30% are in A grade condition, but nearly half are in C grade condition where the grassland is failing at least two criteria. The results show that the majority of these sites do not have the sufficient number of key indicator species within the sward and do not meet the threshold wildflower cover of 30%. Weed cover was a failure for two of the sites.

By comparing previous years survey results, the trends for the non SSSI sites are very positive. Out of all of the habitats surveyed, the upland hay meadows have seen the greatest improvement in condition. Historical records for the area show 92% of sites were in C condition, with 8% in B condition and none in A. Although it is not a direct site by site comparison, it does indicate that the management of the meadows is right.

**Current management**

The majority of BAP habitat upland or lowland hay meadows within the parish are under HLS management prescriptions. Meadows that have not met the habitat condition criteria tend to be those that have been improved for early cut hay or haylage with a grass dominant sward. Past ESA agreements would allow a small amount of fertiliser use on Tier 1 meadows and an earlier hay cut. This is likely to have further reduced the species diversity of these meadows. The more improved meadows are crucial for the farming system as it provides the bulk of winter fodder for the livestock. Many of these meadows are now managed without the restrictions of agri-environment schemes, allowing the farmer to cut earlier and increase the amount of manure spread on the land.

The more diverse meadows in the parish tend to have much thinner soils, are very uneven and difficult to mow and contain a lot of steep areas that remain uncut. The

thinner soils provide conditions for calcareous and neutral grassland species to thrive, thus creating some of the richest meadows within the Yorkshire Dales National Park. They have been maintained by methods passed down through generations of farmers carrying out an annual cycle of traditional management:

i. a single annual hay cut in mid to late July, with the crop left to dry in the field, baled and then stored for winter fodder
ii. aftermath grazing with sheep or cattle through autumn, winter and spring
iii. the meadow is 'shut up' (stock removed) in April-early May to allow the hay crop to grow
iv. no inorganic fertiliser addition
v. light dressings of farmyard manure
vi. occasional liming to maintain neutral pH

One farmer within the parish still mows his steeper banks and rocky areas using a finger bar mower, thus ensuring he takes a maximum amount of hay crop, but also prevents these more species-rich areas from becoming rank.

HLS agreement prescriptions state a 15 July cutting date which is set in order to allow the wildflowers and grasses to flower and set seed, thus replenishing the seed stock in the grassland. For many of the farmers in the upper dale this can be too early for their meadows due to the later growing season and later shutting up period. For farmers further down the dale it can be just right or too late. The weather, in the end, dictates when the hay is cut.

In addition to the traditional management of the meadows, three farmers have taken up the opportunity to increase the species range by adding wildflower seed. The Yorkshire Dales Millenium Trust Hay Time project has assisted with this by linking farmers with donor meadow sites in the parish with the farmers in need of the seed. Over the past five years, 26 ha have been restored using this method (10.6% of the Hay Time work undertaken across the YDNP). Monitoring work carried out by the Hay Time project has proved that this method is effective in adding more plant species to the sward. The average number of species found in the meadows had gone up from 27.75 to 31.07 with the condition of the meadows improving as well (reduction in weeds, increase in rarer species) (Gamble et al 2012).

**Potential threats to the habitat**

A combination of factors can influence the quality of species rich hay meadows and in some cases, the decline in hay meadow species can take a long time and go un-noticed. Chemical fertiliser and increased use of farm yard manure are the main threats to the habitat as it encourages grass species to become more dominant and changes the soil characteristics. The wildflower species are unable to compete and cannot tolerate fertile soil and therefore progressively die out. Consistently earlier hay cutting times can reduce the seed bank of wild flower species as it prevents flowering species from setting seed or reaching full bloom. This can have negative affects on invertebrates like Bumble Bees and bird species such as the Yellow Wagtail. Late Springs can impact on the growth of the meadows, especially if they have been used for lambing and have been cleared of sheep well into May. Late clearance can have an impact on the flowering ability of many plants and lead to a smaller hay crop. High rabbit

numbers can also have a detrimental effect on the sward and species composition. Flower heads can be nipped off by rabbits, preventing the plant to regenerate that year.

*Photograph 3 – hay meadows near Cray* © J Akrigg

**Management recommendations**

Upland hay meadows are an extremely rare habitat and therefore their continued existence is a priority both nationally and locally. The condition of the meadows in the parish is generally good with an improvement being shown in species diversity.

Management by the farmers appears to be right with species diversity increasing. However, with just under half of the meadows failing to have the right number of key indicator species, there is more of a need to maintain the management regime. Farmers could be given the opportunity to monitor their meadows, with training provided on farms within the parish that have species rich meadows.

The meadows in the study area have been identified as the second most important suite of meadows within the YDNP though they are still at risk of becoming fragmented from one another (Integrated Habitat Network analysis). Linkages between meadow areas within the upper dale need identifying and appropriate management implemented to reinforce the network.

**Condition and extent of Calcareous grassland**

Within the parish there is an estimated 303 ha of upland calcareous grassland (plus 130ha in a mosaic with other habitats) and 6.4 ha of lowland calcareous grassland (plus 31.7 ha in a mosaic with other habitats). Table 6 shows the condition of the habitats and figure 9 shows the extent within the study area.

Non SSSI condition has been taken from the 2011 YDNPA Habitat Survey for Upper Wharfedale where 32 sites were assessed. This has provided a snap shot of the overall condition of the habitats within the parish. Appendix III shows the extent and methodology of the survey work within the parish.

*Table 6 Condition of upland calcareous grassland*

| **Condition** | **Buckden parish SSSI** | **Buckden parish non-SSSI** |
|---|---|---|
| Favourable | 84%* | |
| Unfavourable – recovering | 16%* | |
| Unfavourable – no change | | |
| Unfavourable - declining | | |
| Partially destroyed | | |
| Unknown | | |
| FEP condition A | | 37.5% |
| FEP condition B | | 28.1% |
| FEP condition C | | 34.4% |
| Unknown condition | | 0 |

* % of total area of UCG SSSI habitat within Buckden Parish

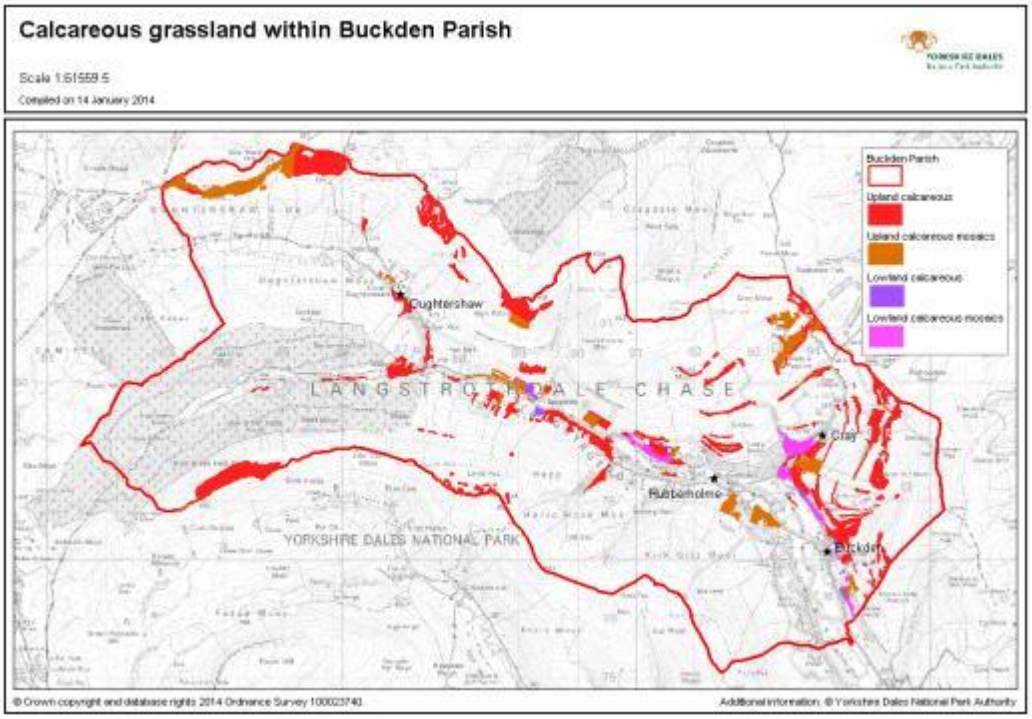
The SSSI habitat is in good condition with all sites either in favourable or recovering condition. The non designated habitat condition shows a third in A grade condition and two thirds in less than good condition. On further investigation of past results, the general trend is an improvement in the condition of the habitat with an increase in the amount of calcareous grassland that is A grade (in good condition), an increase in B grade grassland and a reduction in the area of C grade grassland.

The assessment of the 2011 YDNPA habitat survey results indicates that the B grade grasslands failed due to lack of wildflower cover, with an average cover of wild flowers at 15%. The target for the grassland is 20%. For the C grade grassland where two or more survey criteria have been failed, most sites failed due to a lack of frequency of key plant indicator species (at least 1 frequent and 2 occasional within sward) and as with Grade B grasslands, the wildflower cover was too low. Weed cover is also a negative factor on two sites.

**Current management**

The majority of calcareous grassland is found within the lower half of the farm and forms an important bridging area between the acidic allotments and the improved lower pastures and meadows. Farmers use it as a holding area for ewes and lambs before they are placed on the moorland allotments and fell in the early summer and it can therefore have a concentrated amount of grazing pressure for a short period of time. However, over the period of the year, grazing numbers are light at no more than 0.2 LU/ha.

*Figure 9:*




Information taken from available Environmental Stewardship agreements suggests the majority of the habitat is being grazed under Higher Level Stewardship using cattle and sheep. The main aim of having mixed grazing is to provide a range of sward heights that benefit invertebrate species and to reduce the effects of preferential grazing that sheep have a tendency to carry out. Livestock numbers are restricted during the key flowering period of the plants which is anytime between the beginning of June to mid August depending on the season. A restriction in livestock numbers is a way to allow the flowers to bloom and set seed. For the remainder of the year the scheme agreements allow additional livestock numbers as long as a variation in sward height is achieved.

There is one farm that bucks the trend for mixed cattle and sheep grazing by just grazing sheep on the calcareous grassland. This has achieved impressive results both in terms of the richness of the grassland and the invertebrate population it supports. The area is a designated SSSI and is in favourable condition. This indicates the knowledge the farmer has for the livestock, the habitat and its sensitive management.

**Potential threats to the habitat**

Calcareous grassland is particularly sensitive to increased numbers of livestock and high densities of rabbits. As the grassland is sweeter than the less palatable acidic grassland, it is preferentially grazed by sheep and rabbits which can graze the sward very tightly. If grazed in high numbers through the peak growing season (spring and summer), flowering plant species are unable to flower and set seed and therefore start to die out from the sward composition. Some flowering plants like Lady's Mantle, *Alchemilla* spp. become miniaturised in order to cope with the intense grazing pressure.

During drought periods, the harder the grassland is grazed the more likely it will show signs of early die back and stress.

A lack of grazing also has a negative effect by allowing scrub to develop which changes the habitat and tougher grasses like Tufted Hair grass can become dominant.

**Management recommendations for the habitat**

Calcareous grasslands are of very high biodiversity importance in the Yorkshire Dales National Park. Both upland and lowland calcareous grasslands continue to be on the UK list of priority habitats for biodiversity action.

With a third of the non-SSSI sites in C condition, one of the key targets for the management of these areas should be to increase the cover and number of key indicator species. Continued sensitive grazing management will be the key to the long term improvement in condition of the core habitat.

Connection between fragmented habitats will be a priority in order to prevent loss and improve the ecological network for plants, animals and invertebrates. (see section 5.2 for further information)

**Associated species - Northern Brown Argus butterfly**

In 2002, a comprehensive survey of all known colonies in the Dales, along with visits to potential locations found 33 occupied sites. The key habitats for this species are in the Ribblesdale, Ingleborough, Wharfedale and Littondale areas of the National Park along with a number of small sites in other areas. In 2012, as a result of mapping suitable habitat within historical larval food plant records we now have a better idea of other potential areas for this species.

*Photograph 4 – Northern Brown Argus* © W Benson

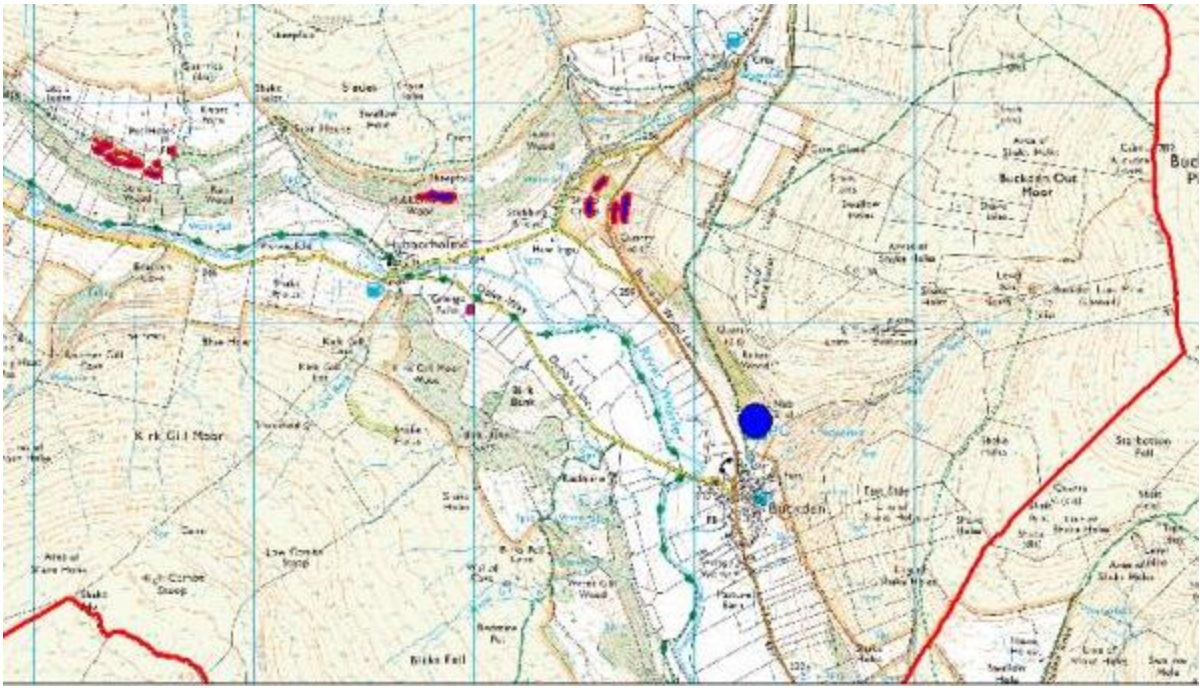
No comprehensive survey work has been undertaken within the project area. All sites in the National Park where there were historical records were resurveyed in 2002 with extant colonies found at the sites below. There have been subsequent records just to the north of Buckden which suggests that this species may be more widely distributed in the project area where the larval food plant – Common Rock rose - is found.

A butterfly monitoring transect was established at Strans Wood in 2012 but has not been running long enough for any trend data to be established.

**Management recommendations**

Appropriate grazing regimes to provide a sward height of between 6 and 10 cm is preferred. Additional survey work in areas of potentially suitable habitat may show that this species is more widely dispersed than first though.

*Figure 10: Known colonies of Northern Brown Argus*




**Condition and extent of blanket bog and associated moorland habitats**

Within the parish, blanket bog is typically found on the upper reaches of the hillsides above 300m – see figure 11 for extent. The area covered by blanket bog extends to an estimated 2036 ha (33% of the parish) of varying condition depending on past grazing management, historical burning management, gripping, erosion and more recent methods of blanket bog restoration. None of the bog areas are designated SSSI. The moorland areas vary in terms of depth of peat, vegetation characteristics and whether the moorland has been gripped or not. Several areas of the high moorland plateau are suffering from severe peat erosion.

The 2011 habitat condition survey assessed 1041 ha of the blanket bog found in the parish (51% of the total area of blanket bog). The results are shown in table 7.

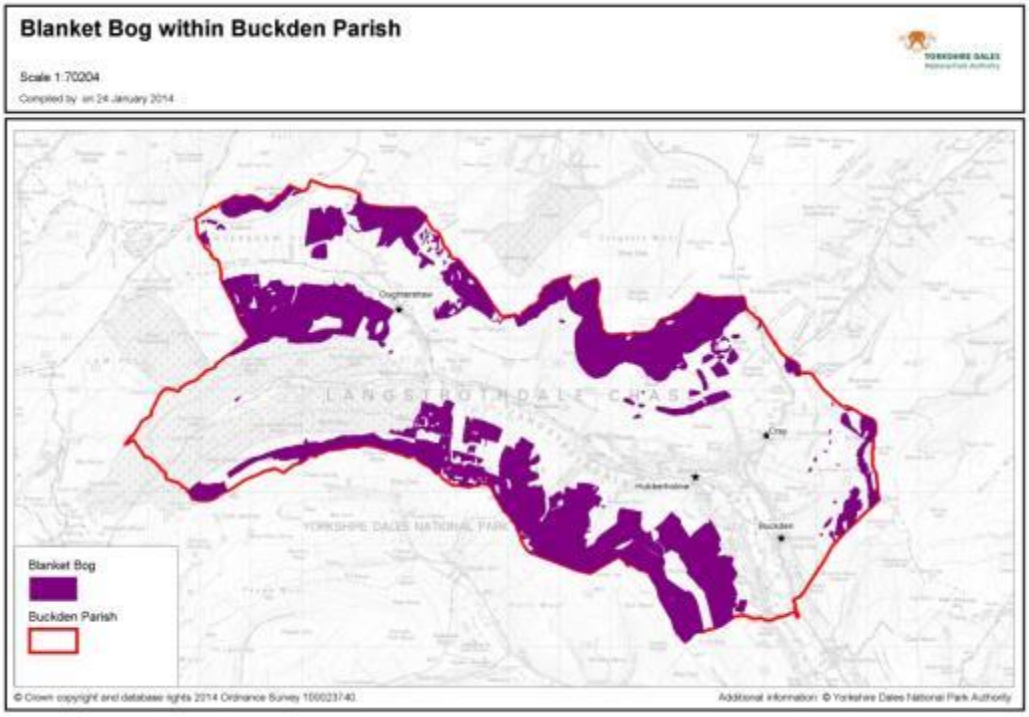
The majority of the blanket bog is in C condition due to a number of factors:

i. lack of dwarf shrub cover – the average cover being 4% - the target pass mark is 20%
ii. no flowering heather found during the survey
iii. all sites failed on frequency of dwarf shrub with many sites either having none or a maximum of two species seen very occasionally.
iv. And bog mosses (peat forming plants), were not frequently found.

*Table 7 Condition of blanket bog*

| Condition | 2011 Buckden parish non-SSSI |
|---|---|
| FEP condition A | 0% |
| FEP condition B | 3% |
| FEP condition C | 97% |
| Unknown condition | 0% |

*Figure 11:*




The 2011 survey included 553 ha of moorland that hadn't been under an agri-environment scheme agreement until 2010 / 2011. These sites have subsequently gone into UELS (the two commons) and HLS. The low cover of dwarf shrub and sphagnum may be attributed to a number of things:

i. the steepness of the terrain (particularly on the southern side of the dale), leading to thinner peat and a tendency for moorland grasses to dominate.
ii. Sheep grazing even at low numbers throughout the year will have an impact on dwarf shrub cover. Sheep will graze dwarf shrub from September onwards once the sugars in the grass have senesced into the roots. They will graze current years growth and if kept on throughout the winter months, can graze into the mature plants, slowly reducing their vigour and ability to colonise other areas.

The remaining sites that were surveyed have been part of CSS agreements since 2000 and 2002. Management of these sites focused on restoring heather cover to 40% or 60% of the field area. The management prescriptions set under CSS gave a very restricted grazing period with only 1 sheep/ha allowed in the summer months, this was

then halved or stock removed throughout the winter. Slow dwarf shrub recovery has occurred – this is expected given the high rainfall and short growing season. Where dwarf shrub cover started at 10% or less, these allotments have seen an increase in rank grassland and rush cover. Research has highlighted that a very low grazing rate can be detrimental to dwarf shrub recovery and that cattle grazing should be included in order to aid dwarf shrub regeneration.

There are a number of other important BAP habitats within the parish including wet and dry heath, acidic and neutral wet flushes that sit in a mosaic with the blanket bog. The areas are relatively small compared to the blanket bog, but are important to conserve in order to provide a diversity of structure and habitat. Flushes are particularly important sources of invertebrates for breeding wader chicks for example.

Acidic grassland forms the second most common habitat within the parish covering 1800 ha (28% of the area). Common bent, Sheep fescue, Mat grass and Tufted hair grass are commonly found, with large beds of Soft rush. This area is important for breeding waders like curlew and redshank and is one of the main grazing areas for livestock during the summer months. Generally the terrain is stepped with large flat plateau interspersed with steep dale sides. Some of the steeper areas have become dominated by bracken and maybe suitable for the creation of scrub or woodland. This would enhance the expansion areas for black grouse and slow down run off from these areas.

**Current management**

Nearly 800 ha of moorland is under UELS agreements with no stocking restriction. Management is aimed at maintaining the status quo. Grazing is throughout the year and is integral to the farming system. However, if the condition of the moorlands is to improve, consideration should be given to entering Yockenthwaite Moor into HLS with a grazing agreement that helps recover the blanket bog, but prevents the steep acidic grassland from becoming rank.

The remainder of moorland sites are under HLS restorative management prescriptions and are subject to reduced stock numbers for the majority of the year. Stocking rate is dependant upon condition of habitat and cover of dwarf shrub. During the summer months stocking rates vary between 0.04LU/ha to 0.2LU/ha. This will aim to increase the range and frequency of dwarf shrubs seen, albeit over a long period of time and in some areas improve habitat conditions for black grouse. A reduction in livestock numbers during the winter months is common place with many sites experiencing total stock removal. Removing sheep during this time of year reduces the grazing impact on dwarf shrub species. It also has an impact on the inbye where sheep are moved too, and on away wintered land – causing poaching, increased risk of diffuse pollution and increased grazing of key pastures.

Sheep are the dominant grazers across all farms within the parish. Many farms continue to graze cattle on the moorland during mid to late summer in order to open up the matted grassland and enable dwarf shrub recovery. Cattle remove large amounts of vegetation during this period of the year in order to maintain body condition. Research has shown that accumulations of matted dead vegetation can be reduced by using cattle, which suggests that they are a useful addition to low sheep grazing in a rotational

pattern of three to five years but this would need further investigation (ADAS 2011). Within research experiments at Pwllpeiran, Wales, Critchley et al (2007) recorded that feeding studies showed that cattle selected Nardus stricta and also consumed more Nardus than sheep.

On approximately 423ha of blanket bog, a number of farmers and landowners are carrying out additional blanket bog restoration including total stock exclusion, re-profiling of peat hags, reseeding of bare peat and grip blocking. This is being facilitated by the Yorkshire Peat Partnership which oversee the site survey work, contractors and monitoring. Funding for this work is through the farmers HLS agreement. This work will safeguard the bog and prevent further peat erosion and shrinkage, increase water storage capacity of the bog and enable it to become self sustaining.

**Potential threats to the habitat**

Upland habitats such as dry heath, wet heath and blanket bog have recovered (and continue to recover) as a result of reduced grazing by sheep in particular, contributing to the improving condition of many sites. However a loss of vegetation structure is now occurring in some areas, with adverse impacts for some species such as Golden Plover and other waders. Less cattle and mixed grazing is contributing to the spread of ranker grasses, rush, scrub and bracken and hampering restoration efforts.

Continued peat erosion and shrinkage is still likely despite attempts to halt it through grip blocking and peatland restoration. Increased rainfall and an increase in intense rainfall events could exacerbate peat erosion.

*Photograph 5 – Fleet Moss* © YNDPA

**Management recommendations for the habitat**

Consider bringing the Commons into HLS management.

Maintain cattle numbers on moorland in order combat rank grassland. Maintain current sheep numbers in order to encourage long term re-colonisation of dwarf shrub species.

There has been a lot of research into the economic viability of mixed grazing systems on moorland vegetation which needs to be disseminated to the farmers.

Consider planting scrub within bracken beds whilst retaining an element of livestock grazing.

**Associated species - Black Grouse *Tetrao tetrix***

Greenfield and the surrounding area was formerly one of the core areas for Black Grouse in the Yorkshire Dales National Park. Although no systematic counts were undertaken details include 150 males in March 1974, 48 males and 23 females seen from the road in February 1975. It is likely that these high numbers were due to the temporary improvement of habitat for Black Grouse associated with the newly planted woodland.

As the woodland canopy closed in and the habitat became less suitable, the number of Black Grouse began to decline and by the mid 1980s numbers had declined to between 11 and 20 birds. A single male was observed in March 1990 but there were no subsequent sightings.

Black Grouse were seen again in the Oughtershaw Side area in autumn 2009 with one adult male, three first year males and three females present from at least early October. It is not known where these birds came from but they were not any part of translocation trials being undertaken by The Game and Wildlife Conservation Trust at the time. The following year survey work was undertaken by the YDNPA and a single male was noted lekking, with two in 2011, and a single in 2012 and 13. Reliable reports indicate that at least two males and two females are regularly seen in the area and there are reports of what may be additional birds in winter from the Cam area (Phil Warren pers. comm.). This area is at the early stages of colonisation and appears stable despite two winters of poor weather (when Black Grouse numbers decreased across most of the Northern England range) and the poor weather in June 2012 that resulted in the worst breeding season on record for this species across northern England. No brood counts have been undertaken but a female with small chicks was noted in 2013.

**Strategic importance of the HNVF area**

If this small population can become established within the project area it will fulfil a key national BAP aim of increasing the range of Black Grouse in the UK. In a local context, the project area is crucial to the further expansion of Black Grouse within the National Park as it will link existing populations further to the north in Wensleydale and Raydale, to other potential areas of recolonisation around Foxup Moor, Horton Moor and possibly Darnbrook and Kirby Fell.

**Management recommendations**

As Black Grouse have colonised the area, there must be areas of suitable nesting and foraging habitat within the project area. Further additional management to enhance brood rearing habitat and provision of winter feeding sites (targeted scrub woodland planting and seed rich meadows) could be very beneficial for Black Grouse.

**Breeding waders**

The moorland and allotment management by farmers within the project area is maintaining areas of short grassland in allotments, combined with longer areas for cover. Where grazing has been reduced completely due to blanket bog restoration, these areas may become less suitable for Golden Plover due to the increase in heather height – this may take time due to the altitude of these sites and the restricted growing season.

The Curlew *Numenius arquata* is Europe's largest wading bird and is a UK BAP priority species. Its numbers are in decline and which has led it to be on the RSPBs Amber list (conservation importance due to decline in breeding population). The National Park provides a nationally-important habitat for the Curlew and is home to a large number of breeding pairs. Survey work here in the early 1990s located around 2,500 pairs nesting on moorland areas. Further surveys found 1,500 pairs on enclosed pastures and meadows during 2000. The conservation of this species in the National Park is on-going with a lot of work carried out by farmers, grant aided through their agri-environment schemes. A number of holdings within the parish contain breeding Curlew and efforts are being made to maintain and restore the moorland and allotment habitat through sensitive grazing management and scrape creation.

The probability map for Curlew (figure 10) shows the likely locations of suitable allotment and inbye habitat within the project area. The map suggests that there is medium potential at the western end and north eastern part of the project area.

The results of the Moorland Bird Survey (MBS) undertaken in the early 1990s support this hypothesis with good numbers of curlew and golden plover, with a smaller number of Snipe Gallinago gallinago and a few Lapwings present in the north eastern area around Yockenthwaite Moor. Dunlin Calidris alpina were also found to be present around the small tarns during the MBS with at least one breeding pair found above Oughtershaw.

The probability map for Lapwing Vanellus vanellus shows that there is a low potential for this species across most of the area, most likely as a result of the steeply sloping valley sides.

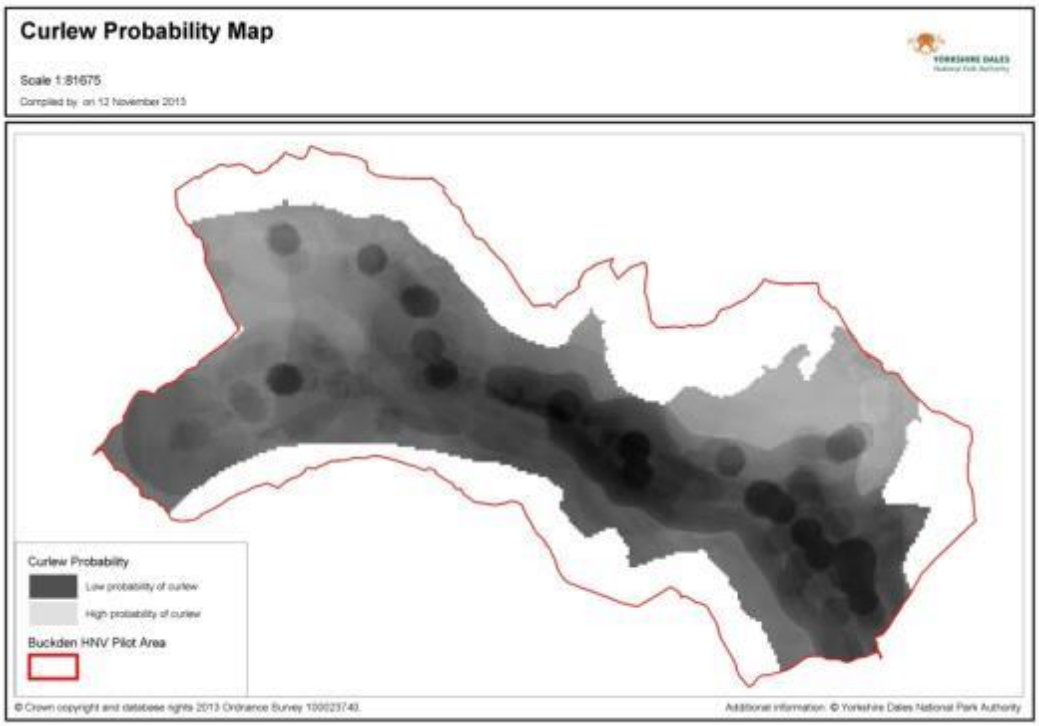
Anecdotal evidence provided by the farmers suggests that curlew and redshank numbers have increased over the last 10 years. Snipe and Woodcock are seen regularly and Skylark numbers have increased. Lapwing numbers appear to have dropped, as they have done elsewhere within the Yorkshire Dales. Farmers like to see these species of birds and are keen for them to return each year. Care is taken in the management of the habitat., for example, marking nest locations to prevent machinery trampling is common place.

**Management recommendations**

Targeting of appropriate management along the northern fringe of the project area would significantly enhance the area for breeding waders. This could include rewetting localised patches of acidic grassland and increasing the amount of temporary standing water pools (or scrapes). A higher number of wet features like this would benefit a

whole range of waders and increase the invertebrate population which would support wader chick numbers. Targeted rush control on flatter ground would provide more open areas for feeding (both livestock and bird species) and encourage Lapwings to nest in higher numbers.

*Figure 12:*




**Condition of semi-natural woodland**

Within the project area, upland mixed ashwood is the dominant semi natural woodland type with a significant area of scattered hazel and hawthorn scrub. There are a number of broad leaf plantations and semi native woodlands containing silver birch, sycamore, ash, alder and oak. In total, semi natural woodland covers 150.2 ha of the parish and scrub covers 19.27 ha. Figure 10 shows the extent of woodland.

The FEP condition data was taken from eight holdings to give a general overview of the condition of the woodlands within the project area. The woodlands that were in A condition were small gill and riparian woodlands that had been protected from livestock by fencing (through ESA funding). The majority of B condition woodlands failed on lack of tree regeneration either due to the woodland still being grazed by livestock, or more commonly by rabbits. Other areas of poor condition related to lack of dead wood.

*Photograph 6 – Rais & Strans Woods* © W Benson

Survey work undertaken by the National Park between 2005 and 2010 on sites where ancient woodland exists included the larger SSSI woodlands in Buckden parish. At the time, the woodlands were found to be suffering from livestock and wild animal grazing leading to a lack of natural regeneration and an evening out of age structure. The ground flora showed the requisite number of indicator species but overall the woodlands were not in good condition. Since 2010, a number of the woodlands have been fenced from livestock and additional tree planting work has been undertaken. It will take time to see the results of this work, but it will mean that the woodlands future has been safeguarded and valuable ecological networks enhanced. This in turn will benefit a large range of invertebrates, birds, bats and plant species.

New native woodland planting has been increasing year on year within the parish and to date 76ha of new native woodland has been created. The vast majority of this has been by two farmers at the head of the catchment near Oughtershaw with 44 ha planted to benefit black grouse, red squirrel and many bird species.

**Management recommendations for the habitat**

Grazing by livestock and wild animals remains the greatest threat to the long term survival of semi natural woodland as tree saplings are grazed and woodland flora diversity reduces. Woodlands that remain unfenced tend to be smaller and therefore at greatest risk of being lost completely. This slowly breaks down the network of interconnected woodlands and their associated species. Targeted fencing of at risk woodlands could be undertaken including additional tree planting.

*Figure 13:*

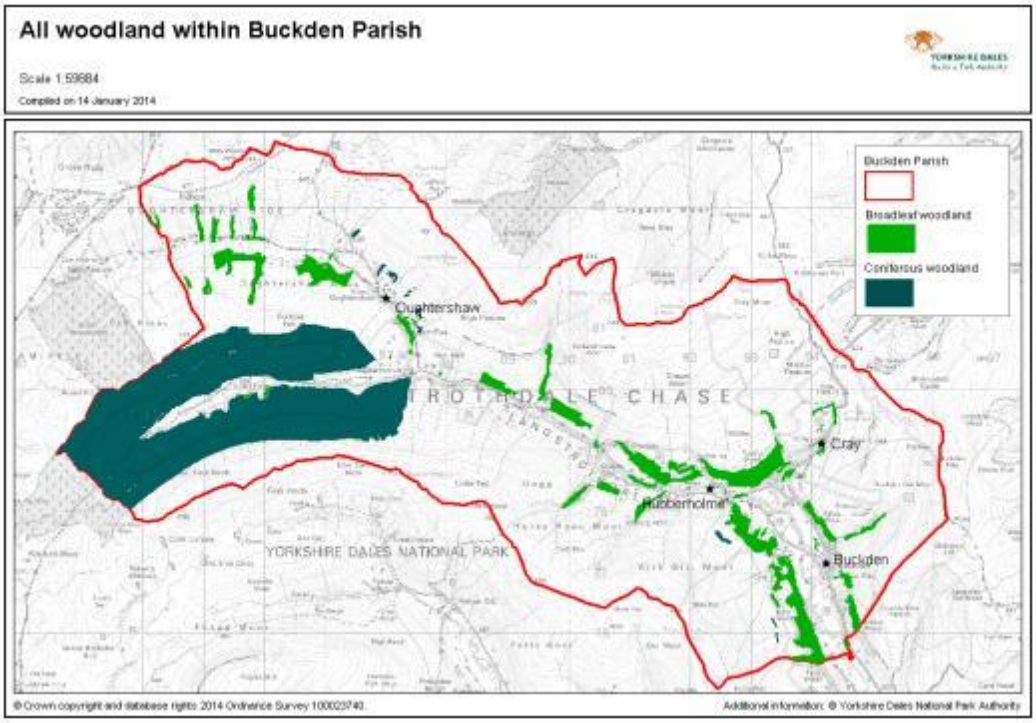



*Table 8 – Condition of semi natural woodland*

| Condition | Buckden parish SSSI | Buckden parish non - SSSI |
|---|---|---|
| Favourable | 28.5% | |
| Unfavourable – recovering | 71.5% | |
| Unfavourable – no change | 0 | |
| Unfavourable - declining | 0 | |
| Partially destroyed | 0 | |
| Unknown | 0 | |
| FEP condition A | | 69% |
| FEP condition B | | 25% |
| FEP condition C | | 5% |
| Unknown condition | | 0 |

For protected woodlands, management is the key to improve the health of the woodland. Shrub layers may need to be coppiced to prevent domination and maintain open glades. Diseased trees and overcrowded areas will need to be thinned. An appropriate woodland management plan should be followed but there is a risk that this type of work may be too expensive for farmers to undertake without adequate grant funding.

The National Trust are considering ways of increasing the amount of broad leaf woodland and scrub on their Upper Wharfedale estate. This will involve careful targeting of expansion of existing areas of woodland and identifying sites where large scale, low density planting of scrub can be undertaken. However, careful consideration needs to be given to the protection of the Red squirrel population within the dale with though given to the development of a Grey squirrel control strategy.

**Associated species - Red squirrel** *Sciurus vulgaris*

**Strategic importance of the HNVF area**

Greenfield is one of 17 Red Squirrel refuge areas within northern England and is currently the core woodland for this species in the National Park. A comprehensive program of Grey Squirrel *Sciurus carolinensis* control funded by the Forestry Commission has been in place within the woodland since autumn 2009 and has significantly reduced the number of greys present. Grey Squirrel control is now being undertaken at several key locations in Upper Wharfedale, at High Birkwith and in Widdale to try and prevent incursion of Greys into the refuge areas. Monitoring work is undertaken as part of the regional monitoring program in Greenfield and at three survey sites in Upper Wharfedale. This shows that the number and distribution of greys in Greenfield has decreased since trapping started but to date; only Grey Squirrels have been recorded at survey sites in Upper Wharfedale.

**Management recommendations**

The broad-leaved woodland habitat within the project area is within the Greenfield Refuge buffer area and is likely to be beneficial to Grey Squirrels. Although new planting of conifers within the project area may not be appropriate, any planting of large seeded broadleaves should be avoided so that it does not encourage the population of, and dispersal of Grey Squirrels.

**Grey Squirrel Control in Upper Wharfedale**

The Red Squirrel Conservation Strategy for Northern England outlines the management actions required to protect Red Squirrels and identifies the core refuge areas where the Red Squirrel populations have the best chance for the long-term survival. Management of these woodlands is targeted at maintaining and improving the habitat for Reds by ensuring long-term retention of cone bearing trees. Around each refuge there is a buffer area, where management is aimed at making the habitat unsuitable for Grey Squirrels by avoiding the planting of large seeded broadleaved species. In both the refuge and buffer areas the control of Greys is strongly recommended.

Since 2008, funding from the Forestry Commission has enabled Grey Squirrel control to be undertaken in Greenfield. The intention was to reduce the Grey Squirrel population in the plantation to a minimum before establishing trap lines outside the plantation of prevent further incursion of Greys. Results for monitoring work and trapping returns have shown the number of Greys within Greenfield has declined and it was concluded that any Greys that were present were most likely to have come from outside the

refuge. Therefore, in 2013 several trap sites were established at strategic locations in Upper Wharfedale, Widdale and Ribblesdale to try and prevent further incursion.

The species composition and area of broadleaved woodland in Upper Wharfedale/project area is likely to support at least moderate numbers of Grey Squirrels. While funding is currently available through the Woodland Improvement Plan for Greenfield to establish a small number of trap lines in the buffer area, a coordinated and systematic Grey Squirrel control program in the wider project area would have significant benefits to the Red Squirrel population in Greenfield. If sufficient resource was available, this approach could lead to the Grey population being pushed back to the south east and significantly reduce the risk of incursion into Greenfield, providing further protection for the refuge area.

Points to bear in mind:

i. There are eight long-term monitoring sites in Greenfield and a further three more recent sites established at at Low Firth Wood (SD 94191 75590), Raise Gill Wood (SD905785) and Redmire Wood (SD933770).
ii. It is difficult to determine what level, or area of control would be required in order to encourage Reds to spread out of Greenfield.
iii. Before starting any Grey control it really needs to be looked at as a long-term program.
iv. Potentially, new woodland planting in the upper area of the catchment is likely to encourage the spread of Greys into, or at least closer to Greenfield.

**Freshwater**

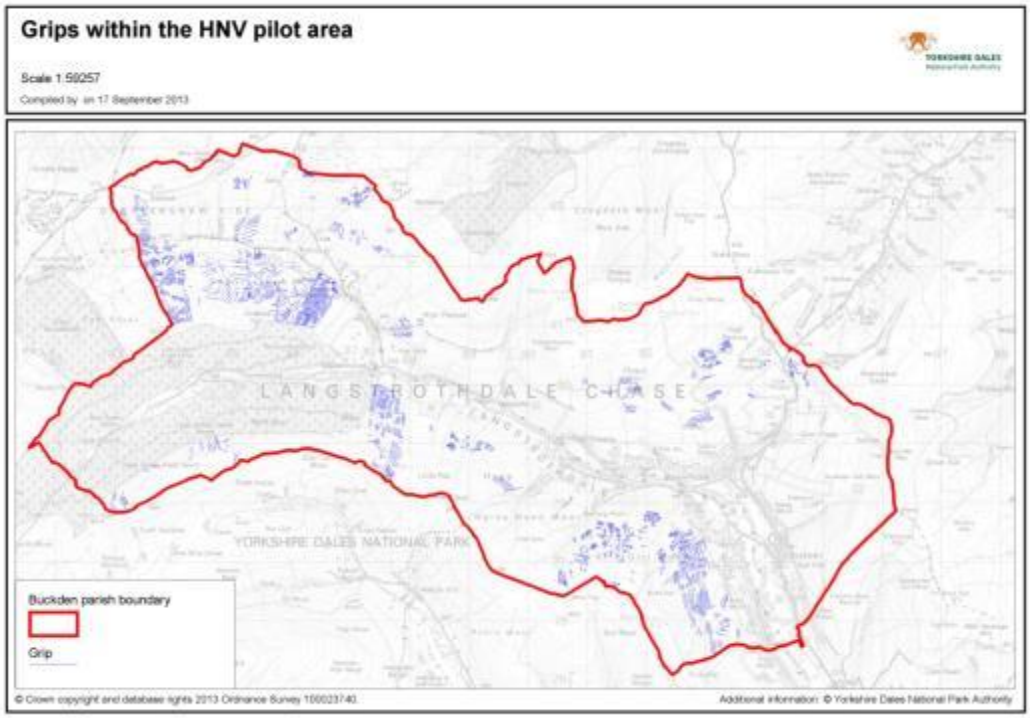
The River Wharfe starts its existence at the confluence of Oughtershaw Beck and Greenfield Beck. The river is termed as a type 2 river by the Environment Agency which reflects that it is a relatively small catchment and the underlying geology is calcareous rock which influences the water quality.

*Photograph 7 River Wharfe above Deepdale* © W Benson

The river exhibits a ‘flashy’ flow regime with river levels rising and falling rapidly in response to rainfall and there is evidence that this has been intensified by moorland gripping used to improve drainage in the upper catchment (see Figure 12). Long-term peat and moorland restoration is underway and this should slowly begin to reduce the frequency and size of flood flows (Natural England 2013). The river has been modified in places by the installation of revetment banking, flood banks, dredging of the river bed and the installation of a gravel trap at Hubberholme. Funding for this work has ceased and the Environment Agency’s vision for the river is for it to be returned to a natural state.

The River Wharfe SSSI starts at Buckden bridge and ends at the confluence of the river Skirfare further down the dale. The SSSI status covers the river channel and small areas of adjacent floodplain. It was designated in 1985 due to its upland and lowland character, its rare sedge species, the limestone pavement and boulder clay river bed and the rich flora of the river banks.

*Figure 14:*




**Current condition and its management**

With regards to water quality, the river is generally in good ecological condition, see figure 13. The headwaters from the confluence at Beckermonds to beyond Oughtershaw are of moderate ecological condition and this has been attributed to diffuse acidification. The main source of the diffuse acidification is from peat erosion on moorland with this being transferred to the river system via grips and streams. A lot of work has been undertaken since the 1990s (Upper Wharfe Best Practice Project, Yorkshire Peat Partnership, agri-environment scheme agreements) to restore the eroding moorland via grip blocking and careful grazing management. Further work is programmed for Fleet Moss to revegetate the exposed peat haggs and this will have long term affects on the water quality.

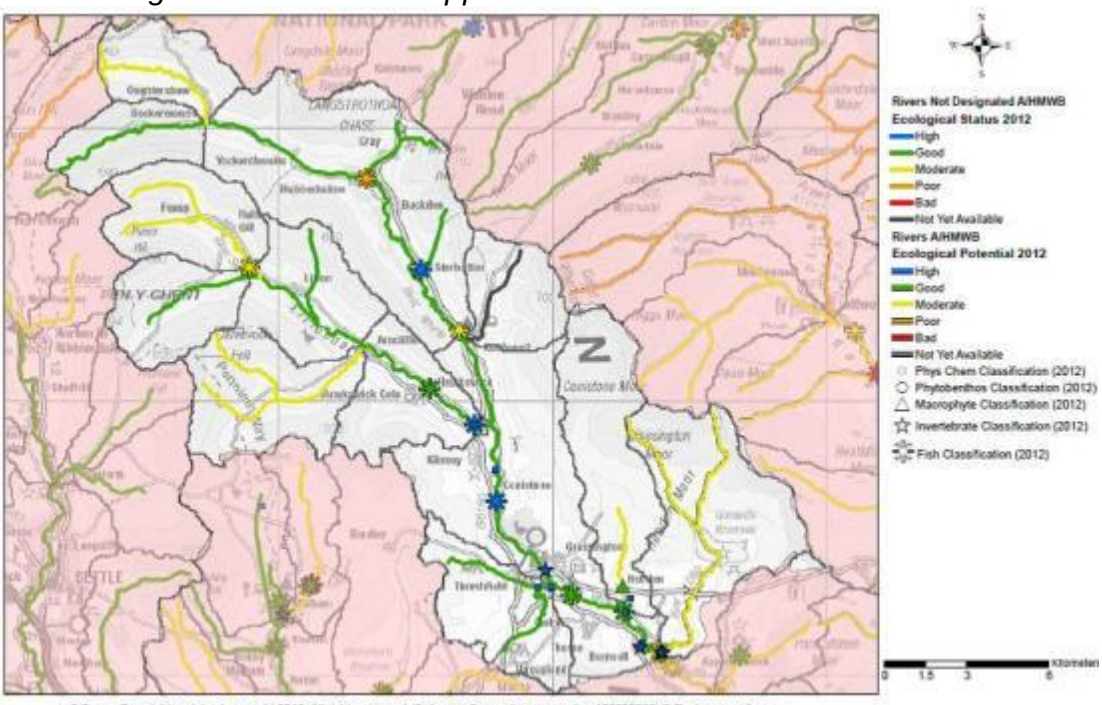
Additional funding has been focused on improving water quality across the wider catchment. The Upper Wharfe Catchment Restoration Project funded by the EA and facilitated by the Yorkshire Dales Rivers Trust has targeted work at restoring stability to river banks on Oughtershaw beck and on the Wharfe below Buckden. Working with a number of farmers in the area, willow spilling, tree planting and fencing of river banks to prevent livestock access have been undertaken.

The River Wharfe SSSI is currently in poor condition as a result of historic management methods which prevent the river from functioning naturally, reducing its ecological health and stopping the SSSI from reaching its potential (favourable condition). The historic management measures include:

i. Gravel removal and channel deepening
ii. Channel realignment
iii. Construction of flood banks close to the river to protect farmland in the floodplain from periodic inundation
iv. Construction of walls to reduce natural erosion which restrict natural movement

(Natural England 2013)

*Figure 15:Ecological Status for the Upper Wharfe 2012*





Natural England commissioned an assessment of the SSSI to look at the current condition of the SSSI, the river geomorphology and flow and to produce a restoration plan. From this, work is now underway to allow the river to become more naturalised via the River Wharfe SSSI Restoration Project, jointly funded by Natural England, Environment Agency and the National Trust. The project is working with two farmers within the Buckden parish (National Trust tenants), facilitating short sections of flood bank removal, culvert removal and bankside tree planting.

**Potential risks**

The progressive removal of Greenfield Plantation could have a direct effect on the water quality and ecological status of the Wharfe. Acidification and sedimentation are the main threats during felling operations. The extraction plan has put in place protective measures to ensure streams, drains, gullies and rivers are buffered from the felling area so as to act as a buffer and sink for loose material and run off. However there is still a risk of sediment being lost into the stream during high rainfall events.

The felling could also have a direct impact on flow volumes within Greenfield Beck and further downstream. Research has shown that partial felling of plantation forestry leads to short-term increases in both peak flows and base flows at the local scale, although this may not be detectable at the larger catchment scales (Robinson et al, 2003). This is due to the lack of forest cover leading to rainfall connecting more directly with drains and streams. This impact is felt for up to 10 years after restocking.

There is concern from a number of farmers about the lack of active management of the river. They feel this has led to the river becoming perched, impeding the historic drainage system contained in the meadows and causing the meadows to change character (including increase in rush cover and coarse grass) and become more waterlogged. There is a worry that some of the hay meadows will be lost over time as it will become increasingly difficult to mow the fields.

**Management recommendations**

Continuation of grip blocking and peat restoration projects will help deliver improvements to water quality, reduce flooding risk and stabilise blanket bog areas.

Protection of riparian woodland will reinforce the habitat, prevent fragmentation, protect river banks from erosion and create shaded, cooler water areas for fish and invertebrates. Targeted gill woodland planting and fencing from livestock will slow down sediment loss to the river system.

Consider ways to reconnect the floodplain with the river system as recommended in the River Wharfe SSSI restoration plan, whilst trying to improve the condition of vulnerable hay meadows.

Raise awareness of the risks of invasive species such as Japanese knotweed and Signal crayfish and methods used to control them.

**Associated species - bats**

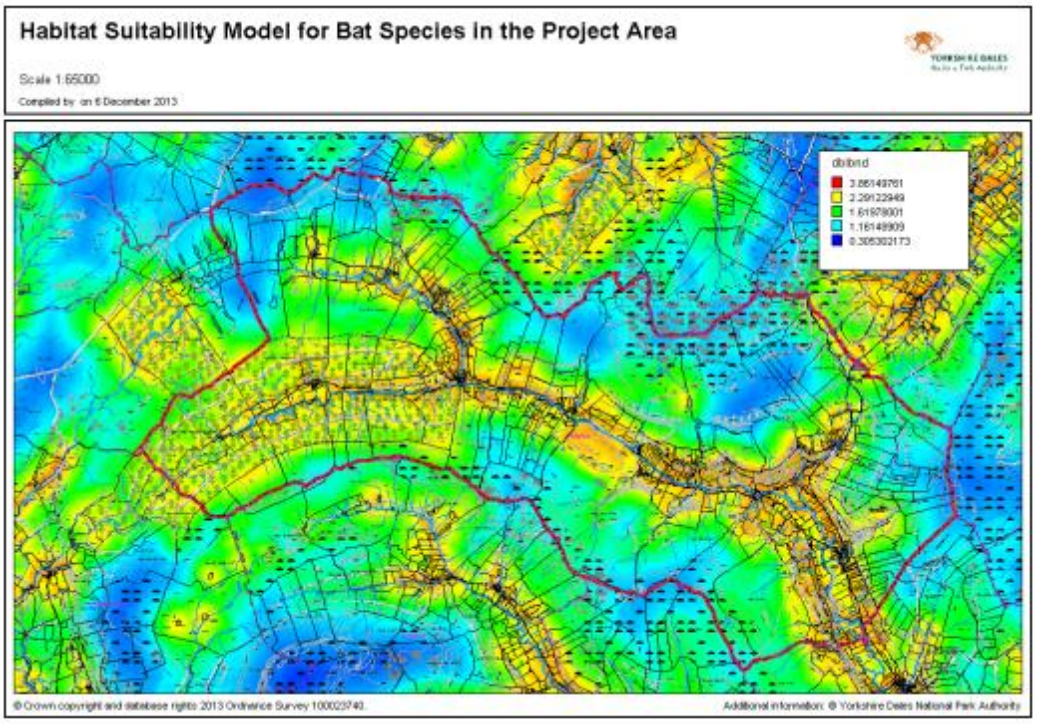
**Bat habitat suitability maps**

The figure 14 shows the habitat suitability for bats in the project area. Targeted woodland planting, primarily along the river corridor could enhance the area for bats. Care would need to be taken so that any woodland or tree planting would not create increased or improved incursion routes for grey squirrels to spread into the Greenfield red squirrel reserve.

Daunbenton's and Pipistrelle showed a significant preference for stretches of river with a smooth water surface and trees on both banks. This corresponded to significantly higher numbers of insects flying over smooth rather than turbulent water surfaces. Hence the distribution of bats is probably correlated to this as well as avoidance of noise from rough water areas, which interferes with echolocation.

Results suggest that in upland river systems, maintenance and enhancement of a mosaic of water surfaces and bankside vegetation with tree cover will increase the value of the riverine habitat to bats.

*Figure 16:*



## 4.0 Survey into Buckden parish farming systems

### 4.1 Methodology

This part of the study was commissioned to gain a better understanding of upland farming within the High Nature Value Farming area. It is widely recognised that extensive upland farming supports of wide range of wildlife and preserves historic landscapes but the economics of this environmental management are less well understood. The aim of this survey is to characterise the area in terms of its farming practices and land use and to identify the trends in farm incomes and the challenges faced by the farmers managing this environment.

To gather the data referred to in this report the methodology adopted was to carry out in-depth face-to-face interviews with 12 farmers from within the study area to ascertain their views on the challenges faced when farming in a High Nature Value Farming area. The questionnaire can be viewed at Appendix 4 of this report.

The questionnaire was broken down into three main sections:

- Data about the farm business in terms of the land area, the available labour resources, the livestock enterprises practiced and grassland management.
- Business management - identifying the main sources of income and the main financial challenges faced by the business. This section also looked at the businesses dependence on income from Environmental Stewardship and the practicalities of integrating Environmental Stewardship with the farming systems described.
- Farmers perceptions of High Nature Value Farming and their willingness to embrace the concept.

The interviews were carried out during November 2013 and reference was made to the following sources:

- 2013 Single Payment Scheme application form (SP5)
- Trading accounts for the year ending 4 April 2013
- Higher Level Stewardship Agreement
- Farm Tenancy Agreement
- Rural Land Register plans of the holding

The questionnaire examined not only the day-to-day practicalities of farming in a HNVF area but also focused on succession planning and farm diversification to give a wide synopsis.

## 4.2 Analysis of responses

Across the study area the farm size would be considered as large when compared to the national average of 57 ha[1]. The average farm in the Buckden area is 318 ha.

The largest farm within the sample is 599 ha and the smallest farm 17 ha. Some of the farms have additional land outside the study area which tends to be lowland pastures. The tables below show the land classification and land tenure for those farms contributing to the study not the Buckden parish as a whole. This excludes some areas of farm land and forestry. Greenfield forest is a privately owned forest extending to 1086.20 hectares a significant proportion of which lies in the Buckden parish. The forest is made up of 60% Sitka Spruce and is managed commercially for timber and has not been included within the study.

### 4.2.1 Land categories

Generally the sample farms all have a mixture of meadow, pasture, moorland and woodland. Some also have common land on which they either own or lease gaits. The proportion of moorland across the holding generally increases the further up the dale the farm is situated. Also the area and quality of meadowland tends to reduce as you head towards the dale head. Two thirds of the farms within the study area have SSSI designations on them.

Figure 15 below shows the distribution of land between meadow, pasture, moorland, common land and woodland. The figure shows that 71% of the total land area is moorland, compared to only 7% productive meadow land, and it highlights the major constraints faced when farming in the study area. The farming system focuses around using the limited in-bye to produce enough forage during the growing season to service the livestock throughout the rest of the year.

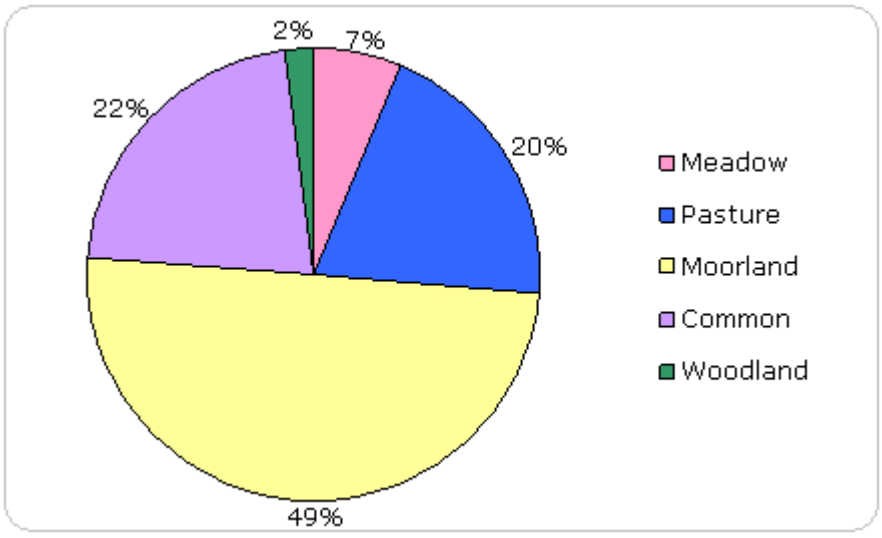



*Figure 17: Buckden parish land categories*

[1] ukagriculture.com

### 4.2.2 Land occupation

The National Trust is a major land owner within the study area and land owned by the Trust accounts for 64% of the total land area. There are also a number of private landlords within the study area whose properties have a similar history with families having acquired them due to their love of the area and their interest in rural pursuits.

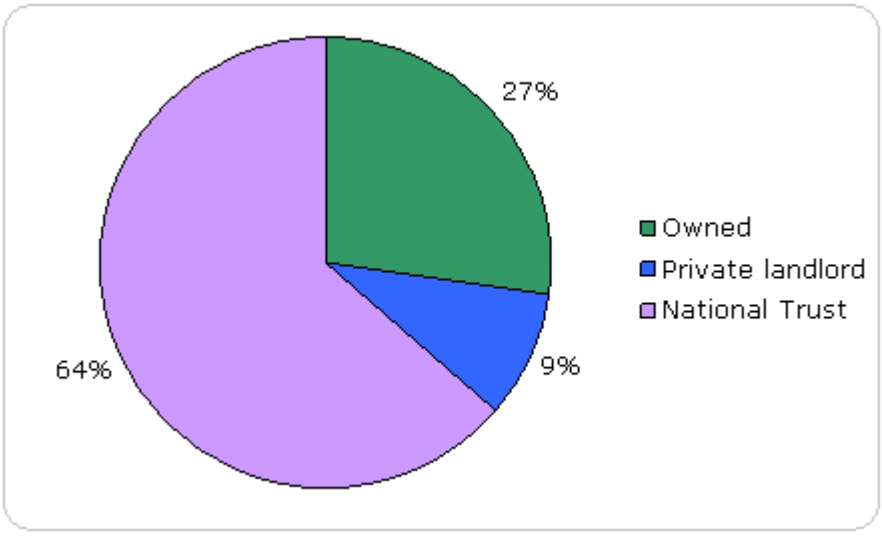



*Figure 18: Land tenure in Buckden parish*

Within the study group there is only one farm which is occupied on a Farm Business Tenancy, all the other tenancies are under the Agricultural Holdings Act 1986. A number of farmers had taken on additional neighbouring land on Farm Business Tenancies as a way of expanding their farmed area. There are some farms which are let on three generations tenancy with existing succession rights still in place, and some on post 11 July 1984 Tenancy where there are no succession rights.

Only 27% of the total land area is owner occupied, and a majority of farmers do not have any owner occupied land at all.

### 4.2.3 Transition of family farms

There is a tradition of family farming in the area with the longest established family having farmed the same holding for 171 years. There have also been a limited number of instances where properties have come onto the market and been available to new starters or people from outside the area. On average the farms have been within the same family for 58 years which identifies that hill farming is an industry where transition from one generation to the next is an extremely important factor.


*Figure 19: Longevity of farm management*

Two thirds of the principal farmers in the study area were aged 51 years or over which highlights the importance of this transition. In most cases the farms have sons or employees who would be considerably younger than the average age.

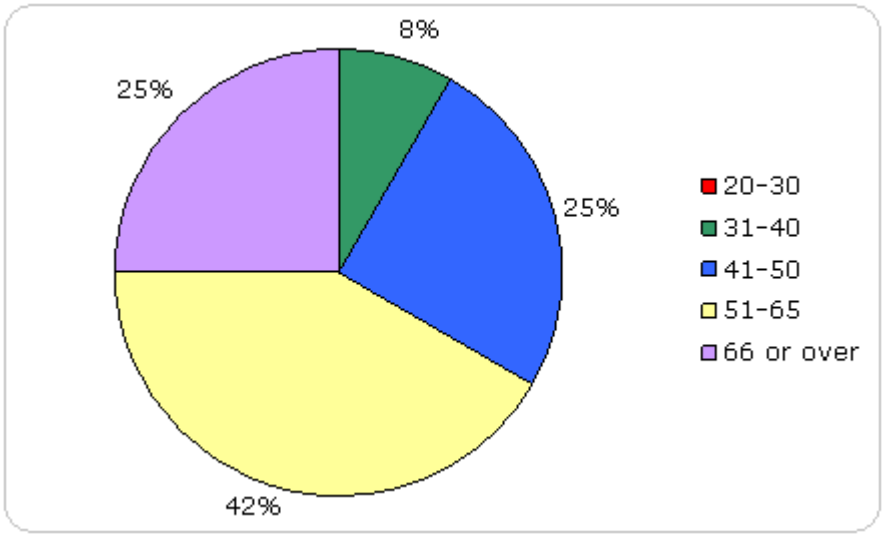



*Figure 20: Age range of the principal farmer in Buckden parish*

The largest proportion is within the 51 to 65 age range and no one under the age of 30.

### 4.2.4 Farm succession

One of the main concerns identified in the study, when discussing the issues surrounding succession planning, was land tenure. Those farmers with a Farm Business Tenancy Agreement or a post 11 July 1984 Tenancy have no statutory rights of succession. This means that negotiations with the landlord is essential at an early stage and will involve some concessions in the terms of the Tenancy. With the long-term nature of hill farming and often low returns the idea of the next generation taking on the holding on a short term FBT at a market rent was unanimously identified as being a major concern. Retirement was also seen as a major barrier to succession. Some farmers on AHA tenancies felt that they could not afford to retire and had not been able to make provision for retirement during their farming career. This contrasted with those farmers on FBT's who were forced to make provisions for retirement due to the lack of security.

### 4.2.5 New entrants

The study revealed that while there are pools of young people keen to take up hill farming there are potentially limited opportunities for them to get onto the ladder. The lack of security of tenure and market rents were identified as barriers to this, along with many other external market factors such as the availability of capital from banks, the high capital costs of livestock, machinery and other in-goings relative to the income that can be generated from them and the high maintenance cost associated with hill farms.

### 4.2.6 Farming activities

The farmers were asked to describe their working patterns and the time they devoted to the various aspects of their farming operations. Overall it was revealed that slightly over half of their time was spent on livestock husbandry and nearly a third on property maintenance such as dry stone walling, pest and rabbit control and maintaining farm infrastructure and buildings.

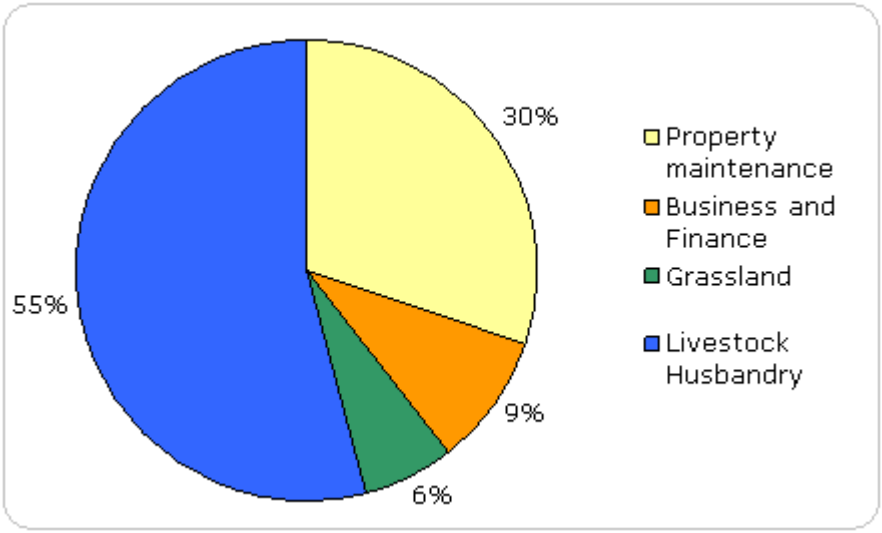



*Figure 21: Time spent on farm related activities*

Interestingly, only 9% of the total time was spent on business management and finance, which participants identified as being due to the other demands on their time. Accounts and banking was something that tended to be given to a spouse or professional body to complete. It was also identified that much of the business management and planning was done outside of what would be considered normal working hours, either in the evenings or weekends. The diagram above shows how the principal farmer devotes his time, not how the total farm workforce spreads its time, this would show an even greater proportion of time spent on livestock husbandry and farm maintenance.

Many of the farmers identified weed control, woodland management and rush control as being property maintenance works rather than grassland management. This shows how the farmer perceptions have changed and how they have adopted environmental management as being part of their farming routine and view a lot of their work as environmental maintenance.

*Photograph 8 - wall restoration* ©YDNPA

### 4.2.7 Working hours

The hours worked ranged from 35 to 85 hours per week compared to the Office for National Statistics average figure of 32 hours. Over 80% of the participants said they worked more than double this. Eight of the 12 participants worked on average 85 hours per week as standard.

In addition to these average hours there are times when the farmers are working extreme hours such as lambing time, calving time, clipping, gathering and haymaking.

A third of the participants were only spending five days per annum off the holding and nobody identified that they spent more than two weeks off the holding. It was generally identified that pressures of work were the constraint preventing people from taking time off rather than financial considerations. The other point that was identified was that these holidays had to be taken as the season and workload dictated and could rarely be planned in advance. On average the farmers had eight days holiday per year.

### 4.2.8 Farm management

All the farms are livestock only holdings and most farmers kept a mix of both sheep and suckler cattle, while some farmers specialised only in sheep. The main constraints for keeping hill cattle were the capital and mechanisation costs associated with them for the winter period and the feed requirement of cattle balanced against the falling yields on hay meadows. The table below shows one quarter of the total livestock units is made up of cattle whilst the remaining 75% is sheep.

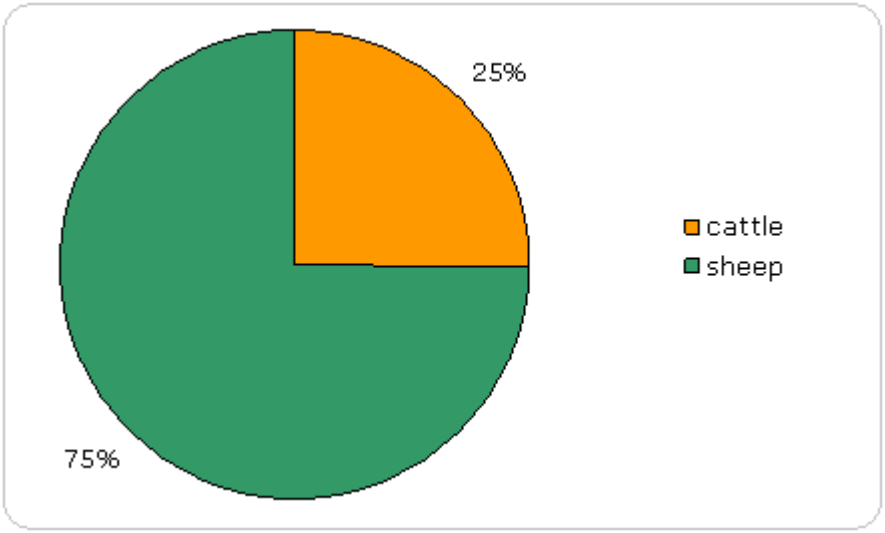



*Figure 22: Livestock groups*

The average flock size is around 600 ewes whereas the average herd size would be only 25 breeding cows. Generally the livestock numbers have decreased over the last 10 years since the abolition of headage subsidies and the greater adoption of agri-environment schemes. Some of the older farmers identified their age as a factor in reducing stock numbers and acknowledged that poor returns on livestock had forced them to look at reducing their work load rather than taking on additional staff.

Over 90% of the sheep are native breeds with Swaledale being the principal breed making up nearly 65% of the total sheep and Dalesbred's representing a healthy 27% of the total and the remainder were made up of other hill breeds such as Cheviot and Herdwick. There is a small percentage of crossbreds including Mules (Swaledale crossed with a Blue Faced Leicester sire) and Texel crosses (where the Texel was the terminal sire).

The choice of breed was identified by most as being dictated by the environment in which the stock had to be kept. Demand for the progeny in the market place was identified as a relevant factor. Many farms had in the past kept the Dalesbred ewe as the main breed, however, the demand for the North of England Mule for lowland commercial lamb producers created a shift from keeping the Dalesbred to the Swaledale. The ability to change to a non-hill breed was largely discounted on the basis that few other breeds would be capable of surviving in the given environment.

In many cases the sheep flock had been in the family for generations. For these farmers, changing breed was not something they would ever consider as the flock was part of their family heritage. In addition, blood lines had been developed over many years and were perceived to be irreplaceable.

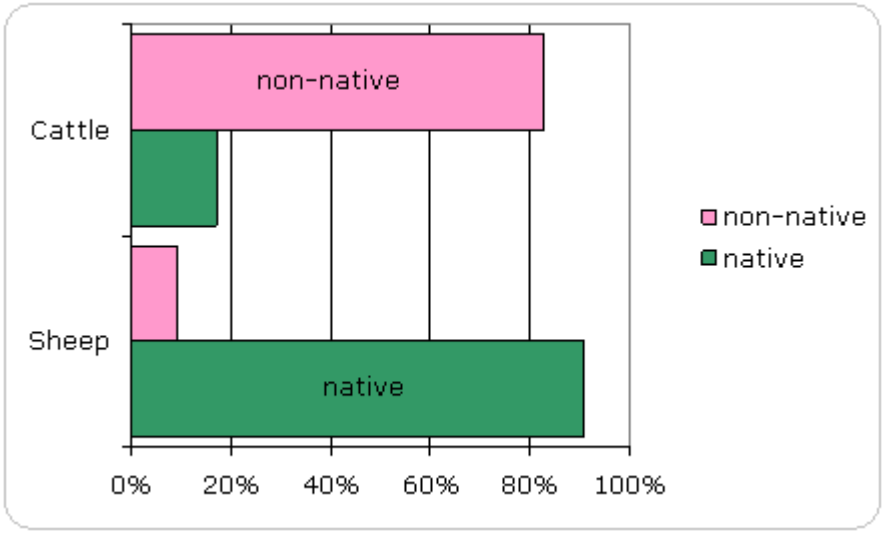



*Figure 23: Comparison of livestock breeds*

The commitment to traditional breeds was less strong in the cattle with only 17% of the total being traditional breeds and the remainder being non native. The majority of cattle were continental crosses. The shift away from traditional breed cattle had been largely driven by the market. It was generally held that a traditional breed of equivalent age would be worth around half the value of its continental counterpart.

Those farmers rearing traditional breed cattle felt that the cattle fitted their farming system and terrain better than the continental. There wasn't the need to grow high volumes of winter fodder, and therefore the land wasn't worked as hard. This had knock on beneficial effects on the sheep flock with less animals having twins. They felt this was a more sustainable farming system. Higher Level Stewardship agreement funding had been a factor that had subsidised their cattle enterprise and enabled them to continue with cattle as part of their farming system.

All farmers feel it is a necessity to house cattle and most people define the housing period as being at least 6 months. The cost of housing cattle is considerable. It is made more viable when keeping a continental cow, the progeny of which has some value in the market place.

Some of the farmers had gone out of cattle production all together due to a lack of suitable housing. Tenants identified that the National Trust did not want to see cattle tethered in stalls, but had not been able to provide alternative housing either and so forced them to cease keeping cattle. It was generally held that keeping traditional breed cattle and out wintering them was not an option because of the terrain and climate. Extensive poaching and damaging of drystone walls caused by sheltering cattle as seen in other areas where this is common practice had put farmers off. Some also identified that the type of limestone ground in Upper Wharfedale goes into the winter with very little cover and so could not sustain a cow without serious compromise to welfare.

One producer with a private landlord who still relied on tethering most of his cattle had gone onto Aberdeen Angus cattle with a view to breeding his own replacements. He also felt that a premium could be achieved for Angus steers by a named sire. Current market prices for Beef Shorthorn and Herefords are encouraging and there is growing

support from the high end supermarkets, for example, Waitrose Hereford beef products are selling extremely well. Also, there is growing consumer support for grass fed beef.

There was a wide variation in the marketing of livestock. Two thirds of the producers were Farm Assured and, in terms of actual numbers of livestock sold as Farm Assured the proportion was far greater. Smaller producers had in some cases decided the burden of regulation and cost could not be justified for the number of livestock they were producing.

Over three quarters of sheep sales were through live auctions. A number of producers had signed up to a specialist marketing initiative with Marks & Spencers through the Swaledale Sheep Breeders Association to achieve a premium for their prime lamb. The lambs need to be finished to meet a specified carcass grade and a commitment to numbers to be supplied is also a constraint to this. The farmers involved in this scheme need to have a registered flock and have to have adequate facilities to fatten the lambs inside as the scheme does not open until January each year.

Only 1% of the total number was sold direct to the general public at the farm gate as boxed lamb. Producers identified the time factor, slaughtering costs and the lack of marketing skills as the reason why this was not done more, but did consider the principle of added value.

Whilst the sale of the cull and fat stock accounted for over 50% of the numbers sold, in value terms breeding stock would represent a much greater proportion than the 25% of total numbers.

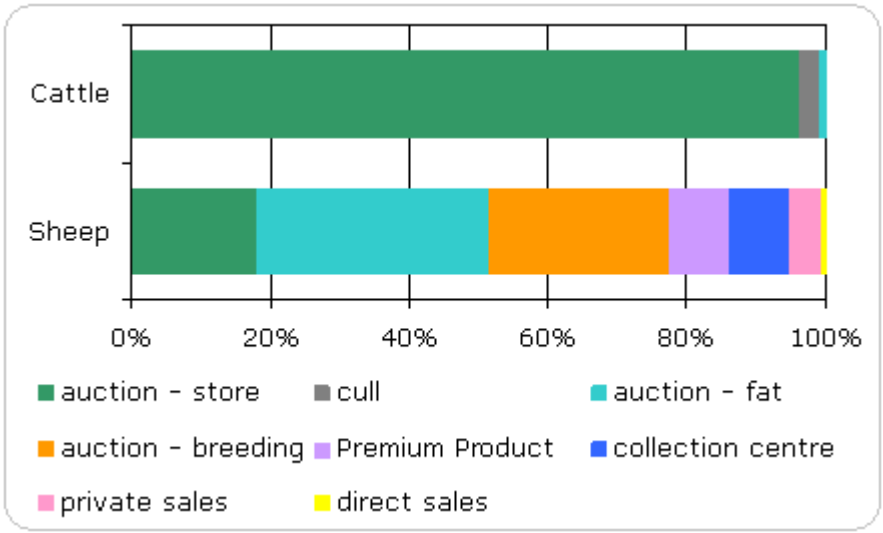



*Figure 24: How livestock are sold*

All of the sample farms identified that it was not economic to finish cattle in the uplands. A total of 96% of cattle were sold as stores and 3% of the remainder represented cull cows with a very small proportion going as direct sales. Most of the store cattle are sold through live auction.

A shift in the management of sheep flocks was identified across the study farms. Generally HLS restrictions had meant that less sheep are wintered on the hill. This has meant either providing housing, or more commonly sending ewes away for winter to low

land farms such as stubble arable land or most common dairy farms. Away wintering has the added benefit of exerting less pressure on the limited conserved feed stocks. However, in some cases, the away wintering was up to 130 miles away from the main holding. Most of the farmers were able to source wintering between 40 and 70 miles from the home farm. This was felt to be a sustainable distance. In many cases there was a long established relationship that had existed for a lifetime or even longer. The prospect of finding additional or alternative wintering sites was seen as a major concern.

Wintering livestock away was identified by all as incurring significant fuel costs / transport costs, cost of the grazing, and sometimes causing a compromise to body condition if not managed properly or if the winter was particularly wet or cold. Ewes were generally costing around 80p/head/week compared to gimmer hoggs and fattening lambs at 50-60p/head/week. Many of the farmers did their own transport, but where a hired contractor was used this was adding a further £3-£4/head. There were additional fuel costs incurred visiting wintering sheep to provide routine husbandry whilst they were away.

The main problem with away wintering was identified as the inconsistency of supply and the requirement of most dairy farmers to have the land free of sheep by the middle to end of February. This represented a major problem for most of the study farms as it meant bringing ewes back home at the end of February when the weather was often at its worst and then having stock on the in-bye land prior to lambing, meaning that there was no grass at the start of lambing time in early April.
In general, the management of suckler cow herds had not changed significantly in the last 10 years. Some producers said they had stopped tethering cattle in stalls and most said they had reduced numbers since the removal of a Suckler Cow Premium Scheme. Most said cattle were an uneconomic enterprise but one that provided benefits to the farm in general in terms of improving the grazing quality of pasture and the provision of farmyard manure for the hay meadows.

*Photograph 9 – winter feeding © J Akrigg*

### 4.2.9 Land management

It was generally identified that soil testing for nutrients and pH was not regular practice on the study area farms. This was attributed partially to the cost of applying lime and correcting nutrient imbalances and partly due to the restrictions imposed previously by the ESA and CSS agreements. A number of the participants were unaware that they were able to lime under the Higher Level Stewardship.

The fertiliser utilisation in the study area had decreased in the last 10 years which was identified largely as a result of environmental restrictions but partially as a result of the marginal rate of return having reduced due to increased fertiliser costs. Two of the farms were now using no artificial fertilisers and one only using them in alternate years. These were the highest farms with the poorest land where the response to fertiliser was felt to be worse due to the high rainfall and poor often acidic soils.

An area of particular discussion and concern was the need to have adequate storage for farmyard manure to enable timings to be better matched to plant nutrient requirement and enable compliance with environmental regulation. Most producers had a shortage of manure storage which limited cattle numbers. This meant that the forage land was not getting sufficient manure which had a carry over effect of declining crop yields from the meadow areas. The optimum time to apply farm yard manure was felt to be at the end of lambing to give the hay crop some additional nutrient or in August/September to improve the aftermath growth. In many, cases farm yard manure was being applied between October and April while cattle were housed. This is a period where low temperatures and high rainfall persist and so the nutrients were being leached and fertility levels declining. Capital grants available for creating dedicated manure storage were identified as a major priority to enable improvement in this regard. A number of the farmers saw the irony in financial constraints preventing investment in manure storage facilities so creating a threat to the High Nature Value environment that they were trying to manage.

The farmers unanimously identified the limited area of meadowland as being a major restriction to their farming system. Without meadow land to generate conserved forage it is impossible to carry stock through the winter, as the higher ground is generally well eaten by the end of December and does not start to grow again until mid April. During this period everyone was supplementary feeding their breeding ewes and had tried to remove all lambs off pasture by this stage, either sending them away on grass keep or housing them for finishing. All non-traditional cattle were housed from the period mid-October through to mid-May.

The meadowland had to provide sufficient forage for both housed cattle and the sheep flock. In order to receive vital funding from agri-environment schemes, most farms were including a proportion of their meadows in conservation options under their Higher Level Stewardship resulting in a decline in yields as a result of putting on limited amounts or no fertiliser. Many felt that the payments under HLS did not go far enough to compensate for the yield reduction. In the first three years the yield drop was slow as there was still some residual fertility. By the fourth year the residual nutrients were exhausted and crop yields and spring and autumn grass growth were falling dramatically. The experience of one farmer who had been in schemes since 1987, found that after the third or fourth year, yields began to lift slightly as soil conditions stabilised and grass types changed.

Cold springs and wet summers compounds the effect on yields and most farmers have had to buy in additional feed. Bought-in hay, costing £120/tonne, had associated problems for many. The hay was usually in large bales for which the traditional farms had no storage, and feed quality can be variable. A further problem was identified as the importation of foreign seed and weed seed. Some identified the potential to become organic producers, but felt costs associated with bought-in feeds were a barrier to this.

The meadows were identified as being fundamental at certain times of the year such as tupping time (November) and lambing time (April) allowing some grass to establish on the sheltered in-bye at the start of the growing season in early April.

Sheep are left in the meadows until mid-May at which time the lambs were well footed and ewes could be moved out into pastures in their transition up onto the moor. The meadows are then shut up from mid-May until July when generally cutting dates between mid-July and mid-August. The meadowland was generally only able to grow enough grass for one cut even when outside of HLS. In the equivalent time period lowland grassland would generally manage two cuts and give a more palatable conserved forage.

*Photograph 10 – hay making* ©Laykin Cottage

The meadows are then left to establish the aftermath grazing which becomes a fundamental part of improving the condition of weaned lambs to improve their marketability. By the middle of October the meadows are empty with most lambs either having been sold as stores or sent away to winter onto grass keep. The meadows are used once a year for tupping in early November.

The areas of pasture vary considerably between the holdings. Most farms identify the importance of pastures for grazing ewes that had produced twins which could not survive and perform on the moorland. Pastures were often important to the HLS Agreements and required cattle grazing through the summer months. Some were also important for ground nesting birds and were no longer available as feeding sites for the winter.

All the farms have a significant proportion of moorland some of which was common and most of which was enclosed. A significant proportion is in moorland restoration under HLS. Stock management has had to alter quite considerably to fit in with management

requirements, which in some cases included livestock exclusion between the period 30 September and 1 April. The moorland is fundamental to the farming system as a place where sheep are held during winter when supplementary fed. The moorland on many of the farms provided deep gills and level plateaus for feeding and shelter.

On the subject farms where a significant proportion of the land was managed under HLS but some areas were kept outside the agreement, there was a trend towards intensifying the use of the areas not subject to restriction. This was identified as a way of counteracting the loss of production on those areas subject to severe restriction. This enabled environmental objectives to be absorbed into the farming system whilst still allowing the livestock enterprises to function.

It was generally identified that reducing livestock numbers had increased ewe body condition. This was feeding through into greater prolificacy of the sheep flocks which provided the benefit of more lambs to sell. However it also resulted in significant additional wintering costs to meet the nutritional demands of twin bearing ewes and problems during summer finding suitable grazing for ewes with twins.

In some cases this involved reliance upon land outside the study area or even taking grass keep to accommodate twin ewes. Some producers said this exacerbated the problem by further reducing the number of livestock units at home during summer - so resulting in a greater accumulation of surplus forage and having fitter ewes the following tupping time that were more likely to conceive twins.

Shepherding was still identified as being an important part of the farming system. The farms generally cover large areas and it is important that sheep are utilising the full forage area. Many farmers send sheep out onto the higher moorland on a regular basis. This is not shepherding to maintain a heft as is practiced in some upland areas, but ensuring effective use of the forage area.

#### 4.2.10 Farm profitability

As well as examination of the last available farm accounts, the farmers were asked for their perceptions on the direction of their businesses. In general, the farmers felt they had experienced a reduction in farm support payments over the last 10 years and predict this trend will continue into the foreseeable future. Profitability was a concern to most of the businesses and the inability to generate sufficient funds for reinvestment and business development was seen as a major constraint.

As most of the farms are tenanted, the ability to generate profit and so extract some capital from the business in order to provide for eventual retirement was seen as nearly impossible. The main cost challenges to the businesses were identified as fuel, fertiliser and feed costs, all of which were seen as unavoidable. Many acknowledged that they had reduced livestock numbers in response to rising feed costs, but it was unanimously felt that to reduce the feed provided per livestock unit was false economy.

The main point communicated on this was that it was essential to run a motor vehicle in order to operate the business, and if keeping breeding livestock, it was essential to feed them or use fertiliser and so these costs to some extent were unavoidable. While most people had tried to identify ways of reducing these costs through reduced use of inputs, it was difficult to do this without reducing the quality and quantity of output.

Interestingly, the study did not identify loans, wages or pest control as being major cost constraints. On closer examination this was largely because wages were being avoided by the people involved in the business who were working excessive hours rather than employing staff. In addition, boundary maintenance and pest control was largely done in house and absorbed into longer working hours rather than paying a contractor. If the business' was more viable then some of these tasks could be contracted out freeing up more time for business management and marketing.

Those people who did use contractors for stone wall maintenance identified it as being one of the largest costs, especially after the recent bad winters. Wall maintenance was a high priority for all the farmers. This was partly for flock management, partly for maintenance of the farms field systems and partly to avoid penalties on subsidies as most of the stone walls need to be maintained as part of the Environmental Stewardship Scheme.

Although difficult to quantify, the affect of weather on farm profitability was ranked highly by all the participants. It is worth noting that this study was done in the year following the wettest summer and the coldest spring recorded for some time. Cumulatively these had a devastating effect on livestock production. The study identified that farmers has in cases spend double the amount on feed than on a 'normal year'. The farms also suffered from higher losses, especially at lambing where the sheep lamb outdoors and very few farms have facilities or finances to house the stock. The effects of this weather will be seen in the next set of accounts, not those used in this report. The effects were however being felt by the farmers in terms of a lack of cash and so decisions being influenced according to the availability of working capital.

Whilst nearly all the businesses had either a spouse working off the holding part-time, or operating a diversification business from the farm, these figures were generally not shown in the farm accounts. This income was essential to the way of life but used rather to finance living costs and the running of a private vehicle rather than directly subsidising the farm account. The two highest and most remote farms had the greatest dependence on diversification income.

There were three businesses that had been able to embrace diversification and establish successful enterprises. They were generally those with the most extreme physical limitations and so lowest stock numbers.

One enterprise saw its' location as a business asset; using the farm's setting and constraints as an opportunity to produce more marketable beef and sheep: using locally adapted native breeds which thrive in this environment; and drawing in guests and visitors attracted by the beauty of the area. Furthermore, this farm has successfully installed a bio mass boiler which was driving down energy costs and releasing an additional income stream. The tourism enterprise had also opened marketing opportunities for some farm produce and enabled a premium to be achieved. This farm is an example where alternative income streams and farm assets have been developed alongside traditional farming practice. This has reduced the reliance on support payments and livestock sales as the main source of income and given the business some protection against volatility in agricultural income.

It was widely felt by the farmers within the study area that they remained uncompetitive in the market place with their produce. The main reasons highlighted for this was the

fact that hill breeds were generally less valuable and the cost of producing stock in the hills was generally higher due to the climatic constraints and greater maintenance liabilities of large hill farms. In addition to this fuel costs were identified as a major constraint when often travelling long distances to markets and to grass keeps. A number of farmers felt that if they could achieve a better price for their produce and reduce their reliance on farm support payments this would enable them to run more flexible businesses and improve public perceptions of the industry.

The farmers in the study area are unanimously committed to continuing with traditional sheep breeds as they were seen to be the only animals capable of handling the harsh climate environment. Where possible producers were keen to add value by direct marketing, however felt that greater industry investment was required to facilitate this.

When asked what the possible marketing opportunities were, one area identified as having potential was a well conceived and well managed initiative using the National Trust brand as a marketing tool. Discussion between farmers and the National Trust had taken place some years ago, but not developed into an accessible scheme to most. Whilst finishing cattle was felt to be uneconomic, most of the farmers were interested in finishing the majority of their lamb crop. Many identified that marketing initiatives needed to reach a critical size to have viability and saw collaboration through the National Trust as a way of achieving this. The facilitation costs of such a scheme, and lack of industry contacts further down the supply chain were felt to be major barriers and an area where significant investment would be required.

Farmers were asked how their businesses could be improved to increase profitability. Most felt that attempts had already been made to reduce production costs and reduce reliance on external inputs to improve profitability. Cost cutting was identified as an obvious way to improve profitability and one that they had been committed too throughout their farming careers. Most felt that the nature of hill farming meant that not spending on animal feed or not maintaining the properties was not a long term option. It was identified that some costs could be deferred such as infrastructure improvements but this was stifling business development long term.

All the participants were keen to integrate their agricultural practices with environmental management to continue to derive Pillar 2 funding. One concern raised by a number of participants was that the HLS agreement spanned a 10 year period and took no account of inflation. The payments were intended to be based on income forgone and costs incurred. With the level of feed and fuel costs constantly rising farmers felt they were worse off in real terms the further they got through the term of the agreement. This was particularly relevant to the hay meadows, where making hay was using additional fuel and crop yields were falling. Some cited examples where the yield has fallen from 60 bales of hay to the acre to 30 bales over the last 10 years. In this equivalent period the price of fuel has more than doubled to around 70p/ltr.

Most were already engaging with and committed to farm-based diversification particularly around tourism. One commonly occurring theme on this was that the principal farmers themselves did not physically have time to undertake diversification activities. This had to be something done by a spouse or other family member if it were to be continued without significant detriment to the principle farming operations.

Farm accounts were obtained for 11 of the 12 participating farms. These included both specialist sheep and sheep and beef holdings. The accounts were mainly for the year ending 5 April 2013 with a couple relating to 2012. Comparison between 2013 and 2011 showed only modest variance and so this was felt to be a representative basis for analysis.

Figure 23 shows the contribution of Higher Level Stewardship, Single Farm Payment and cattle and sheep sales to the gross farm income. In all cases, sheep sales exceed cattle sales and, in most cases, the Environmental Stewardship monies exceeded the Single Payment showing the reliance that the study farms have on Pillar 2 income. Farmers in the study area were fortunate in that they had all been invited into and secured an agreement under HLS. This is not available to all producers.

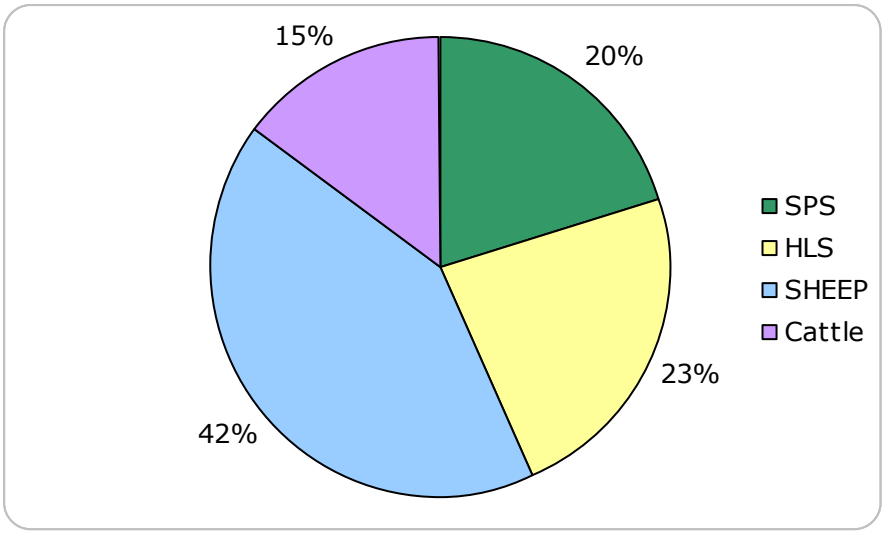



*Figure 25: Farm incomes*

The analysis of the farm accounts excluded income from family members working off the holding or income from diversification and concentrated solely on agricultural activities. While livestock sales still remain more than 50% of farm incomes, this is the area where most of the cost is incurred. In a few cases, the livestock enterprises were unable to operate self sufficiently. These tended to be the most remote farms with greatest reliance on purchased inputs and also the greatest reliance on diversification.

On average across the study area the proceeds from SPS and HLS represented 95% of fixed costs. This meant that the livestock sales were covering variable costs, making a contribution of 5% towards fixed costs and generating the modest profit figure which was on average for the group £16,542. All the farms have a total dependency on EU subsidy. Without SPS none of the farms were viable, and on average the farms would be loosing £7460. The picture was much the same for HLS with on average farmers deriving £26,995 from Pillar 2. Without this on average the farms would be loosing £10,453. Without either SPS or HLS the businesses would again on average be loosing £17,913 which highlights the importance of continued support.

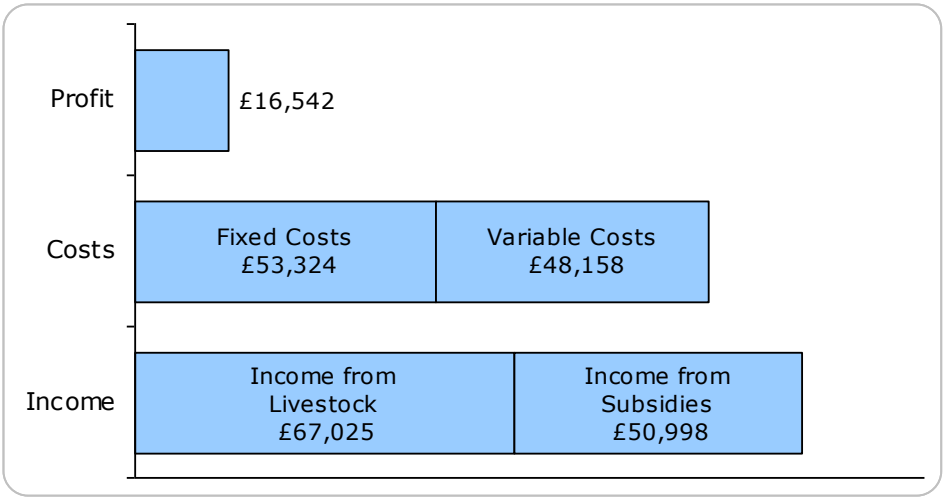



*Figure 26: Income / Costs / Profit*

The profits shown by those businesses that had secured land outside the study area were consistently higher than the rest of the group. It was not possible from the farm accounts to quantify the extent to which additional land was enhancing profits but the effects of finishing a greater proportion of stock and reducing purchased feed costs were very evident. This point strongly supports the argument that upland producers are disadvantaged in comparison with their lowland counterparts and provides justification for continued support to upland areas.

The accounts did not enable the profitability of cattle and sheep to be compared, but there was a consensus that cattle were a less economic enterprise due to the winter housing costs and greater requirement for mechanisation and infrastructure. Looking at the livestock enterprises collectively, the gross output per livestock unit was on average £788.53. There were variable cost of £566.56 per LSU leaving a contribution to profits and overheads of £221.97. It is an oversimplification to go further and say that each suckler cow contributed £221.97 and each ewe £22.20 because of the point made above. The farmers felt that they had adjusted their farming systems to find equilibrium between controlling the need for bought in feed and maintaining a reasonable level of output. It was strongly felt that on the higher farms, an increase in the numbers kept would result in a reduction in the margin achieved per livestock unit. On average the purchased feed costs were £366 per LSU which is very high when compared to any lowland farming system.

When the average annual profit figure of £16,542 is related to the average hours worked of 75 hours per week this equates to an hourly rate of £4.41/hr. This figure makes no account for return on capital employed in the business, or the time invested by other unpaid family members working on the farm. The businesses were, where possible, making investment in capital improvements some of which were non tax allowable. The effect of this was that for many, despite showing an annual profit, after income tax and capital investments there was a cash deficit. This supports the point made earlier in the report that most farming families depended on a spouse or other family member working off the farm to meet living costs. Where the businesses had diversified the additional income was treated in a similar way.

The principle fixed costs were motor expenses at £13,459, rent at £9,326 (only applicable to tenanted holdings) and property repairs at £8,703. In addition to the costs

associated with the parish holdings, the majority of farms had rented land away from the farm adding to the costs. Generally the owner-occupied holdings had greater repair and maintenance expenses than their tenanted counterparts where the landlords where making a contribution to repairs. These figures do show that on average the cumulative of the rent and the repairs at £18,029 exceed the annual average profit figure.

The average annual capital expenditure is shown in the table below taken from estimated expenditure over the last 10 years. The graph shows the farms were generally committing on average around £11,882 of capital expenditure some of which was non-tax allowable. When compared to a profit figure of £16,542 this supports the points made about farmers inability to fund retirement or extract capital from the business. It was felt that even on tenanted holdings to take money out of the business rather than reinvest was detrimental to the long-term viability of the farm.

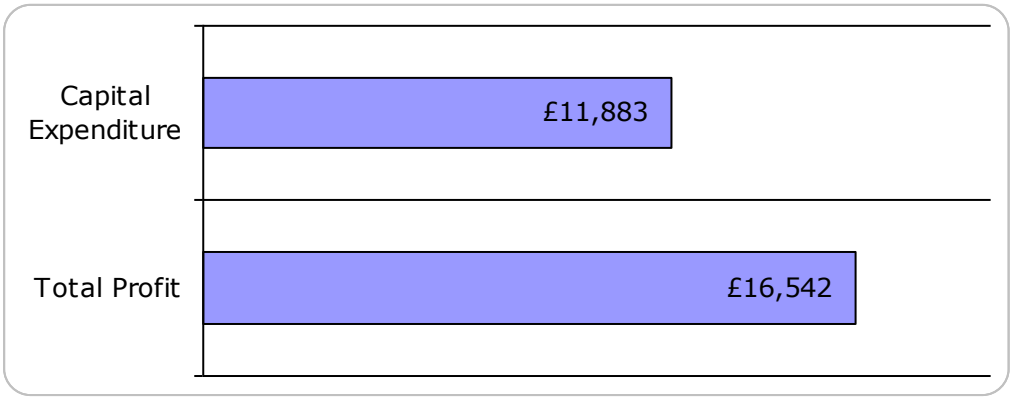



*Figure 27: Profit Capital Expenditure*

While nearly all the businesses had either a spouse working off the holding part-time, or operating a diversification business from the farm, these figures were generally not shown in the farm accounts. This income was essential to the way of life but used rather to finance living costs and the running of a private vehicle rather than directly subsidising the farm account. The two highest and most remote farms had the greatest dependence on diversification income.

**Capital Expenditure**

A study commissioned by English Heritage revealed the multiplier effect of grant funding for barn and wall restoration under ESA and CSS in the Yorkshire Dales National Park and the Lake District National Park. The report covering traditional farm building restoration in the Lakes, written in 2005 showed that for every £1 of grant funding spent there was a multiplier effect of £2.49 to the local economy. In the Dales this was slightly less with a multiplier of 1.65 for barn restoration and 1.92 for wall restoration. Here the figures were felt to be diluted by the proximity of service towns on the periphery of the National Park which were benefitting also. The report identified capital works as a highly efficient way of maintaining the historic fabric of the National Parks and generating significant employment and economic development within the area. The capital works available under HLS are less flexible which is possibly an opportunity lost to the wider rural economy as well as farm infrastructure.

Within the study area, approximately £469,706 of grant funding for capital works was spent during the last 10 years. Of this walling and fencing were the main areas of expenditure, though some farmers had also restored traditional farm buildings under the ESA grants. According to the figure published by English Heritage this grant expenditure together with the farmer contribution would have contributed £1,281,016 to the YDNP economy over the last 10 years. The farmers identified the positive effect that these grants had made to the fabric of the farms but were less aware of the wider economic benefits.

Generally, large scale land drainage was not felt to be feasible due to the perceived environmental impacts. If funds and HLS restrictions allowed, most identified that small scale drainage works could have a major production benefit at little environmental cost. In many cases neglect of field drainage had contributed to the land becoming more difficult to work. Those meadows with traditional stone drains had often suffered collapsed tops which were causing localised drainage issues. This was felt to be partly due to the use of larger agricultural machinery and partly due to the age of the drainage systems and difficulty associated with accessing and maintaining them.

While most identified that they would like to invest in new production buildings it was felt that without grant contribution or a contribution from the landlord that it could not be financed or indeed justified. One farmer had successfully obtained grant funding for a roofed midden under the Farming and Forestry Improvement Scheme and the Environment Agency had contributed towards improved sheep dipping facilities between 1998 and 2002 but these were the only significant infrastructure investments.

Some, predominantly the owner occupiers, had managed to invest in conversion of redundant agricultural buildings into non agricultural enterprises to provide an additional income stream. While tenant farmers identified that this was a lucrative source of additional income they felt that they were not in a position to finance the conversion without a capital asset to borrow against.

4.2.11 Access to the internet

The majority of the study area had access to a computer but not all which identified that a computer system is not essential for the running of a farm business. It was a common theme that while they had access to a computer they had a reliance on either a spouse or other family member to operate it and access the information required.

A computer was essential for most businesses in comparing market prices and sourcing supplies. It is also important for some businesses for dealing with Government Agencies. Most of the farms used an agent for dealing with their Single Payment Scheme application and Environmental Stewardship. This was generally perceived that the money received under these schemes was so fundamental to their survival that they needed the work to be done by someone who had insurance in case of a disaster. Also due to the complexity of the schemes it was deemed easier to employ someone whom had the time to read and digest the content of the application process. All the above would again be a time constraint on the already overworked principal farmer.

Internet connection was something that was inconsistent throughout the study area. Some businesses had good access to internet facilities and others had had to make investment at their own expense to try to get a satellite connection. For some,

community cooperation had enabled a good internet connection to be established. Those businesses that had diversified identified their reliance on the internet for advertising and taking bookings.

4.2.12 Farm support

It was generally felt that a shift away from production based subsidies had resulted in a decrease in the farm support received over the last 10 years. The removal of HFA and replacement with UELS did not in most cases reduce the income but it did mean that more restrictions were incurred in order to receive the payments available. There was widespread recognition of the contribution that Pillar 2 monies made to the farming business.

Any reduction to Pillar 2 payments was seen as a real threat to profit and sustainability of the business. Some felt that on farm diversification may provide a possible income to compensate but could not see how this would be financed at the outset. One suggested consequence was lower intensity farming where there was no maintenance of the farm infrastructure. This would see loss of the traditional hay meadows and a more ranched landscape in which livestock had to fend for themselves to a greater extent.

In many cases it was felt that increasing livestock numbers to compensate for a loss of Pillar 2 would not be a viable short term solution. This was held to be the case because most of the farms had been in ESA and then Environmental Stewardship for over 20 years and the inherent productivity of the land had decreased as a result of reduced fertiliser applications and carrying less stock. It was felt that to turn this around would take a long time, a lot of fertiliser and drainage all of which are high cost options.

Most of the farms in the study area felt they would rather be more self sufficient and less dependent on subsidy. However, in the current environment, their businesses could not be adapted to achieve this. Some of the farmers felt that the financial support available was sufficient to enable them to continue and remain viable while others it was keeping their incomes at the subsistence level only. Many said financial support in the form of capital grants would enable them to improve their production facilities and so enable them to start producing more efficiently.

The rate of grant and the minimum size of project was something that attracted considerable discussion. Many felt that the 80% ESA grant on barn restoration had made the grant funding universally available. Some tenant farmers felt that 50% grants were not always accessible to them. It was suggested that a hill farming business could contribute £10,000 towards capital projects without compromising the business, but that generally capital grants required a greater commitment than this.

It was unanimously accepted that environmental schemes were fundamental to the viability of farming businesses in the study area. Uplands Entry Level and Higher Level Stewardship were the main agreements that people participated in. Before that, most had participated in the Countryside Stewardship and ESA schemes.

The constraints of the ESA agreement were identified as having a blanket effect on their Severely Disadvantaged land. The fact that Higher Level Stewardship enabled some fields of less ecological value to be farmed more flexibly was identified as having

enabled some of this effect to be offset. However, it was felt that HLS is still a scheme drawn up at a national scale and still failed to account for local difference. Farmers felt that a less prescriptive scheme tailored at a parish level could achieve greater environmental improvement and leave behind a more flexible farming community.

One overriding concern was that there is very little feedback on the effectiveness of the scheme and its achievement of environmental objectives. A further problem was the reduced contribution towards capital work items that were considered maintenance rather than for restoration.

Under the ESA many of the farmers within the study area had been able to access capital grants to restore traditional farm buildings. These grants were considered essential as in most cases, the buildings were no longer usable assets to the farm business.

There was a spread of opinion as to how management of the environmental restrictions was impacting on farming operations and how effective it was from an environmental perspective.

Most farmers felt the rigidity of cutting dates represented no real environmental benefit but represented a huge constraint to farming operations. In some cases, they felt that the cutting dates were in fact of detriment to nature having forced some hay meadows to be cut excessively late in the season and had carry over affects on their flowering abilities in the following spring and summer.

Spraying restrictions under the HLS agreements mean an increase in the farmer's workload in controlling common weeds. Only allowing the use of spot spraying or weed wiping is not as effective as spraying and as a result weeds are on the increase across the area. This was felt to be infesting some areas to the detriment of other species. It was widely accepted that a five to 10 year spray interval allowed plants to recover but kept weeds at an acceptable level.

While most farmers were aware of the bird and mammal species that were of priority to their agreement, there was less appreciation for the plant and grass species. Most farmers were very keen to learn more about the environment in which they farmed and to gain a greater appreciation for the environmental benefits that they were able to deliver.

Most felt that they had a base knowledge of what was good environmental practice but did not have the knowledge to make a link between this and the quantifiable improvements to the habitats that they were managing.

The main constraint to improving knowledge on environmental aspects of the farm was the cost of spending time away from the farm. In many cases this would mean hiring replacement staff while the principal farmer was spending time off the holding, which represented a true cost to the business.

Most farmers acknowledge that one of the main motivators for participating in the Higher Level Scheme and complying with the restrictions was financial. They did however acknowledge that where environment benefit could be delivered with no opportunity cost to production then they were very keen to embrace these opportunities.

Most of the agreement holders said they would like to be able to make more contribution to the land management requirements and be more involved in the planning of prescriptions. There was a range of motivations for this with many feeling it was important because existing prescriptions were not, in their eyes, achieving the environmental benefits that they were set up to deliver.

Many also felt they could achieve the same environmental benefit while integrating their restrictions better with their existing farming operations, so reducing the opportunity cost.

Some of the Higher Level Stewardship agreements had educational access payment which was encouraging farm walks and study groups onto the holding. This did include a compensation payment but was also recognised as a way of improving public perceptions of the industry and sharing knowledge with interested parties.

4.2.13 Perceptions of farming and the environment

Generally the farmers in the study area felt that their role as a farmer was one that had in recent years gained some recognition as an important public service. It was felt that the main driver for this was an appreciation of the landscape and cultural heritage which was being maintained by farming – a shift in role from being solely food producers.

While the need to earn a living was the main motivator keeping people farming and farming in the manner that they did, there were other factors identified such as tradition, the physical constraints preventing alternative systems from being adopted and a lack of capital for making infrastructure improvements or forced the farming systems that were being practiced.

When asked what public benefits the adopted farm practice were generating it was widely held that there were considerable environmental benefits, social benefits in terms of public access and education and financial benefits to the rest of the rural economy in terms of tourism, carbon sequestration, water quality and preservation of cultural heritage. One of the main benefits was felt to be indirect - the production of high quality food at less than the true cost of production. Farmers also identified their role at a community level supporting local schools and village events, giving their time or lending equipment for community activities and supporting local services.

While it was generally felt that Higher Level Stewardship had been fundamental to achieving a lot of these benefits there was some concern that Pillar 1 money under Single Farm Payment was being lost to the wrong people. This included payments to large lowland units that were commercially viable without subsidy and Landlords and non farmers who were holding land for the purpose of subsidy generation. A concern common to all the farmers was their exposure to financial penalties under the scheme. The new EID rules for sheep make compliance on a hill farm practically impossible due to losses on the open fells.

The farmers in the study area did perceive themselves to be High Nature Value farmers, identifying that they were in their working role, predominantly rearing livestock but in doing so, they were also maintaining a very sensitive landscape and were financially dependent on the income they generated from their environmental works. Some

farmers had already engaged in moorland restoration and were aware of their contribution to carbon sequestration and improvements to water quality.

All the farmers had an appreciation for the environment in which they lived and worked and felt that it had special qualities they could appreciate on a day to day basis. They also realised it was a major draw of visitors into the area.

When asked to identify constraints that made operating in a high nature value area more difficult, the most commonly arising thread was the weather and the inherent restrictions of the land. The restrictions included steep gradients, inaccessible areas, thin soils and large areas of the farm that were inaccessible during winter.

Most of the farmers felt there was a benefit of being a High Nature Value farmer both in terms of recognition through Pillar 2 funding and also in terms of the day to day enjoyment of a special landscape.

Whilst this had associated costs in maintaining farmers felt that to some extent they were being compensated for this under HLS. Climate change was a topic that attracted considerable scepticism and most felt they were unsure as to whether it was a temporary blip that had lead to recent very wet summers or it was part of an emerging trend.

However, it was identified unanimously that this had made farming very difficult and had a detrimental impact on farm profits. When farmers were asked to focus on how their land management impacted on climate change they identified two alternatives.

It was generally accepted that traditional farming practices and low intensity farming were having a positive affect on climate change by providing carbon sequestration, improving water quality and providing varied habitats for wildlife. The alternative was seen as a change in practices and an increase in intensification that could change whole ecosystems resulting in soil erosion, leaching of nutrients and grazing out small shrubs all of which would increase the risk of flooding and have detrimental impacts across a much wider ecosystem.

## 5.0 Discussion - looking to the future

Farmers manage land on an individual holding basis, but collectively they look after vast landscapes which encompass ecological networks of important habitats and species. There is potential to harness the collective management of these networks through proactive engagement with groups of farmers, encouraging a bottom up approach to protect and enhance high nature value areas.

By providing groups of farmers with the right information about their holding and their surrounding landscape, there is a greater chance that these networks can be sustained and new ones established. A good example of this kind of approach is the Dartmoor Farming Futures project where two groups of farmers have developed a new approach to agri-environment delivery on two large commons on Dartmoor, taking control of the management and monitoring work and looking how this impacts on the ecosystem services this upland area provides for the wider community. This project began because farmers were frustrated by the mixed messages from

Government bodies and other interested parties on what was the priority for the moorlands of Dartmoor. Since then, policy makers, scheme managers, water companies and conservation bodies have produced a vision for Dartmoor which forms the basis for the farmer led agri-environment scheme pilot.

Within this section we explore 3 key areas that could form the basis for the future of high nature value farmland.

## 5.1 An efficient, sustainable farming system

In 2003, the National Trust worked with their tenants to produce 10 year whole farm plans that addressed the environmental aims of the farm as well as some business aspects. The farmers have worked with the Trusts Farm Adviser to deliver a plan that is beneficial to both. From this, the Trust has invested over £600,000 in the estate over the last 10 years to support infrastructure improvements and assist Tenant's in meeting regulatory requirements. There is potential to extend this approach to all of the parish farms with greater emphasis on business planning. This would enable bench marking against other businesses with very similar attributes, enable rationalised decisions on which enterprises to develop, inform areas of possible cost saving and identify areas for collaboration. This level of farm planning would enable areas for capital investment to be identified and the level of investment to be rationalised in terms of labour saving, nutrient savings, increases in out put residual property value and other relevant factors. This would then give a base for discussion between land lord and tenant and facilitate a more proactive approach.

These farm businesses depend on public funding (typically 45% of turnover) that is paid for the exceptional 'public goods' that they provide. However, this funding is under threat of being reduced over the medium term. There is an urgent need for these businesses to adapt to enable them to develop, reduce costs and sustain income levels. Tailored 'whole farm' plans with recommendations for the farm business that will bring both economic and environmental enhancements could be a way forward. The plans would include business improvement and efficiency measures; business development measures (e.g. new non-farming enterprises) and natural environment enhancement measures. The agreed economic recommendations could be implemented by the farmer from rural economic development funds directed by the Local Economic Partnership's strategic investment programme, or relevant LEADER programmes, as appropriate for business improvement, skills training, improving efficiency or improving/developing non-farming enterprises and tackling collaborative solutions to any underlying structural issues. This has the potential to join up, and then build on, the existing services provided by NPAs, AONBs, Natural England, the Forestry Commission and others.

A more efficient farming system will generate cost savings in the long run. An improvement in farm efficiency will not only make economic sense but it will have benefits for the environment as a whole.

The survey has highlighted several areas where incentives or focused grant funding could make a significant difference. The most important ones are discussed here.

**Farm Infrastructure**

A major constraint within the High Nature Value Farming study area which inhibited business progression was farm infrastructure. Across the holdings there is insufficient surplus to enable investment in production facilities. This was most acute on the tenanted holdings where the farmers themselves do not have equity to release capital against, and landlords were reluctant to invest in the holdings.

Without modern labour efficient housing business are faced by the following constraints:

i. There is no potential to retain youngstock once weaned to add value by finishing them ready for the slaughter market.
ii. There is no potential to increase production efficiency by housing livestock during adverse weather or at lambing time.
iii. The existing housing facilities are often very labour intensive and non compliant with Farm Assurance standards.
iv. Traditional housing systems do not provide manure storage facilities.
v. There is less flexibility in the system to adapt the livestock management to incorporate environmental restrictions into the farming system. Often Environmental Stewardship schemes require the seasonal removal of livestock which insufficient farm infrastructure can sometimes prohibit.

Cattle numbers within the study area are in continual decline, principally due to the lack of suitable housing. The investment in infrastructure would have the following benefits:

i. more labour efficient management of stock,
ii. better and safer storage of farm yard manure,
iii. more timely applications of manure to hay meadows in the spring
iv. improved yields from hay meadows,
v. reduced risk of diffuse and point source pollution,
vi. a more cost effective cattle enterprise.

**Labour and succession planning**

Due to the financial constraints of farming in such an area the businesses are heavily reliant on family labour, especially to meet the seasonal spikes such as at lambing time, hay making and shearing etc. Livestock, husbandry tasks and general farm maintenance on all the holdings accumulated to in excess of what the principal farmer could manage. In most cases the business involved at least one other family member in order to meet the daily workload. Profits averaged out at around £16,500 which equates to £4.41 per hour on the hours worked (well below the National Minimum Wage of £6.31/hr). This is a simplification of the situation as it does not account for the appreciation of business assets or a return for working capital, but it proves to highlight the relatively poor returns for effort invested.

Structurally the industry has the problem that there is very little opportunity for new entrants and the only young people entering the system are those continuing a

family business. Reform of agricultural tenancy law together with apprenticeship schemes and share farming schemes need to be fully developed in order to provide enough incentive and security for the land owner / retiring farmer and also provide a credible way in for young / new entrants. Where families have an obvious successor engagement between the landlord and tenant at an early stage to secure the transition from one generation to the next is essential. Without this, there is a period of uncertainty, during which tenants can not justify continued investment in the fabric of the holding and so both land lord and tenant loose out.

**High Quality Food Marketing**

Producers in the High Nature Value Farming area felt that they were constrained by being seasonable producers of homogenous products, the marketing of which they had little control over.

Hill breeds are often less sought after in the market place than their lowland counterparts, and the lambs often have to be sold in the September/October glut as grass runs out and prices are typically depressed by over supply. Many farmers have taken steps such as renting grass keeps to try and combat this problem but fundamentally felt that they were in a disadvantaged position due to the environment they farm.

Premium marketing of their stock was something that attracted considerable discussion, with one farm within the study area doing this effectively whilst integrating with on farm tourism. The main constraint that the larger farms had was that they did not have the time to engage in marketing their own stock at the farm gate. It was widely accepted that a marketing organisation acting collectively in the interests of farmers within the study area may be a more viable option. Farmers were confident in their ability to produce a quality product but acknowledged a lack of specialist marketing expertise.

Research into establishing supply chain contacts and potential outlets for produce from the hills is needed to reduce the exposure of producers to fluctuations in the market. A critical mass of producers could be brought together to market produce under the established brand of the National Trust if these supply chain links could be made.

**High Quality Diversification**

Tourism or off-farm income had a role to play in all of the businesses within the study area. In some years the additional income stream was identified as being fundamental to meeting the families' living costs as opposed to income for saving or outside investment. Where diversification was a key part of the business, in most cases it was identified that the principal farmer could not undertake to manage this enterprise as well as the farm. In most cases another family member or spouse was running the diversification business as well as helping out on the farm. On farm diversification was identified as being more adaptable than working off the farm as it still enables a degree of flexibility in sharing labour between the farm and non farm activities.

Diversification is not something that is suited to all farming businesses, and to some extent, over supply of tourist accommodation for example, could be to the detriment of existing diversification enterprises. However, as part of the whole farm plan, potential areas for diversification could be identified and methods for financing the project could be examined. Renewable energy production could be as relevant for many farms as tourism or direct marketing and the available technologies and capital costs need to be explored in full.

**Renewables**

Most of the farms are 'off-grid', relying on more expensive solid/liquid fuels for heating. A recent case study in the Yorkshire Dales showed that switching from LPG to local woodfuel led to annual savings of over £5,000 per year (in reduced fuel bills and income from the Renewable Heat Incentive). One of the parish farmers is benefiting from such a scheme and will see his £17500 investment paid back in 3 years. He will then go on to make annual savings of £7500 which will more than cover the cost of the feedstock for the boiler.

This alternative energy supply would make a significant difference to the viability of farm businesses. As well as providing fuel for their own needs, there is also considerable opportunity to develop local supply chains to provide woodfuel to a wider market, ensure continuity of supply and generate additional income. This would bring significant environmental benefits through carbon reduction and improved woodland management. The development of an integrated woodfuel advisory service would help develop local woodfuel supply chains and business networks and help overcome the existing barriers to uptake.

Feedback from farmers suggest that for many, the time constraints of already working 75 hours a week have been a major barrier to renewables uptake. If a reliable supply chain of convenient feedstock could be secured, this barrier could be overcome.

## 5.2 A more resilient natural environment

The high biodiversity value of many of the Buckden farming systems has been generated by a historical association between the habitats and their management. In a spatial context, they produce a mosaic of habitats - meadows, grass pastures, woodland, hedgerows as well as more intensively managed land around settlements and farmsteads. In a temporal context, not all land is managed in the same way at the same time; so neighbouring farms with essentially the same production systems may be grazed in different ways (e.g., with different animals and at different stock densities) and at different times of the year. This diversity provides much more favourable conditions for plants and animals (especially invertebrates) to find areas with suitable conditions for the completion of their lifecycles. A one size fits all approach to environmental management (like ESA and some HLS) could have detrimental effects on plants and animals and therefore the next version of agri-environment schemes must truly allow for a holding specific approach to habitat

management, but with one eye on the wider landscape scale management requirements.

The direction of the next agri-environment scheme, in so far as encouraging farmer participation and engagement, is welcome. There are however, concerns that the shift to five year agreements gives little long term security for farmers or for the habitats and species the scheme seeks to protect. Favourable payments that last only 5 years may not provide enough security to the farmer if a change in the farm business is necessary for the agri-environment scheme. Farmers in the parish are used to 10 year agreements, a number of them are on their third 10 year agreement indicating a commitment to the environment and a reliance on the income to support the farm business. The results of the habitat condition review indicate long term agri-environment scheme management improves habitats, eg hay meadows and calcareous grassland. This is in stark contrast to those habitats that have recently entered into an agri-environment scheme (a number of moorland areas), where condition is still poor.

In order to better utilise farmers efforts and enable efficiencies to be met within the farm system, a landscape scale approach to natural environment management may be required. One method that focuses solely on this is the Integrated Habitat Network. A habitat network consists of a collection of the same habitat areas which are sufficiently 'connected' for a particular species to move between the individual areas. An Integrated Habitat Network (IHN) refers to the creation of a network of different habitat types and its integration with land use planning and management. (Darren Moseley & Jordan Chetcuti 2012).

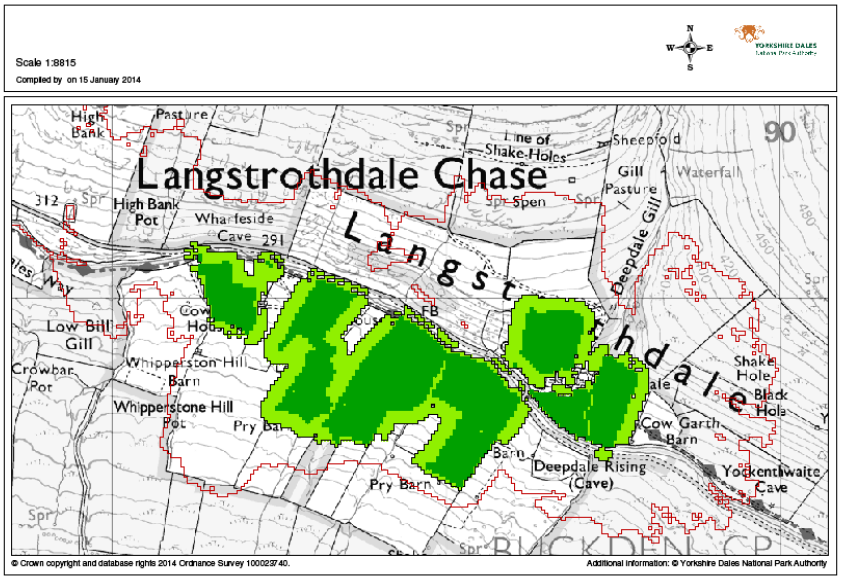
The quality of the IHN depends on the available habitat and species data of a particular area. Predictive modelling can then utilise this data to highlight areas of opportunity for species expansion and/or habitat creation. The YDNPA commissioned a report 'YDNP Integrated Habitat Network' (Forest Research 2013) to look at the development of an IHN within the National Park and is now developing a strategy for its use. The mix of habitats used within the study included . Neutral grassland, Fen, marsh & swamp, and Broadleaved, mixed & yew woodland, and meadows. Six specific focal species were modelled: Great crested newt; West European hedgehog; Adder; Northern brown argus; Small pearl-bordered fritillary; White letter hairstreak.

Figure 26 illustrates an example of possible habitat expansion for the upland hay meadow within Langstrothdale. It shows upland and lowland hay meadow UKBAP habitat patches (G06&G09) in dark green surrounded by a network of permeable land for meadow species (up to a maximum of 100m). Langstrothdale has been shown to be the second most important area for upland hay meadows in the YDNP. This data can be used to target areas where the restoration of semi-improved neutral grasslands would be of most benefit to link existing areas of high quality habitat and thereby increase the resilience this nationally important habitat. The likelihood is dependant on a number of constraints and a possible change in land management to allow this to happen.

This form of targeted land management planning could be utilised by farmers to understand how the habitats and species on their holdings interact with neighbouring

holdings and how they can work together at a landscape scale to deliver environmental targets. This in turn, shows government the commitment farmers have to the environment for this particular area and provide sufficient evidence to direct funding. The level of funding needs to adequately reward farmers' for their positive environmental management and compensate for the opportunity cost of adopting such management.

*Figure 28: Integrated habitat network - linkages and expansion areas of core upland hay meadow sites*




## 5.3 Valuing the ecosystem services

The UK has become the first country to quantify and place a value on the goods and services the natural environment provides to society as a whole. The UK National Ecosystem Assessment (2011) undertook a complete assessment of the services which nature provides, how these have changed over the past, the prospects for the future, and the value of these to society and continuing economic prosperity. This report identified which ecosystems were doing well and which were in decline and the economic effect this has. In support of developing a strategy for ecosystem services, the Natural Environment White Paper recognises the opportunities for new and innovative approaches for reflecting the value of the natural environment in supporting economic growth and wellbeing. It commits the government to encouraging and facilitating greater use of payments for ecosystem services (PES) in the future, especially as part of a broader mix of policy instruments (Dunn, 2011)

PES is not new; agri-environment schemes are such an example with over £400 million per year spent on agreements (2007 – 13). There are also a growing number of examples of private funding for watershed schemes – for example, United Utilities Sustainable Catchment Management Program, spending £9 million on land management and moorland restoration to improve water quality in their drinking water catchments.

The basic idea in PES schemes is that the users/beneficiaries of services provided compensate the providers. Payments for ecosystem service can be based on one specific service (e.g. carbon sequestration) or bundles of ecosystem services (e.g. carbon sequestration plus biodiversity enhancement). The financing of PES can be from government or financed voluntarily by private companies and individuals or incorporate private finance as key elements of the scheme (Dunn, 2011).

Identifying and quantifying the ecosystem services an area provides, is the starting point towards developing a PES scheme. They can also be born out of need to reduce risk and expensive alternative treatments, for example water treatment. Table eight is an attempt to link the study areas natural resources with the services they provide and ideas for schemes that could help towards the enhancement of the resources.

| Natural Resource | Area within Buckden Parish (ha) | Est. Carbon storage * (tonnes) | Est. value of stored carbon ** | Ecosystem Service | Additional PES management ideas |
|---|---|---|---|---|---|
| Moorland | 2036 | 531396 | £1.59 million | Carbon sequestration<br>Carbon store<br>Flood risk management (water storage)<br>Water supply<br>Biodiversity | Carbon credits and carbon offsetting – payments towards restoring peat bogs |
| Woodland (combined) | 1058.9 | 130562 | £391686 | Carbon store<br>Carbon sequestration<br>Fuel<br>Biodiversity | Woodland Carbon Code – opportunity to develop offsetting scheme to pay for woodland creation |

*Table 9 – Value of ecosystem services in Buckden parish*
*calculations based on researched values (University of Cumbria 2013)
**current carbon price of £3/tCO2 (expected to rise over the next two decades). Lake District National Park 2013

Reduction of green house gas emissions is a key target for government, industry and businesses within the UK. Agriculture is responsible for nine per cent of UK GHG emissions (2011 figures). However, as other sectors reduce their emissions, the agricultural slice will become much larger. Therefore agriculture has to be seen to be taking action too. The Government target is for agriculture to reduce emissions in England by three million tonnes of CO2 by 2020. A voluntary approach is being undertaken at present, but if emissions are not falling a carbon tax maybe imposed. Developing schemes that will help improve the extent and condition of natural carbon stores could be one way of helping the industry meet its targets. Further investigative work is being undertaken by the Northern Upland Chain Local Nature Partnership to

look at carbon trading, offsetting and the potential to develop a carbon market scheme.

The Lake District National Park Authority have investigated the potential for developing carbon markets within Cumbria and are working towards developing a scheme that will fund local land-based carbon sequestration projects. This is a developing market place which could place upland farmers at the right end of a significant amount of funding.

## 6.0 Conclusions

Buckden parish is an area of high nature value with a broad range of species and habitats and a farming community that is committed to traditional farming and the environment this generates.

From an agricultural perspective, the farms are large but they comprise mainly moorland fells and benefit from very little semi-improved in-bye grassland. The average farm size within the study area is 318 hectares but on average only 7% of the farm is productive meadowland. This creates major constraints on the farming systems and results in a very low output per unit area.

There is a high percentage of estate owned land which on one hand, is positive – the National Trust have the environment at the heart of their management strategy and they are committed to improving the infrastructure of the farms. But on the other hand, the tenanted farmers feel unable to justify the high cost of investment needed to change business direction or to cut input costs (e.g. renewable energy systems). In most cases the modest surplus that is generated is reinvested in maintaining the fabric of the farm. In many cases, these traditional features such as walls and field barns are only of limited agricultural value but are maintained due to the farmers pride and sense of responsibility for the appearance of the area in which they live and work.

Farming in such a constrained environment means that the returns from livestock production are very modest, and the dependency on environmental schemes is high. The nature of the farms and the terrain mean that there is an enormous maintenance liability including walls, field barns, mole and rabbit control in the winter and weed control in the summer. This maintenance cost is disproportionate to the income potential of the farms, which means those managing the farms have to work unsociably long hours rather than employ the services of a contractor. To not undertake the maintenance would have unacceptable consequences for both the appearance of the area and the production of livestock. Full appreciation of, and recognition for, this on going maintenance is required at all levels.

Hill farming has always had a strong reliance on unpaid family labour and has evolved to be a way of life as much as a career. This situation was acceptable when land tenure facilitated succession and the returns were sufficient to facilitate retirement of the older generation. This enabled the younger generation to work for little or no pay on the understanding that they would one day succeed to the business and this ensured a flow of young people into the industry. The level of

returns at the moment and the land tenure arrangements means this pattern is breaking down and the future of hill farming is coming under increasing threat.

With average profits amounting to only £16,500, the businesses are extremely vulnerable to a reduction in income. Both Single Farm Payment and Higher Level Stewardship each exceed the profit figure. This shows that without either one of these payments the farms could not survive. The level of profit would be regarded by most outside the industry as unacceptable, especially in the context of the hours worked, risks undertaken and capital employed to achieve this return. But for those in the industry the main focus of concern is their vulnerability at this profit level, and their inability to reinvest in the farms and improve their business. In most cases if income levels did improve, money would not be taken out of the business for recreation or private expenditure. The money would be spent on infrastructure, technological advancements and production equipment, all of which would have a multiplier effect through the rural economy.

One of the main constraints of Higher Level Stewardship was identified as being the limited availability of grant funding for capital works. This included boundary maintenance, maintenance of traditional buildings and new infra-structure projects such as dividing land parcels. It was acknowledged that HLS did provide valuable capital grants for the restoration of dry-stone walls, but only those bounding land parcels that were under HLS restrictions. Besides Environmental Stewardship funding, there are some capital grants identified as being available such as the Farming & Forestry Improvement Scheme (FFIS). These grants however are very targeted and were only available to some within the study area. The grant contributes only 50% and in some cases match funding was unattainable to tenant farmers.

There are constraints imposed by ES schemes which do incur the businesses additional costs. For example, livestock exclusion on hill land necessitates away wintering which for many businesses was a significant outlay. Furthermore the restrictions on management of the hay meadows including prohibition of fertiliser applications and restricted cutting dates, resulted in much reduced crop yields and crop quality. This either results in reduced animal performance or increased concentrate costs to compensate. Despite these negative effects on the agreement holder's agricultural practices the farmers were unanimously positive in their views on Environmental Stewardship.

Due to the geography of the upper dale, these habitats extend in corridors without interruption from one farm to the next. Farmers within the study area identified that ground nesting birds, including rare BAP protected species including Curlew, Lapwing and Redshank, were reliant upon a wider habitat than they could provide, extending across one or often more neighbouring farms. This was perceived to be one of the great rewards of managing land within a High Nature Value Farming area and something that should be available for enjoyment by all.

Within the study area there are 13 BAP habitats and 29 BAP species including upland hay meadows, calcareous grassland, native woodland and heather moorland. These are features common to all of the farms within the study area. Two thirds of the farms contain a SSSI, the majority of which are in favourable condition. Survey

results show that the habitats are in good or recovering condition with much effort going into restoring the habitats and utilising agri-environment funding to enable this. Species numbers are stable or moderately increasing indicating that habitat condition is suitable. However there are still issues relating to the condition of some of the habitats and the lack of clarity on how HLS management prescriptions can achieve habitat restoration. Continued funding from government and commitment from farmers is required to bring these sites into more favourable condition.

The farmers felt they were well placed to provide not only landscape and environment services at a farm scale but also across a wider landscape scale. They also identified their ability to provide further public benefits such as carbon sequestration, improved water quality and catchment management. Delivery of this was felt to be fundamental to understanding the management objectives and being rewarded for the management investment. The Yorkshire Dales National Park Authority Integrated Habitat Network could be a starting point to developing a landscape scale management strategy for the parish – akin to the Dartmoor Vision. This would bring interested parties and farmers together to agree common objectives.

Providing these wider public benefits, was viewed by farmers as a positive opportunity that could diversify their business and help justify some of the existing investment in managing the environment that they already undertake routinely. This in turn would provide income to other rural businesses.

Generally farmers felt they did not have sufficient specialist expertise to monitor the benefits that they were attempting to achieve under ES and felt that the effectiveness of the environment could be improved if more investment was made in agreement holder education. This was not unanimously felt as some farmers did not wish to be included in further training. However, for those interested in further education, the time required to undertake the studies was identified a major constraint however on farm training or local skills training in a village hall was identified as a suitable way of addressing this.

The farmers were asked for their views on the future direction of agri environment schemes and were asked to rank the following four options.

i. Continue with agri-environment schemes along existing lines where Natural England draw up specific prescriptions which the agreement holder has to follow.
ii. Have a system where an independent facilitator works between Natural England and the farmer to come up with tailored prescriptions.
iii. As a group design and implement a scheme with input from an independent facilitator to monitor the results and feedback to Natural England.
iv. As a group design and implement a scheme and be responsible for self monitoring and reporting.

Option iii was the preferred option for 9 of the farmers, with the remaining 3 preferring option ii. All felt that that iv would expose them to an unacceptable level of

risk.  Some identified that iv would be the preferred option if their business was not so fundamentally dependant on income from ES for survival.

There was a feeling that existing schemes have been too prescriptive and a greater degree of flexibility is required.  It was identified that taking account of local environments and ecosystems could give better integrated schemes and deliver more environmentally. The farmers were prepared to engage in the design of the scheme and implementation, but were reluctant to accept ultimate responsibility for monitoring and reporting. It was felt that the role of monitor required someone with environmental and agricultural expertise. This would enable a balanced evaluation which appreciated the environmental gains and the impacts on farming.

The farms in the study area have been in family ownership or management on average 58 years and in one case double that. This longevity of management brings with it techniques passed down from previous generations, sheep flocks with long lineage that are locally adapted to the terrain, a greater understanding of the environment and a link with the past. This should not be underestimated nor assumed that traditional means poor business potential.

However, this kind of farming can be modernised and made more efficient without detriment to the environment, with the right kind of targeted advice and help. The benefits from having a modernised farming system twinned with a supportive market place can be multiple. Not only does the farm business become more efficient and financially self reliant, it also gives greater flexibility for the farming system, reduces risk of agricultural related pollution, provides more space for nature and more time for the farmer to concentrate on managing the landscape and the ecosystem services that are derived from it.

Is Buckden parish a High Nature Value farming area? Without doubt, this area is extremely diverse in habitats and species and contains the right attributes to be considered as such. However, HNVF is unprofitable without government and EU support subsidies and so there is a need to truly value the services this landscape provides and the people who manage it.

## 7.0 Recommendations

While the report covered a wide range of aspects affecting farm businesses, Environmental Stewardship and financial sustainability were the principle issues that concerned the group.

From the information gathered we can make the following recommendations:

1. Continue targeting environmental support through Pillar 2 to High Nature Value Farming regions.

2. Develop landscape scale schemes bringing the farming community and interested organisations together for a commonly agreed aim.

3. Provide capital funding akin to the Catchment Sensitive Farming initiative aimed at farm infrastructure improvements.

4. Develop incentives for putting in place vermin control measures.

5. Include within the suite of agri-environment schemes, capital grants for the maintenance of traditional field boundaries and field barns.

6. Put in place mechanisms to ensure that money through Pillar 1 and Pillar 2 is going directly to active farmers.

7. Engage with other stakeholders to identify the potential to deliver paid ecosystem services which can integrate into sustainable farming systems and landscape scale environmental stewardship schemes.

8. Provide farmers with tailored ‘whole farm’ plans with recommendations for the farm business that will bring both economic and environmental enhancements.

9. Develop an integrated woodfuel advisory service to overcome the existing barriers to uptake, and develop local woodfuel supply chains and business networks.

10. Encourage landowners to make farm holdings available to new entrants and increase the level of support paid to new entrants to enable them to become more competitive in the tendering process to maintain a flow of people into the industry.

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**Annex 1 –**

# UK & EU agricultural legislation; historical overview

## Introduction

Livestock farming, and most particularly livestock farming in the uplands, is an industry that has become used to turbulent prices for inputs and the goods that it supplies. Farm incomes have long been a topic of concern and debate, while incomes tend to fluctuate, farming in the hills tends to be economically disadvantaged. Alongside a strive for efficiency within the sector, there has been a continued consensus towards supporting livestock farmers through European Subsidies.

This report looks at the state of the industry today and recent trends within the sector to help identify the present challenges faced within the uplands, and to inform the possible ways of developing and supporting the sector going forward.

Timeline of Agricultural support

Farming practices have been influenced by subsidies since the end of the Second World War. This has seen intensification, over production, extensification the introduction of environmental schemes and will continue to evolve. The history of the main subsidies is summarised below.

1950- The Common Agricultural Policy was set up in Europe Post War to ensure food securities and introduced a guaranteed price for production.

1973- UK joined the EU consequently the CAP, Domestic production increased record highs.

1984- First Dairy Quotas were introduced to limit production.

1987- First Environment Stewardship Schemes introduced to select regions known as Environmentally sensitive areas.

1991- Countryside Stewardship Schemes and Wildlife Enhancement Schemes were introduced.

1992- First introduction of Set-a-side, Suckler Cow Quotas, Sheep Quota, and Beef Special Premium Scheme.

2001- Hill Farm Allowance was introduced a subsidy to support hill farmers to compensate for difficult farming conditions.

2005- All production was decoupled with the introduction of the Single Farm Payment and for the first time subsidy was available to all land managers. Additional support was available to all was the introduction of Environmental Stewardship ELS

and for targeted environmental conservation areas Higher Level Stewardship was introduced.

2010- Hill Farm Allowance was changed to Upland Entry Level Stewardship to be more environmentally orientated than on livestock production.

**State of the farming industry today**

**Global food system**

England has increasingly become part of a global food system, the challenges of which are increasingly high on both public and political agendas.

According to the Food and Agriculture Organisation (FAO) of the United Nations, over the last two years 12 percent of the global population were unable to meet their dietary energy requirements. Although undernourishment around the world is in decline, there is continuing widespread debate about how best to feed growing global populations and, at the same time, protect against increasing pressure on natural resources.

**Exports**

British produce is in the strong position of being recognised as high quality and exports have more than doubled in the last ten years[(2)] with strong trades with Europe and, increasingly, worldwide to emerging markets such as China and India.

However, exports of products derived from British agriculture have fluctuated dramatically in the last twenty years and this has resulted in turbulent times for producers.

Exports of both lamb and beef fell dramatically in 1996 as a consequence of major food scares, not least the BSE epidemic in cattle resulting in the EU imposing a ban on beef exports.

Exports reached lows in around 2001 when the foot and mouth disease further decimated the markets and led to reduction in national livestock levels. This has a pronounced effect in the uplands where restocking proved a real challenge especially in moorland areas.

Over the last ten years, exports of lamb and beef have steadily increased to a level well above the last 20 year highs reached in the mid-1990's. Although there have been fluctuations in the market in recent years, the export market remains strong and bodes well for the future state of the British agricultural industry. However, whilst the volume of exports is encouraging, prices are still often only marginally above the cost of production.

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[2] *Defra; Overseas trade in food, feed and drink, Oct'13*

## Provenance of food

Food scares over the last two decades have made British consumers increasingly concerned about the quality and safety of the food that they choose to eat.

British consumers have become better educated about the farming industry through extensive press coverage such as Jimmys Farm, the BBC's Lambing Live and Countryfile, and ITV's The Dales. Many cookery programs have endorsed the use of locally sourced and seasonal produce, and consumers have come to identify British produce as being of excellent quality having been regulated to high welfare standards, and with low food miles and seasonality.

The turn of the 21st century saw a surge in the sale of organic produce and in the desire by consumers to buy food of local provenance: Direct sales to consumers including those through farm shops and farmers market peaked in the mid to late 2000's but has since seen a slight downturn.

The recent downturn in direct sales could be attributed to the UK economic recession in 2008 which has forced many consumers to 'tighten their belts'. Research has shown that although consumers *wish* to support British producers and buy locally sourced high quality products, when it comes to the till they choose price, taste, quality and brand over provenance [(3)].

Although quality and taste feature highly with British produce, cost of production and therefore retail price remains high compared to many imported goods including staple items such as bread, milk and butter are often cheaper.

Large retail supermarkets continue to dominate the retail market and, although efforts have been made to promote British produce by this sector, they remain consumer-led and are, as the main wholesale purchaser of produce, in the strong position of being able to dictate the price paid by the producer and drive the market-price down.

## Incomes

The strong export market and support of British consumers indicates that farmers today are in a relatively strong position however, as seen above, farmers continue to be at the mercy of the retail industry and the market-price that they receive for produce fluctuates dramatically.

After a steady decline over the latter half of the twentieth century, farm incomes reached an all-time low in 2000 when net farm income averaged just £8,700 per farm across the agricultural sector[(4)].

Although improvements have been seen since then with the average farm business income in 2011/12 reaching £60,000, LFA grazing farms in Yorkshire and

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[3] *The Guardian, 21/09/11*
[4] *UK Agricuture (www.ukagriculture.com)*

Humberside have achieved much smaller increases in income over the last ten years, with average income only reaching £15,630 per farm in 2011[5].

Over the last ten years, the average age of the principal farmer has increased, with 62% aged 55 years and over in 2007, compared to 51% in 2000 (ref: UK Agriculture).

Financial pressures across the industry have led to a 22% decline in the number of full-time farmers between 1996 and 2010[6] although there was a 32% increase in the number of part-time farmers.

**Succession**

DEFRA's Future of Farming Review Report (published July 2013) identifies the difficulties faced by new entrants to farming, and highlights the fact that it is not realistically possible for new entrants to secure their own land and business. Furthermore, low numbers of retiring farmers restrict opportunities, with this being exacerbated by the CAP and the inheritance tax framework

Many of farms only have family members working on the farm with very little outside help, mainly due to the cost of wages and the farm not producing enough to pay even the family members. Often the next generation is working for less than the minimum wage and additional employment is sourced off the farm in order to supplement incomes.

The supply of farms on the rental market is still restricted which is a driver for price. The price often means that new entrants are priced out of the market by existing farmers expanding and spreading fixed costs.

High demand and short supply for rural housing mean that tenant farmers have often failed to accrue sufficient wealth to acquire a retirement home. This even poses a problem to family succession where the younger generation is held back by the inability of the older generation to retire.

New entrants to the industry tend to be those that have made money out side of farming that are able to invest capital. This is not an option to young farmers relying on borrowed money. Due to the nature of farming the returns are uncertain and lenders are not keen to take on new entrants with no track record.

Many of the tenant farmers are unable to retire from the farms and choose the option of staying till they die as they can not afford to move from the farm. On succession tenancies the business assets are needed for the next generation who have worked on the farms for no real wage just the reliance on inheriting the business. This often means that selling the stock and machinery to fund retirement is not an option.

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[5] *RBR; Yorkshire & Humberside Regional Report for 2011/12*
[6] *UK Agricuture (www.ukagriculture.com)*

**Interest rates**

Interest rates have been at an all time low since the financial crash in 2008. This initially had the effect of constricting the supply of lending as banks restructured their departments. Agriculture then emerged as a 'safe' sector to invest in and the supply of lending has increased. The availability of cheap credit has made investment in land or production facilities more viable, but only for those with the ability to generate cash flow to service the repayments.

The favourable Inheritance Tax provisions and low interest rates are identified as major drivers in the land market.

Land prices are currently at an all time high due to demand from investors as well as farmers. Currently, with subsidy calculated on area-based payments, land has a guaranteed return and can be more lucrative than other types of investments which is driving price.

**Mechanisation**

The increase in agricultural productivity during the 20$^{th}$ century is largely due to advances in agricultural technology.

The main driver for the increase in efficiencies in agricultural production has been the advancement in technologies and the development of mechanisation, especially in the arable sector of farming. Whilst livestock producers have been able to improve genetics, pasture management, housing and handling systems there is less potential for mechanisation.

Mechanisation has brought clear benefits to the industry, however the cost of machinery and fuel has become a real constraint. The doubling in price of white diesel from 75.46 pence per litre in 2002, to 141.83 pence per litre in 2012 has added significant cost and similar tends have been seen in the cost of red diesel over the same period.

**Commodity prices**

Other commodity prices have seen a dramatic inflation in costs, most of which are closely linked to fuel prices, fertilizer being a prime example. This has resulted in significant changes in farm practices and land use over the last decade. Arable producers are often faced with such high land and mechanisation costs that they are forced to continue with high fertilizer usage to maintain yields. Livestock producers outside of dairy farming have been showing a consistent decline in fertilizer usage since 2002. The increased cost of fertilizer has lowered the point of marginal return meaning production is slowly tailing off.

Feed costs have affected all industry sectors. Global market demand makes the price of wheat very volatile. Alternative uses for combinable crops including renewable energy production are also having an effect on the market. The dependency of the livestock sector for grain for finishing animals means that increased demand for cereals will squeeze margins yet further.

**Livestock**

Since the removal of headage payments there has been a steady decline in the number of sheep and number of breeding cows. The reduction in suckler cow numbers has been pronounced in the uplands.

The most major change in livestock numbers was due to the Foot and Mouth crisis of 2001-2002. Figures from the DEFRA farm survey publication Livestock numbers show, the North West was the area greatest hit with the FMD out break and suffered the greatest loss in both cattle and sheep numbers.

Dairy herds have seen the greatest decline in numbers nationally. The rate of decline is the greatest in the east of the country, due to the ability to convert land use to crop production. TB has also been a major constraint to the dairy industry especially in the West country. The movement restriction imposed mean that cattle are being finished on the farm of birth which increases costs and creates housing problems. Also, pre-movement testing introduced additional cost burden on the producer.

The beef industry has seen other problems which have affected consumer confidence and have affected purchasing habits. BSE in the mid 1990's reduced demand and has taken a long time to recover.

Environmental Stewardship, mainly the Higher Level Stewardship, have focused on reintroducing native breed cattle to be raised on more extensive grazing systems in an attempt to improve the biodiversity of the grassland in upland region. The other benefits have been an increase in cattle previously near to rare breed status being reintroduced to areas where sheep grazing has recently dominated. These animals have been identified as having potential for added value farm gate prices. However, in the livestock market there is very little demand for traditional breed cattle due to the poor growth rates and carcase traits, and so store values are very low.

This type of production is far from what was being driven under headage payments as producers were encouraged to rear cattle for slaughter and hence receiving a premium for doing so. Therefore this encouraged breeding more continental type cattle which reach slaughter stage earlier that a native bred counterpart thus reducing costs. Continental type cattle do not prosper on rough grassland therefore they are not ideal for grazing large areas of less favourable area.

Unfortunately adding value does not make the product available to the majority. There has to be a balance between meeting the needs of the consumer while maintaining profitability.

Sheep numbers rose throughout the 1980s, as headage-based subsidy payments encouraged producers to increase numbers of breeding ewes, and reached a quota ceiling in the 1990s. Again, the onset of FMD in 2001 had a major impact on sheep numbers which plummeted nationally. The number of sheep reared nationally is closely linked to the market price. As trade for lamb was high in 2011 this had a knock-on affect on breeding flock number as there was an increase of 4.3% in 2012.

Sheep producers are increasingly attempting to meet the demands of the consumers, whom want to see lean lamb at a cheap price. In order to achieve this producers are breeding more continental-cross breeds which are quicker finishing than their hardy traditional hill counterparts. The price per kilo of a finished continental-cross lamb compared to a hill lamb is often around 30% more.

This puts pressure on hill sheep breeds as producers look at changing breed. Better genetics and nutrition has also seen an increase in sheep bearing twin lambs. Although this may see a better return overall, it poses a problem in the hills as the nutritional requirement of a ewe with twin lambs can not be met on rough grazing land. This has lead to a decline in numbers of ewes grazing higher ground. It also has an effect on the requirements for lower ground to accommodate the ewes which may lead to farmers needing to pay high rents on additional grazing land.

EID was introduced for all sheep farmers which has had little impact on improving traceability of lamb but has resulted in additional cost burden. This cost has been seen both for tags and reading systems, but also in penalties under cross compliance for producers subjected to routine and targeted inspections.

**Diversification**

Farmers have long been using their assets to increase farm incomes. Diversification takes on many forms from bed and breakfast, tourism, farm shops and directly adding value to products i.e. dairy to ice cream, rare breed beef direct selling box schemes.

> *These entrepreneurial farmers are estimated to add an additional £10,400 to the total farm income and some 50% of farmers have some kind of involvement in a diversification project. More than 30% of farms have more than one diversification activity[7].*

Tourism activities are greater on mixed beef and sheep farms due to the nature of the farming practice and because a large proportion of these farms are in Areas of Outstanding Natural Beauty (AONB's) or National Parks.

The newest entrants to the diversification market have been those to the Energy market where increases have been seen in Wind, Solar and bio fuel production. Much of the HNV area has not seen the benefit of wind power production through turbines as they struggle to gain planning consent due to the visual impact on the landscape.

Tourism has been affected by the financial crisis as consumers have less disposable incomes available. There has been less demand for visitor accommodation and the add-ons such as farm gate meat sales.

Uptake of diversification tends to be greater in the uplands where farming margins are tighter and so alternative income streams are a necessity for survival. Often

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[7] *Keep, 2009*

these areas have a good environment to sell but are restricted by land tenure and a lack of capital.

Tourism is limited on many of the HNV farms due to access, planning constrains, utility services and the inability to meet certain standards i.e. water quality.

**Challenges faced by upland producers**

It is widely recognised that farmers manage most of the landscape of the uplands and play a vital role in the protection of the landscape and habitats that attract tourists from across the world each year.

Lowland farmers have climatic and physiological advantages so are more easily able to respond to evolving markets and adapt their systems to meet consumer demands.

Producers within upland areas operate on land with inherent limitations and so are less able to embrace modern technological advances and respond to market forces.

The ability to improve pasture management is restricted by climate and topography of the natural landscape.

The ability to change livestock breeds is restricted by the physical constraints of the landscape.

As a consequence, the progression of hill producers has been more limited and these grazing livestock farms in the LFAs are increasingly dependent on income from SPS and Environmental Stewardship, much more so than other farm types.

LFA grazing farms receive less than 70% of output purely from agricultural activity, whereas mixed farms receive 80% and dairy 93% [(8)].

The role of upland farmers has been the production of breeding stock for the lowlands in a stratified industry which limits scope for the intensification of food production. In the last 10-15 years it has been increasingly recognised that they must be supported in their development of sustainable hill farming and their role in protecting the environment, landscape, natural resources, soil, water and genetic diversity.

Upland farmers are often limited in their ability to adapt their business when facing financial pressure.

Low income and profit margins mean that the farm business is particularly sensitive to even small fluctuations in market values. It also means that there is often little capital funding available to, for example, diversify into a new type of business or invest in production facilities.

Farming businesses are usually small or micro businesses, mostly family owned and run and generally operating as sole traders or partnerships.

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[8] *RBR Yorks & Humber Regional Report for 2011/12*

Holdings are often limited in size and opportunities for expansion and usually limited by the unavailability of capital.

Now is a good time to review the impact of the 2005 CAP Reform and to see how this has affected farming in England over the last 8 years. The replacement support system needs to identify the producers in most need of subsidy and best placed to provide public benefit for the money they receive in order for the industry to move forward.

**The history of the Common Agricultural Policy (CAP)**

**Agricultural Intensification**

After World War II the government launched a campaign to increase agricultural production to try and solve the problems of food shortages and eliminate the need for rationing that had occurred during the war. The aim was quite simply to make the UK self-sufficient.

As part of the government drive to increase farm production and efficiency, in 1973 the UK joined the Common Market now known as the European Union (EU) and adopted what is known as the Common Agricultural Policy (CAP).

**The introduction of the CAP**

The CAP was set up by the EU in the 1950s to make Europe more self-sufficient. CAP subsidies established a guaranteed price system for farmer's produce ensuring that they could continue to produce food even when the market conditions are not favorable and therefore to retain land in agricultural production and maintain employment levels.

Following the adoption of the CAP in the UK there was a dramatic increase in production; the regime encouraged intensification and saw sheep and breeding cow numbers increase to take advantage of the available funding.

By 1980's this intensification of production was resulting in the unfavourable massive over-production of food products such as wheat and butter within England and across the EU.

There was also a negative effect on the environment and landscape with considerable damage to ecosystems and wildlife: Wildlife habitats were lost through the intensification of livestock production in upland areas, and through the removal of hedgerows and loss of crop diversity with the practice of monocropping in the lowlands.

Environmental concerns gathered pace forcing the objectives of EU subsidies to change.

**CAP Reform**

CAP reforms were contentious and notoriously difficult to agree and implement at EU level. However, quotas on dairy production were successfully introduced in 1984 in an attempt to overcome overproduction issues and reduce over-exploitation of

support and food wastages. The first agri-environment schemes were rolled-out in 1987 within specially designated areas.

On the back of the introduction of dairy quotas, more widespread reforms began in 1992 and saw a shift-away from the support of intensive beef and cereal production, and towards encouraging more sustainable production methods. These reforms included:

The introduction of the first agri-environment scheme in 1987 within specially designated areas.

Set-aside was made compulsory, effectively requiring farmers to remove 15% of arable land from production.

Additional support was provided to hill farmers with land within the Less Favour Area (LFA) in the form of extensification supplements to compensate for a reduction in stocking levels, and the Hill Farm Allowance (HFA) scheme.

Incentives to encourage the retirement of older farmers to open up opportunities for the younger generation.

Incentives to encourage afforestation; specifically the restoration and creation of native woodland areas with high value in terms of landscape character and the protection of native flora and fauna.

CAP reforms changed the emphasis towards the production of quality livestock rather than quantity of output. It was anticipated that this would improve food quality and so the commodity price for produce however, due to other external factors, this has not always been the reality.

**Benefits/limitations of CAP reform**

What came to light after CAP reforms were implemented was that not only were objectives of the reform achieved, but certain environmental benefits were realised, effectively resulting in dual-purpose funding. For example:

The establishment set-aside resulted in reduced risk to water quality from diffuse pollution.

Reductions in overgrazing through extensification support in the uplands allowed sensitive grassland, woodland and moorland habitats to begin recovery.

However, there remained a system of production-based direct (headage) payments which still encouraged farmers to stock at high density even though the national level was limited. Economic drivers meant that upland farmers juggled with the need to maintain high stocking densities to access headage payments for breeding sheep, suckler cows and beef production, whilst satisfying the requirements of agri-environment schemes and extensification supplements.

It became clear that further reform was needed: Agenda 2000 and later reviews saw the de-coupling of production-based and environmental protection support with the introduction of the Single Payment Scheme and modern Environmental Stewardship.

## The history of agri-environment schemes

### Hill Livestock Compensatory Allowance (HLCA)

Payments were headage based.

### Hill Farm Allowance

Introduced in 2001, the Hill Farm Allowance (HFA) replaced the HLCA and saw a significant move away from previous production based support.

HFA was only accessible to farmers with land within the Disadvantage Areas of the LFA. The aim of the scheme was to compensate beef and sheep hill producers for the difficulties of farming in the LFAs, and to provide support to farmers for managing the landscape and their contribution to rural society.

Claimants were required to farm at least 10 hectares of eligible forage land within the LFA for the production of suckler cows and/or breeding sheep, and minimum stocking densities were required.

Flat rate area-based payments were made at varying rates depending on the LFA designation of the land. However, larger holdings saw areas over 350 hectares paid at a 50% reduced rate, and a cap on payment on areas of land on the holding over 700 hectares. There were however optional top-up payments for environmental enhancements such as maintaining woodland areas and set-aside.

### The First Agri-Environment Schemes

The first agri-environment scheme was introduced in 1987 in the form of the Environmentally Sensitive Areas (ESAs) scheme.

As the name suggests, funding was available to land within specific areas that were designated as nationally important in terms of conservation, historic and landscape value.

Farmers were invited to sign a 10 year agreement to receive an annual payment ranging from £8 to £500 per hectare in order to follow management practices to conserve and enhance the landscape, historic and wildlife value of the land, and to promote public access.

ESA were followed by the Countryside Stewardship Scheme (CSS) in 1991:

CSS was made available on all land not within a designated ESA.

The Scheme was aimed at improving the environmental value of farmland; to conserve landscapes, their wildlife and history, and to promote permissive and educational access.

The Scheme included the ability to apply for whole farm plans for restoring and creating landscape features including dry-stone walls, ditches and hedges.

The Wildlife Enhancement Scheme (WES) was also introduced in 1991 specifically for areas of land designed as Sites of Special Scientific Interest (SSSIs).

SSSIs are areas containing rare habitats with the most diverse wildlife communities, and include some of the most spectacular and beautiful local landscapes.

The objective of WES was to actively maintain and enhance SSSIs through combining English Nature's knowledge of wildlife management with the owner or land manager's skills and knowledge of the land.

English Nature primarily targeted SSSI sites found to be in unfavourable condition for management agreement in an attempt to successfully deliver the Government's target of having 95% of SSSI in favourable or recovering condition.

Applications for WES was voluntary and uptake was good especially where the financial incentive offered were high. However, there was added incentive to join Scheme because Natural England (formally English Nature) has legislative power to enforce positive management on SSSIs, so it made sense to join the scheme and receive payment for restricted management as opposed to having it imposed without compensation.

Applications for ESA, CSS and WES agreements (now known as 'classic' schemes) were closed during 2004.

By this time, the number of ESA and CSS agreement holders was at a high of 28,210 with over one million hectares of land under agreement and expenditure on both schemes combined was at a high of £167 million [(9)].

The classic schemes were replaced with the umbrella of modern Environment Stewardship (ES) funding in 2005, as outlined in more detail later in this report.

**Modern CAP reform**

Moves towards modern CAP reform began in the late 1990's. These reforms saw the division of CAP support into two 'pillars' and sought to break the link between income and production support known as 'de-coupling'.

Pillar 1 provided direct subsidies to producers to support production in the form of the Single Payment Scheme.

Pillar 2 providing Rural Development Programmes (RDP*)* including Environmental Stewardship and the Woodland Grant Scheme.

From 2005, all land mangers were able to receive funding whereas previously it had been primarily received by sheep and beef producers and those farming in the LFAs. Dairy farmers were able to receive subsidies for the first time. There was a shift away from producers being paid on 19 different production-based subsidies to a system of area based payments.

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[9] *Ref: DEFRA: Countryside Stewardship and Environmentally Sensitive Areas Schemes Report on performance 2003/2004 and 2004/2005*

Agri-environment schemes became compulsory for every EU Member State.

**Pillar 1: Single Payment Scheme**

Introduced in January 2005, Single Payment Scheme (SPS) became the method for distributing Pillar 1 funding providing direct financial support for England's farming community.

The objectives of introducing the SPS was to; assist farmers to become technically efficient, run profitable businesses, reward farmers for looking after land for environmental public good, and to enable farmers to prosper.

Single Farm Payment (the funding mechanism of the SPS) was not linked to any kind of production, it essentially rewards land owners/producer for complying with a number of specified legal requirements relating to the environment, and public, plant and animal health and welfare.

These legal requirements are termed 'Cross Compliance':

> *Cross Compliance refers to the requirement for farmers to comply with a set of Statutory Management Requirements (SMRs) and keep their land in Good Agricultural and Environmental Condition (GAEC):*
>
> *SMRs relate to the areas of public, animal and plant health, environment and animal welfare.*
>
> *GAEC relate to the issues of soil erosion, soil organic matter, soil structure, ensuring a minimum level of maintenance, avoiding the deterioration of habitats and protection and management of water [(10)].*

SFP was funded as a sliding scale with a gradual move-away from the payment being calculated on a historic headage basis, to an entirely area-based payment. In England the area payment is adjusted depending on the land classification. Farmers in the lowlands receiving the highest rate of payment and farmers in the uplands receiving a lower rate of payment. The payments are still calculated on a quota based system with each farmer holding entitlements to cover the eligible land they farm.

Single farm payment is paid annually with a target date set by the RPA as the 1st December.

**Pillar 2: Rural Development Programme (RDP)**

Pillar 2 funding is distributed through the Rural Development Programmes for England (RDPE)

The last RDPE for the period of 2007 to 2013 had a budget of approximately £3.9 million to spend over the 7-year period. This was more than double the amount available for the last programme.

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[10] *RPA 2013*

Spending of Pillar 2 funds has been targeted at:

Environmental Stewardship (ES) schemes

Capital Grant Schemes (Catchment Sensitive Farming)

Community Schemes (Leader)

The EU require a specific amount of CAP support to be distributed under Pillar 2, however this is increased at a national level through a method of modulation; effectively taking money off payments to SPS claimants and redistributing it to Pillar 2 funds.

**Environmental Stewardship (ES)**

Launched in March 2005, the Environmental Stewardship (ES) scheme replaced the earlier classic agri-environment scheme and had the objective of providing 'reward' to land owners and producers to deliver effective conservation and enhancement of the countryside.

Scheme objectives were to help to protect the environmental benefits already achieved through the classic schemes, and, where appropriate, provide a way to deliver targeted management for those environmental features still requiring further restoration.

ES was targeted as a nation-wide scheme available to all farmers or land managers. It was designed with (eventually) four tiers of stewardship[11]:

Entry Level Stewardship (ELS): England's 'flagship' scheme providing a straightforward approach to supporting the good stewardship of the countryside. Considered to be a broad and shallow scheme, it required simple and effective land management but going beyond the SPS requirements of Cross Compliance.

Organic Entry Level Stewardship (OELS): This offered the same support and land management requirements as ELS with additional support for holdings with organic status or in the process of conversion to organic. The scheme was open to all farmers not receiving Organic Farming Scheme aid.

Uplands Entry Level Stewardship (Uplands ELS): Launched in February 2010, this scheme replaced HFA provided support for hill farmers with payments for environmental management. This strand of ES supersedes the Hill Farm Allowance. It is open to all farmers with land in Severely Disadvantaged Areas, regardless of the size of the holding.

Higher Level Stewardship (HLS): This involved more complex types of management with agreements tailored to local circumstances. HLS applications are assessed against specific local targets and agreements were offered where

[11] www.naturalengland.org.uk

they meet these targets and represent good value for money. This is an invitation only basis.

The latest figures provided by Natural England in their February 2013 *Land Management Update* show that over 66% of the Utilisable Agricultural Area (UAA) of England is subject to Environmental Stewardship, with a further 4% still subject to classic ESA and CSS Agreements. The total annual value of these schemes combined is £417 million.

**Pillar 2: other**

Other regional programmes were also available including:

Catchment Sensitive Farming (CSF) was introduced in 2010 and is available to land owners and producers within specific priority water catchment areas to support improvements or the installation of facilitates that would benefit water quality by reducing diffuse pollution from agriculture.

**Summary**

Farming has not been exposed to or driven by true market forces since World War II. The introduction of subsidies has distorted the market and meant that a true cost of production has been difficult to assess. Subsidising food production has had the desired effect of getting a consistent, secure supply of food at a low price which has had obvious benefits for the UK consumer.

However, the farming industry has been left dependent on agricultural subsidies and, consequently, it's exposed to changes in how schemes are delivered, and the rates at which they are paid. As markets have evolved, food imports and changing consumer preferences has meant that food security has become less of an issue in the 21st century. This has come alongside the realisation that conservation and environmental protection are equally important objectives within the industry.

**Glossary of abbreviations**

| | |
|---|---|
| AONB | Area of Outstanding Natural Beauty |
| HFA | Hill Farm Allowance |
| EU | European Union |
| LFA | Less Favoured Area |
| CAP | Common Agricultural Policy |
| CSS | Countryside Stewardship Scheme |
| ESA | Environmentally Sensitive Areas |
| HFA | Hill Farm Allowance |
| WES | Wildlife Enhancement Scheme |
| SSSI | Site of Special Scientific Interest |
| BSE | Bovine Spongiform Encephalopathy |
| SPS | Single Payment Scheme |
| ERDP | England Rural Development Plan |
| YDNP | Yorkshire Dales National Park |

| | |
|---|---|
| UELS | Uplands Entry Level Stewardship |
| EID | Electronic Identification |
| UK | United Kingdom |
| RDPE | Rural Development Programme for England |
| DEFRA | Department for Environment, Fisheries and Rural Affairs |

**Appendix I**

HNV farmland in Europe – shares per Country (*) and relation between UAA and CLC agricultural classes

| | col 1 | col 2 | col 3 | col 4 | col 5 |
|---|---|---|---|---|---|
| COUNTRY | HNV farmland area according to this study | Agricultural land (CLC agricultural classes + HNV areas) | Utilised Agricultural Area (official figures from EUROSTAT FSS) | Discrepancy (col2/col3)*100 | Area share of HNV farmland (col1 / col2) |
| *Austria* | *2,447,292* | *3,578,621* | *3,266,250* | *109.6%* | *68.4%* |
| Belgium | 347,960 | 1,786,942 | 1,385,580 | 129.0% | 19.5% |
| Bulgaria | 2,509,989 | 6,734,217 | 2,729,390 | 246.7% | 37.3% |
| *Cyprus* | *342,045* | *637,043* | *151,500* | *420.5%* | *53.7%* |
| **Czech Republic** | 1,043,973 | 4,950,869 | 3,557,770 | 139.2% | 21.1% |
| Germany | 3,162,699 | 21,607,362 | 17,127,350 | 126.2% | 14.6% |
| Denmark | 172,267 | 3,446,150 | 2,707,690 | 127.3% | 5.0% |
| **Estonia** | 380,879 | 1,695,820 | 828,930 | 204.6% | 22.5% |
| Spain | 18,986,960 | 34,038,906 | 26,085,390 | 130.5% | 55.8% |
| *Finland* | *1,330,797* | *2,967,068* | *2,215,970* | *133.9%* | *44.9%* |
| France | 7,797,145 | 35,311,870 | 27,856,320 | 126.8% | 22.1% |
| Greece | 5,349,572 | 9,122,263 | 3,583,180 | 254.6% | 58.6% |
| Hungary | 1,906,124 | 6,822,877 | 4,555,110 | 149.8% | 27.9% |
| Ireland | 1,162,594 | 5,777,390 | 4,443,970 | 130.0% | 20.1% |
| Italy | 6,127,030 | 18,359,587 | 13,062,260 | 140.6% | 33.4% |
| **Lithuania** | 627,202 | 4,159,700 | 2,792,040 | 149.0% | 15.1% |
| Luxembourg | 12,871 | 142,632 | 127,510 | 111.9% | 9.0% |
| Latvia | 568,400 | 2,853,680 | 1,432,680 | 199.2% | 19.9% |
| Netherlands | 368,788 | 2,621,717 | 1,958,050 | 133.9% | 14.1% |
| Poland | 4,813,243 | 20,231,887 | 14,754,880 | 137.1% | 23.8% |
| Portugal | 2,900,462 | 5,035,890 | 3,736,140 | 134.8% | 57.6% |
| Romania | 4,860,372 | 14,433,920 | 13,906,700 | 103.8% | 33.7% |
| Slovenija | 591,314 | 754,255 | 485,880 | 155.2% | 78.4% |
| Slovakia | 547,582 | 2,485,476 | 2,159,900 | 115.1% | 22.0% |
| **Sweden** | 1,136,030 | 4,759,869 | 3,192,440 | 149.1% | 23.9% |
| **United Kingdom** | 5,165,466 | 19,368,468 | 13,174,690 | 147.0% | 26.7% |
| **Total** | 74,659,056 | 233,684,479 | 171,277,570 | 136.4% | 31.9% |

*(*) Malta not included*

HNV farmland – shares per Country

(*) and relation between UAA and CLC agricultural classes (see text for explanation)
.
Highlighted in bold the Member States that provided national biodiversity datasets which have been included in the estimates
together with CLC data (see chapter 2.5). Those Member States where further refinement of current data appears particularly
important are marked in italics.

*Source: High Nature Value Farmland in Europe An estimate of the distribution patterns on the basis of land cover and biodiversity data*
*Maria Luisa Paracchini, Jan-Erik Petersen, Ybele Hoogeveen, Catharina Bamps, Ian Burfield, Chris van Swaay. EUR 23480 EN - 2008*

## Appendix II – Habitat and Species descriptions

### Upland hay meadows

Upland hay meadows are characterised by a suite of species including Sweet Vernal-grass, Wood Crane's-bill, Pignut, Great burnet and Lady`s mantles. They are confined to areas with a history of non-intensive hay-meadow management at 200-400m altitude in the upland valleys of northern England and Scotland. Recent estimates indicate that there are less than 1000 ha in northern England and Scotland is believed to have less than 100 ha. They are of national and international importance: both are UK Biodiversity Action Plan priority habitats, and upland hay meadows are also an Annex 1 habitat in the EU Habitats Directive.

The Yorkshire Dales National Park contains a large proportion of the national upland hay meadow habitat (approximately 10%). It is centred on Langstrothdale, Ribblesdale, Swaledale and Arkengarthdale. In addition, the nationally rare plants lesser butterfly-orchid, burnt orchid, montane eyebright and small-white orchid also grow in or in close association with this habitat.

While traditionally managed hay meadows support some rare plants, their real importance lies in their species composition. Their low fertility soils coupled with the impact of grazing and cutting means that individual species are unable to dominate, resulting in the very richest hay meadows containing over 30 species per square metre and up to 120 species per field. They are of high habitat value for a range of fauna, many of which are also UK Biodiversity Action Plan species: they provide feeding areas for invertebrates, bats and other mammals, and feeding and nesting sites for birds (Hay Time Project 2012).

### Calcareous grassland

Calcareous grassland is restricted to shallow soils derived from a variety of lime-rich bedrocks such as Carboniferous Limestone which was formed 350 million years ago. There is an estimated 10,000 ha of upland calcareous grassland in England, with particularly important areas for the habitat in the North Pennines (including the Yorkshire Dales National Park) and Cumbria.

These calcareous grasslands are broadly of two types. The first and least widespread are the blue moor-grass dominated upland grasslands. Most examples occur above 250-300m but the habitat is also found within unenclosed moorland at lower elevations and descends to sea level in north-west Scotland. Upland calcareous grasslands typically occur as parts of habitat mosaics, which are generally managed as rough grazing land for domestic livestock. These are relatively rare upland vegetation types which support a wide range of uncommon species.

The more widespread type of calcareous grassland is more lowland in character and dominated by fescues and characterised by the presence of fine-leaved sedges. Lowland calcareous grasslands develop on shallow lime-rich soils generally overlying limestone rocks including chalk. Lowland calcareous grassland sites occur in both enclosed and unenclosed situations but typically below the upper level of agricultural enclosure in any particular district. Richer grasslands may include

common milkwort and common rock-rose and rarely Frog Orchids and Field gentians.

**Associated species – Northern Brown Argus butterfly**

This species is one of only a few butterfly species that occurs primarily in the northern parts of the UK, mainly within Scotland, Cumbria, Lancashire, Yorkshire and Durham. As its name suggests, the Northern Brown Argus is brown in colour but also has rows of distinctive orange markings on the tips of its wings.

Within the Yorkshire Dales the Northern Brown Argus can be spotted in the limestone areas of the National Park from early June until mid-August. It favours sheltered areas of unimproved limestone grassland where the common rock rose, (which is an important food for the butterfly larvae), grows.

**Blanket bog**

Blanket bog is a globally restricted peatland habitat confined to cool, wet, typically oceanic climates. It is, however, one of the most extensive semi-natural habitats in the UK and ranges from Devon in the south to Shetland in the north. Peat depth is also very variable, with an average of 0.5-3m being fairly typical but depths in excess of 5m not unusual. There is no agreed minimum depth of peat which can support blanket bog vegetation. It includes the EC Habitats Directive priority habitat 'active' blanket bog, the definition of active being given as 'still supporting a significant area of vegetation that is normally peat forming'.

**Black Grouse**

Black grouse are probably best known for their elaborate springtime courtship displays. During this ritual, the males gather at traditional communal display sites known as leks in March. The peak of the lekking activity usually occurs around dawn and to a lesser extent at dusk. The females that are attracted to the lek will normally mate with a dominant male and then disperse to the surrounding area to raise their young on their own.

Within the Yorkshire Dales National Park, the black grouse can be found on the moorland fringe and favours a range of different habitats including rough grassland, pastures, heather moorland, hay meadows and scrub woodland.

Only a few decades ago, black grouse were widespread in the Yorkshire Dales with small populations occurring where there were suitable areas of habitat along the moorland edge. The population increased in the late 1970s and early 1980s when recently planted conifer plantations provided ideal nesting and chick rearing habitats. However, the increase was only temporary. As the conifer canopy closed, the plantations became unsuitable habitats for the black grouse and the population declined in line with national and regional trends.

**Breeding waders**

The majority of the UKs breeding waders come to the uplands to breed and rear young, taking advantage of the wet ground conditions and particular moorland and moorland edge habitats. Species common to the Yorkshire Dales include Snipe, Golden Plover, Curlew, Lapwing, Redshank and Dunlin. The main moorland areas have been designated as Special Protection Areas under European policy in order to conserve the breeding wader numbers as they are home to significant populations of these species.

Golden Plovers, *Pluvialis apricaria,* breed on heather moorland, blanket bog, acidic grasslands and montane summits, where they prefer to nest on high, flat or gently sloping plateaux, away from the moorland edge. Adjacent pastures with abundant earthworms and tipulid larvae are important for feeding adults, and chicks may be moved up to 2 km or more to feed in marshy areas rich in invertebrate food (Byrkjedal & Thompson 1998).

High densities of breeding Golden Plover, can be found on blanket bog and heather moorland, and suggested higher levels of grazing can be important to prevent heather becoming rank, as breeding Golden Plovers appear to favour short heather. Overgrazing of moorland leading to conversion of heather to grass is likely to be detrimental to Golden Plovers, but high grazing levels of in-bye pasture close to moorland edges may be important to maintain areas of short sward used by feeding birds during the breeding season.

**Semi natural woodland**

Woodland is a scarce yet important component of the Yorkshire Dales landscape. Semi-natural ancient woodlands dominated by self-sown native species are the most important types of woodland in the Dales for biodiversity conservation. These include upland mixed ashwoods, upland oakwoods and wet woodland.

Upland mixed ashwoods are found on base-rich soils and is the most abundant and widespread type of woodland in the National Park. The canopy is comprised of ash, wych elm, sycamore with an understorey of downy birch, rowan, bird cherry, hawthorn and holly. The composition of the ground flora depends on the level of grazing and canopy cover but is usually dominated by dog's mercury, bluebell and wood avens with wild garlic in the wetter areas. Ferns such as male fern and lady fern are also abundant.

Upland Mixed Ashwoods are also an important habitat for a number of priority species including Netted carpet moth, Pearl bordered fritillary, High brown fritillary and the Dormouse.

**Red squirrel**

In the Yorkshire Dales, red squirrels are restricted to the north western area of the National Park. It is difficult to accurately estimate the numbers of Red Squirrels in North Yorkshire but the number of sightings has risen dramatically since records

were started in the late 1990s. It is thought that this increase is because the conifer woodlands in the area have reached cone bearing age in recent years.

The Yorkshire Dales is widely recognised as an important habitat for red squirrels. Widdale, Greenfield Red Squirrel Reserve and part of the Garsdale and Mallerstang Red Squirrel Reserve areas are within the National Park. The Greenfield reserve is located in the western edge of the project area and occupies over 800ha of conifer plantation. Red squirrels were first confirmed in Greenfield in 2004 and are probably an offshoot of the Cumbrian population. Once widespread, the creature is now confined to just a few areas of England, chiefly in Northumberland, Cumbria and North Yorkshire.

**Freshwater**

The Wharfe is a swiftly-flowing nutrient-poor river supporting a wide range of mosses and liverworts. It exhibits both upland and lowland characteristics as it moves from the headwaters to the parish boundary. Its bank side vegetation can be extremely rich in places with a predominance of hay meadow and calcareous grassland species inhabiting the banks. For a significant length it is bounded by ash, alder, silver birch and sycamore trees, though this tends to end near Yockenthwaite and begin again near Oughtershaw. Overgrown tributary streams support willow scrub *Salix spp*., and a variety of sedges, for example bottle sedge *Carex rostrata*, slender tufted-sedge *C. acuta* and lesser pond sedge *C. acutiformis*, while the nationally rare northern spike-rush *Eleocharis austriaca* favours wet hollows and meanders. The invertebrate fauna of the Wharfe is dominated by stoneflies, mayflies and caddisflies, while fish such as grayling *Thymellus thymellus*, and brown trout *Salmo trutta* are often present. Kingfisher, dipper, otter and goosander are frequently seen

The upper reaches of the river between Oughtershaw and Yockenthwaite is strongly influenced by the bedrock with stepped waterfalls, exposed rock river beds and very little fine gravel. Between Hubberholme and the parish boundary the river bed is covered by different sizes of cobbles and boulders which have become islands in certain areas.

**Bats**

Seventeen bat species are resident in the UK with eight species regularly recorded in the Yorkshire Dales. All bats in the UK are nocturnal and insectivorous and require an abundance of insect prey to satisfy their large appetites. The Pipistrelle bat, for example, reportedly catches over 3,000 insects each night.

The Yorkshire Dales National Park provides a range of important roosting environments for a number of bat species. These habitats include old buildings, caves and old trees. The river habitat of the Yorkshire Dales also supports large numbers of bats, particularly within the small gaps and cracks of stone bridges. The Soprano and common Pipistrelle bats are the most likely species to be encountered in the Yorkshire Dales and may be found roosting and feeding in a wide range of habitats particularly where there is some woodland cover.

**Buckden parish Biodiversity Action Plan species list**

**Amphibians**
Common Toad Bufo bufo

**Birds**
Sky Lark Alauda arvensis
Tree Pipit Anthus trivialis - would benefit from scrub planting for black grouse
Lesser Redpoll Carduelis cabaret - would benefit from scrub planting for black grouse
Common Linnet Carduelis cannabina - would benefit from scrub planting for black grouse
Common Cuckoo Cuculus canorus
Reed Bunting Emberiza schoeniclus
Red Grouse Lagopus lagopus
Common Grasshopper Warbler Locustella naevia – probably present
Yellow Wagtail Motacilla flava - At least one pair was still present up until at least 2006. No further records until 2013 one at least one male was present (casual record as oppose to formal survey work). With late cut meadows hay meadows in the project area there is certainly potential for this species to breed.
Spotted Flycatcher Muscicapa striata
House Sparrow Passer domesticus
Grey Partridge Perdix perdix – probabaly present
Common Bullfinch Pyrrhula pyrrhula
Common Starling Sturnus vulgaris
Song Thrush Turdus philomelos
Northern Lapwing Vanellus vanellus
Hedge Accentor Prunella modularis
European Nightjar Caprimulgus europaeus – reported to be present in Greenfield

**Butterflies**
Small Heath Coenonympha pamphilus – likely to be widespread

**Crustaceans**
White-clawed crayfish Austropotamobius pallipes probably but need to check.

**Mammals**
West European Hedgehog Erinaceus europaeus
Brown Hare Lepus europaeus
Otter Lutra lutra

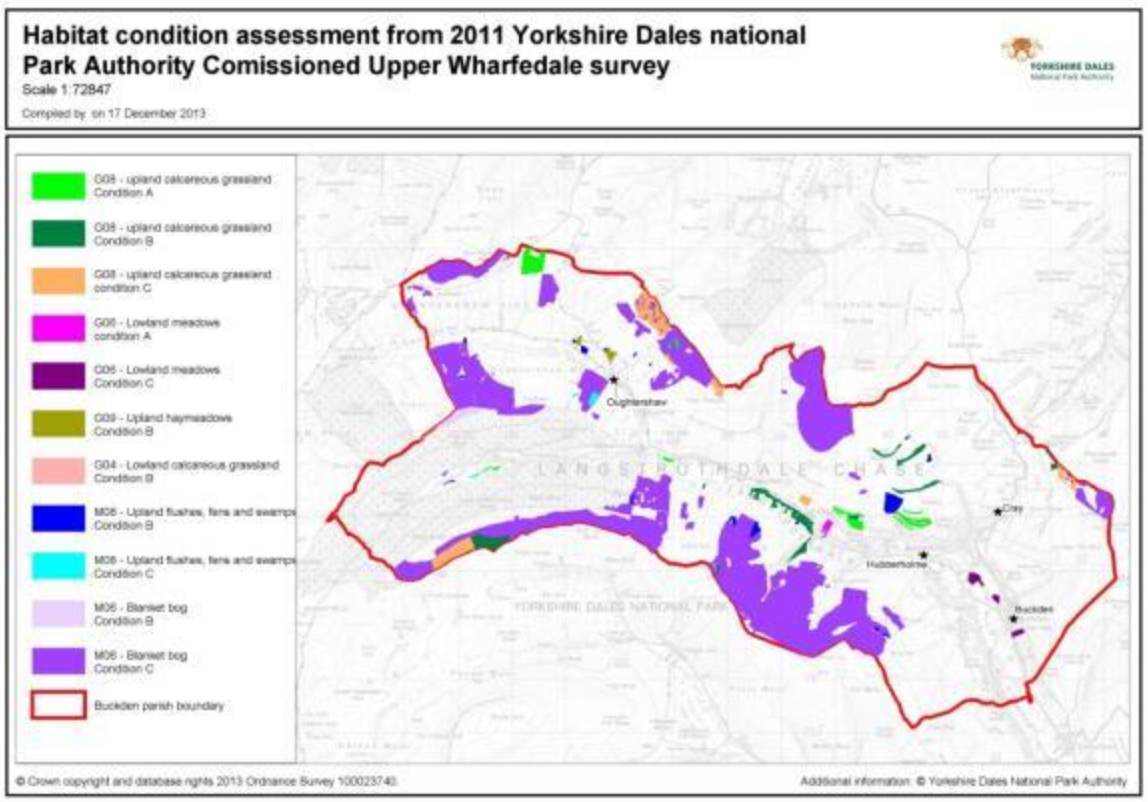
**Moths**
There is probabaly limited moth trapping in the project area so the list of species present may not be definitive.

**Grouped Species Action Plan for Reptiles**
I'm not aware of any definitive records but Common Lizard Zootoca vivipara is likely to be present, Slow Worm Anguis fragilis and Adder Vipera berus possibly present.

**Spiders**
money spider Semljicola caliginosus - Historic records on Buckden Pike. Survey work undertaken this season and am awaiting results.

**Fish**
Brown/Sea trout Salmo trutta

## Appendix III – Yorkshire Dales National Park Authority habitat survey 2011




In 2011 a condition assessment of BAP habitats within the upper Wharfedale parishes of the Yorkshire Dales National Park was commissioned by the National Park Authority and completed by the consultants Thomson Ecology. The condition assessment targeted 5382 hectares (subject to landowner consent) in the parishes of Arncliffe, Bordley, Buckden, Conistone with Kilnsey, Halton Gill, Hawkswick, Starbotton with Kettlewell and Litton. The chosen sites were non-designated and were areas of BAP habitat identified from previous surveys.

Of the 85 landowners that were contacted 45 (53%) allowed access on to the land to survey. The assessment commenced in June 2011 and was completed in November 2011. In total 2503 ha of BAP habitat was assessed (see Figure 1) ranging in size from small areas (<0.1ha) within a management unit to large tracts of moorland >260ha.

The condition assessment methodology was based upon that developed for the Environmental Stewardship scheme. The consultants were provided with a map of

the area of habitat. The basic format of the survey required walking a ‘W’ transect and stopping 10-20 times to record a series of attributes.

**Non-SSSI G02 Semi-improved grassland, G06 Lowland meadows (BAP habitat), G09 Upland meadows (BAP habitat) – Field FORM**

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____
**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

| **Meadow (M) or Pasture (P)** | |
|---|---|

| **INDICATOR SPECIES (✓ or X)** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Freq* | **G06, G09 meadows & pastures** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Freq* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **G02 – Semi-improved grassland** | | | | | | | | | | | | Sneezewort | | | | | | | | | | | |
| Buttercup, bulbous | | | | | | | | | | | | Tormentil | | | | | | | | | | | |
| Buttercup, meadow | | | | | | | | | | | | Valerian, Marsh | | | | | | | | | | | |
| Cat's-ear, common | | | | | | | | | | | | Vetchling, meadow | | | | | | | | | | | |
| Clover, red | | | | | | | | | | | | Yellow rattle | | | | | | | | | | | |
| Cuckooflower | | | | | | | | | | | | **G06 only** | | | | | | | | | | | |
| Hawkbit, autumn | | | | | | | | | | | | Agrimony | | | | | | | | | | | |
| Medick, black | | | | | | | | | | | | Bedstraw, Fen | | | | | | | | | | | |
| Plantain, ribwort | | | | | | | | | | | | Bedstraw, Lady's | | | | | | | | | | | |
| Selfheal | | | | | | | | | | | | Bedstraw, marsh | | | | | | | | | | | |
| Sorrel, common | | | | | | | | | | | | Betony | | | | | | | | | | | |
| Speedwell, germander | | | | | | | | | | | | Bird's-foot-trefoil, greater | | | | | | | | | | | |
| Trefoil, lesser | | | | | | | | | | | | Bitter-vetch | | | | | | | | | | | |
| Wood-rush, field | | | | | | | | | | | | Burnet, salad | | | | | | | | | | | |
| Yarrow | | | | | | | | | | | | Cowslip | | | | | | | | | | | |
| **G06, G09 meadows & pastures** | | | | | | | | | | | | Dropwort | | | | | | | | | | | |
| Anemone, wood | | | | | | | | | | | | Goat's-beard | | | | | | | | | | | |
| Avens, water | | | | | | | | | | | | Meadow-rue, common | | | | | | | | | | | |
| Bird's-foot-trefoil | | | | | | | | | | | | Milkworts | | | | | | | | | | | |
| Bistort, common | | | | | | | | | | | | Mint, water | | | | | | | | | | | |
| Bugle | | | | | | | | | | | | Ox-eye daisy | | | | | | | | | | | |
| **Burnet, great** | | | | | | | | | | | | Pepper-saxifrage | | | | | | | | | | | |
| Burnet saxifrage | | | | | | | | | | | | Scabious, field | | | | | | | | | | | |
| **Eyebrights** | | | | | | | | | | | | Water-dropwort, | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | narrow-leaved | | | | | | | | | | | |
| **Hawkbit, autumn** | | | | | | | | | | | **G09 only** | | | | | | | | | | | |
| **Hawkbit, lesser** | | | | | | | | | | | Crane's-bill, wood | | | | | | | | | | | |
| **Hawkbit, rough** | | | | | | | | | | | Globeflower | | | | | | | | | | | |
| Knapweed, Black | | | | | | | | | | | Thistle, Melancholy | | | | | | | | | | | |
| **Lady's-mantles** | | | | | | | | | | | **GRASSES** | | | | | | | | | | | |
| | | | | | | | | | | | Bent, common | | | | | | | | | | | |
| | | | | | | | | | | | Bent, creeping | | | | | | | | | | | |
| | | | | | | | | | | | Brome,soft | | | | | | | | | | | |
| Marsh marigold | | | | | | | | | | | Cock's foot | | | | | | | | | | | |
| Meadowsweet | | | | | | | | | | | Crested Dog's-tail | | | | | | | | | | | |
| Orchids – list species below | | | | | | | | | | | Fescue, meadow | | | | | | | | | | | |
| | | | | | | | | | | | Fescue, red | | | | | | | | | | | |
| | | | | | | | | | | | Foxtail, meadow | | | | | | | | | | | |
| **Pignut** | | | | | | | | | | | Meadow-grass, rough-stalked | | | | | | | | | | | |
| Ragged Robin | | | | | | | | | | | Oat-grass, false | | | | | | | | | | | |
| Saw-wort | | | | | | | | | | | Oat-grass, yellow | | | | | | | | | | | |
| Scabious, Devil's bit | | | | | | | | | | | Sweet vernal grass | | | | | | | | | | | |
| Small blue-green sedges (glaucous, common, carnation) – list species below | | | | | | | | | | | Timothy | | | | | | | | | | | |
| | | | | | | | | | | | Tufted hair-grass | | | | | | | | | | | |
| | | | | | | | | | | | Yorkshire Fog | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

| **CONDITION ATTRIBUTES** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Number of grass species (n) | | | | | | | | | | | |
| Cover of rye-grasses & white clover (% cover) | | | | | | | | | | | |
| Number of species, including grasses (n) | | | | | | | | | | | |
| Cover of wildflowers & sedges (excluding white clover, creeping buttercup &undesirable species (% | | | | | | | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cover) | | | | | | | | | | | |
| Combined cover of non-jointed rushes (soft, hard, compact) – assess area visible from stop (% cover) | | | | | | | | | | | |
| Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover of bare ground – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover of invasive trees and shrubs – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover of indicators of waterlogging (large sedges, rushes & reeds) – assess area visible from stop (% cover | | | | | | | | | | | |

| **ADDITIONAL INDICATORS OF SUCCESS ATTRIBUTES** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sward height (cm) | | | | | | | | | | | |

## Non-SSSI M06 Blanket Bog (BAP habitat) – Field FORM

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____

**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | Freq* | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Peat depth (m)** | | | | | | | | | | | | | | | | | | | | | | |
| **Dwarf shrub (record species below) (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Bilberry (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Bell Heather (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Cowberry (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Cranberry (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Cross-lvd Heath (% cover)%** | | | | | | | | | | | | | | | | | | | | | | |
| **Crowberry (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Gorse, Western (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Ling (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Pioneer ling in a burning rotation (excluding sensitive and other no-burn areas) (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Mature/Degenerate heather in a burning rotation (excluding sensitive and other no-burn areas) (% cover)** | | | | | | | | | | | | | | | | | | | | | | |
| **Cottongrasses (list species below (%** | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **cover)** | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| **Deergrass (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| **Moor-grass, Purple (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| **Sphagnum (list species below) (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| **Damaged Sphagnum (dead/bleached/crushed/broken/pulled) (%)** | | | | | | | | | | | | | | | | | | | | | |
| **Grips present – assess area visible from stop (✓ or X)** | | | | | | | | | | | | | | | | | | | | | |
| **Grasses,sedges & rushes (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| **Flowering cottongrass plants (if assessment in the spring) (✓ or X)** | | | | | | | | | | | | | | | | | | | | | |
| **Flowering heather plants (if assessment in the summer & autumn) (✓ or X)** | | | | | | | | | | | | | | | | | | | | | |
| **Proportion of heather shoots grazed (Feb-Apr) (%)** | | | | | | | | | | | | | | | | | | | | | |
| **Burning of sensitive areas present - assess area visible from stop (✓ or X)** | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Bare ground - assess area visible from stop (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| **Cover of injurious weeds & non-native invasive species – assess area visible from stop (% cover)** | | | | | | | | | | | | | | | | | | | | | |
| **Cover of trees & scrub – assess area visible from stop (% cover)** | | | | | | | | | | | | | | | | | | | | | |

***R = 1-2 stops, O = 3-4 stops, F = 5 or more stops out of 10**

## Non-SSSI M06 Blanket Bog (BAP habitat) – Condition Summary

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____

**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

| **Grips (✓ or X)** | |
|---|---|

| **Criteria** | **Result** | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Frequency of bog mosses | F | |
| 1. Amount of damaged Sphagnum | ≤10% | |
| 2. Cover of dwarf shrubs (except where Sphagnum or other wetland indicators dominant) | ≥20≤75% | |
| 2. Frequency of dwarf shrubs | 2 species = F | |
| 3. flowering cottongrasses (spring)<br>Or, flowering heather plants (autumn) | F<br>F | |
| 4. Cover of grasses, sedges, rushes | <75% | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria = C)** | |
|---|---|

**Non-SSSI G04 Lowland calcareous grassland (BAP habitat), G08 Upland calcareous grassland (BAP habitat) – Field FORM**

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____
**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

| **GRASSES (✓ or X)** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Freq* | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Freq* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bent, common | | | | | | | | | | | | **G04 lowland calc only (cont.)** | | | | | | | | | | | | |
| Blue moor-grass | | | | | | | | | | | | Milkworts | | | | | | | | | | | |
| Brome, upright | | | | | | | | | | | | Orchids (list species below | | | | | | | | | | | |
| Cock's foot | | | | | | | | | | | | | | | | | | | | | | | |
| Crested Dog's-tail | | | | | | | | | | | | | | | | | | | | | | | |
| Crested Hair-grass | | | | | | | | | | | | | | | | | | | | | | | |
| Fescue, red | | | | | | | | | | | | Ox-eye daisy | | | | | | | | | | | |
| Fescue, sheep's | | | | | | | | | | | | Plantain, hoary | | | | | | | | | | | |
| Oat-grass, hairy | | | | | | | | | | | | Purple milk-vetch | | | | | | | | | | | |
| Oat-grass, meadow | | | | | | | | | | | | Restharrow | | | | | | | | | | | |
| Oat-grass, yellow | | | | | | | | | | | | Saw-wort | | | | | | | | | | | |
| Quaking-grass | | | | | | | | | | | | Scabious, field | | | | | | | | | | | |
| Sweet vernal grass | | | | | | | | | | | | Sandwort, thyme-leaved | | | | | | | | | | | |
| Tor-grass | | | | | | | | | | | | St. John's-wort, beautiful | | | | | | | | | | | |
| **INDICATOR SPECIES (✓ or X)** | | | | | | | | | | | | Thistle, stemless | | | | | | | | | | | |
| **G04, G08 calcareous grassland** | | | | | | | | | | | | Vetch, kidney | | | | | | | | | | | |
| Bird's-foot-trefoil | | | | | | | | | | | | Violet, hairy | | | | | | | | | | | |
| Burnet, salad | | | | | | | | | | | | Yellow-wort | | | | | | | | | | | |
| Dropwort | | | | | | | | | | | | **G08 only upland calc only** | | | | | | | | | | | |
| Eyebrights | | | | | | | | | | | | Bistort, alpine | | | | | | | | | | | |
| Fairy flax | | | | | | | | | | | | Butterwort, common | | | | | | | | | | | |
| Gentians | | | | | | | | | | | | Clubmoss, lesser | | | | | | | | | | | |
| Harebell | | | | | | | | | | | | Grass of Parnassus | | | | | | | | | | | |
| Hawkbit, rough | | | | | | | | | | | | Mountain everlasting | | | | | | | | | | | |
| Hawkweed, mouse-ear | | | | | | | | | | | | Saxifrage, mossy | | | | | | | | | | | |
| Rock-rose, common | | | | | | | | | | | | Saxifrage, yellow | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rock-rose, hoary | | | | | | | | | | | Whitlowgrass, hoary | | | | | | | | | | | |
| Scabious, Devil's bit | | | | | | | | | | | Small sedges (spring, flea glaucous, carnation) – list species below | | | | | | | | | | | |
| Scabious, small | | | | | | | | | | | | | | | | | | | | | | |
| Squinancywort | | | | | | | | | | | | | | | | | | | | | | |
| Thistle, carline | | | | | | | | | | | | | | | | | | | | | | |
| Thyme, wild | | | | | | | | | | | **OTHER NOTABLE SPECIES** | | | | | | | | | | | |
| Vetch, horseshoe | | | | | | | | | | | | | | | | | | | | | | |
| **G04 lowland calc only** | | | | | | | | | | | | | | | | | | | | | | |
| Basil, wild | | | | | | | | | | | | | | | | | | | | | | |
| Bedstraw, lady's | | | | | | | | | | | | | | | | | | | | | | |
| Bellflower, clustered | | | | | | | | | | | | | | | | | | | | | | |
| Betony | | | | | | | | | | | | | | | | | | | | | | |
| Cowslip | | | | | | | | | | | | | | | | | | | | | | |
| Crane's-bill, Bloody | | | | | | | | | | | | | | | | | | | | | | |
| Hawkbit, Lesser | | | | | | | | | | | | | | | | | | | | | | |
| Knapweed, greater | | | | | | | | | | | | | | | | | | | | | | |
| Marjoram | | | | | | | | | | | | | | | | | | | | | | |

***R = 1-2 stops, O = 3-4 stops, F = 5 or more stops out of 10**

| **CONDITION ATTRIBUTES** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cover of rye-grasses & white clover (% cover) | | | | | | | | | | | |
| Number of species, including grasses (n) | | | | | | | | | | | |
| Cover of wildflowers & sedges (excluding white clover, creeping buttercup &undesirable species (% cover) | | | | | | | | | | | |
| Combined cover of non-jointed rushes (soft, hard, compact) – assess area visible from stop (% cover) | | | | | | | | | | | |
| Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort and common nettle and false oat-grass) – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover of bare ground – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover of invasive trees and shrubs – assess area visible from stop (% cover) | | | | | | | | | | | |
| Cover if herbs indicative of nutrient enrichment (daisy & creeping buttercup) (% cover) | | | | | | | | | | | |

| **ADDITIONAL INDICATORS OF SUCCESS ATTRIBUTES** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sward height (cm) | | | | | | | | | | | |

## Non-SSSI G04 Lowland calcareous grassland (BAP habitat), G08 Upland calcareous grassland (BAP habitat) – Condition Summary

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____

**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

**G04**

| **Criteria** | **Result** | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort and common nettle) | <5% | |
| 2. Cover of wildflowers & sedges (excluding white clover, creeping buttercup & undesirable species) | >30% | |
| 3. Cover of bare ground | <10% | |
| 4.Cover of invasive trees and shrubs | <5% | |
| 5. At least 2 indicator species Frequent and 3 Occasional | ✓ | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria or criteria 5. = C)** | |
|---|---|

**G08**

| **Criteria** | **Result** | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Cover of bare ground | <10% | |
| 2. Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle & false oat-grass) | <10% | |
| 3. Cover of wildflowers & sedges (excluding white clover, creeping buttercup & undesirable species) | >20% | |
| 4.Cover of herbs indicative of nutrient enrichment (daisy & creeping buttercup) | <25% | |
| 5. At least 1 indicator species Frequent and 3 Occasional | ✓ | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria or criteria 5. = C)** | |
|---|---|

## Non-SSSI G02 Semi-improved grassland, G06 Lowland meadows (BAP habitat), G09 Upland meadows (BAP habitat) – Condition Summary

**Unit Name & Number**_____ **Parcel number**_____ **File Number**_____

**Land Manager Name**_____ **Date of visit**_____**Surveyor**_____

**G02**

| **Criteria** | **Result** | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) | <5% | |
| 2. Cover of wildflowers & sedges (excluding white clover, creeping buttercup &undesirable species) | <10% | |
| 3. Cover of bare ground – assess area visible from stop (% cover) | <10% | |
| 4. Cover of invasive trees and shrubs<br>Cover of indicators of waterlogging (large sedges, rushes & reeds) | <5%<br><30% | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria = C)** | |
|---|---|

**G06**

| **Criteria** | **Result** | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) | <5% | |
| 2. Cover of wildflowers & sedges (excluding white clover, creeping buttercup &undesirable species) | >20% | |
| 3. Cover of bare ground | <10% | |
| 4. Cover of invasive trees and shrubs<br>Cover of indicators of waterlogging (large sedges, rushes & reeds) | <5%<br><30% | |
| 5. At least 2 indicator species Frequent and 2 Occasional | ✓ | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria or criteria 5. = C)** | |
|---|---|

**G09**

| Criteria | Result | |
|---|---|---|
| | **Required** | **Actual** |
| 1. Combined cover of undesirable species (creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, marsh ragwort, cow parsley and bracken) | <10% | |
| 2. Cover of wildflowers & sedges (excluding white clover, creeping buttercup &undesirable species) | >30% | |
| 3. Cover of bare ground | <10% | |
| 4. Combined cover of non-jointed rushes (soft, hard, compact) | <50% | |
| 5. At least 2 indicator species Frequent and 2 Occasional | ✓ | |

| **Condition (If fails 0 criteria = A, 1 criteria = B, 2 or more criteria or criteria 5. = C)** | |
|---|---|

**Appendix IV - Farm Economy and Perception Survey**

Thank you for agreeing to take part in this survey. The objective of this survey is to provide a snapshot of farming within Buckden Parish, Upper Wharfedale. It will provide a view on the state of farm incomes and will capture your perceptions of the role you play for the farm business, the community, the environment and the general public.

The results of this survey will be combined with an assessment of the 2012/13 Farm Business Survey to give a broad economic picture for Buckden Parish. A more detailed farm business survey will be undertaken by a sample group of farmers within the pilot area in order to provide a more accurate local picture of the farm economy. If you would like to take part in this more detailed survey, please contact John Akrigg or Helen Keep.

The survey is split into three sections – A: Farm management
B: Farm business
C: Farmer perceptions

**Section A: Farm management**

**1. Please tell us a little bit about your farm**

Approximate size of farm……acres, or ……..hectares

**Land tenure:**

Main farm ☐ owner occupier ☐ tenant

Other land ☐ owner occupier ☐ tenant

Type of hill land ☐ common land ☐ private open moorland

☐ private enclosed moorland

**2. Family & labour force:**

How long has your family been farming the home farm? ……..

How old are you?

☐ 20 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 65 ☐ over 65

How many workers including yourself are there on the farm?

| | Family | Change since 2000 | Non family | Change since 2000 |
|---|---|---|---|---|
| Full time | | | | |
| Part time | | | | |
| Seasonal | | | | |

| | | | | |
|---|---|---|---|---|
| Casual | | | | |

How many people living in the household work elsewhere?

| | |
|---|---|
| Full time | |
| Part time | |
| Seasonal | |
| Casual | |

There is an old tradition that farmers never leave the land until they die, go broke or retire. Have you considered who will take on the management of the farm when you retire – please explain? (e.g. your children, share farming, contract farming, renting farm out, sale of farm etc.)

What do you consider to be the main issues with regard to succession planning and enabling new entrants a foothold on the hill farming ladder?

When do you expect to retire?

☐ within 5 years ☐ in 5 – 10 years time ☐ in 10 – 20 years time ☐ in more than 20 years time.

The future of hill farming is dependent on new entrants/ farm succession to remain dynamic
and innovative. Please rate your level of agreement with the following statements and tick the
relevant box.

| Activity | Strongly agree | Somewhat agree | Neutral | Somewhat disagree | Strongly disagree |
|---|---|---|---|---|---|
| There are good opportunities for young people to take up hill farming | | | | | |
| There is no future for young people in hill farming | | | | | |
| I would discourage my children from taking over the farm from me | | | | | |
| There are young people who want to take up hill farming | | | | | |

What barriers do you think there are for new entrants to hill farming? Eg short term FBTs, farm economics, etc.

| |
|---|
| |

**2. Time management**

Farming is typically labour intensive with traditional upland farming perceived to be more labour intensive than other types of farming. Please could you estimate across the year how many days you will spend on the following:

| | |
|---|---|
| Boundary works – walling, fencing | |
| Pest control – rabbits & moles | |
| Weed control | |
| Hay making | |
| Silage making | |
| Farm infrastructure maintenance (buildings) | |
| Shearing | |
| Dipping (or other forms of parasite control) | |
| Rush control | |
| Woodland management | |
| Stock checks | |
| Business planning | |
| Financial accounts | |
| Other – please list: | |

**3. Livestock**

| Type of livestock | Number | Breed | Approx change in number over the past 10 years (increase or decrease) |
|---|---|---|---|
| Hill flock 1 | | | |
| Hill flock 2 | | | |
| Other sheep | | | |

| | | | |
|---|---|---|---|
| Dairy cows | | | |
| Suckler cows | | | |
| Beef cattle | | | |
| Other stock (type) | | | |

Why have you increased or decreased your livestock numbers over the past 10 years? (eg livestock prices / market, agri-env scheme requirements),

……
……
……
……
……

Are you intending to alter your livestock numbers and/or type/breed in the next 10 years?
Y N

| Type of change | Breed change (if yes what breed & why) | Number change (higher or lower approx. no. & reasons for change) |
|---|---|---|
| Sheep | | |
| Beef cattle | | |
| Suckler cows | | |
| Dairy | | |

How do you sell your stock (in % of total no's)?

| **Cattle** | breeding | store | finished |
|---|---|---|---|
| Auction mart | | | |

| **Sheep** | breeding | store | finished |
|---|---|---|---|
| Auction mart | | | |

| | | | | |
|---|---|---|---|---|
| Independent agent | | | | |
| Marketing group | | | | |
| Direct to processor | | | | |
| Retail | | | | |
| Other | | | | |

| | | | | |
|---|---|---|---|---|
| Independent agent | | | | |
| Marketing group | | | | |
| Direct to processor | | | | |
| Retail | | | | |
| Other | | | | |

Are you part of a farm assurance scheme? Y N
If yes, please state which one.
……

Sheep Management

| Is the sheep flock: | |
|---|---|
| Hefted with unfenced boundaries between hefts | % |
| Hefted with fenced boundaries between hefts | % |
| There is a hefted area with the farm but it's not used | |
| If have hefted sheep, how often are they actively raked? | |

| | | |
|---|---|---|
| Has your sheep grazing management changed in the last 10 years? | Y / N | |

If so, please explain (include any drivers for change eg agri-environment scheme management)
……
……
……
……

How do you manage external parasites in the flock?

| | frequency (times/yr) |
|---|---|
| Dip | |
| Pour on | |
| Injection | |
| Other | |

Has this changed in the last 10 years? Y / N
If so, why
……
……
……
……

Do you off winter any of your animals elsewhere?
Y / N

If yes, then why?
.....
How far
away?.....
.
Is it a problem?
……

| | | |
|---|---|---|
| Do you house any stock at any time of the year? | Y / N | |

If yes, how long, what system?

| Stock | When, how long | What system |
|---|---|---|
| | | |
| | | |
| | | |

How has your cattle management changed in the last 10 years?
(e.g. feeding, housing, away-wintering, breed change)

| How? | Reason |
|---|---|
| | |
| | |
| | |

**4. Land management**

| | |
|---|---|
| How often do you soil test for pH and nutrients? | |
| How often do you spread lime? | |

Has the frequency changed in the last 10 years – please describe?
……
……
……
……

Is the farm a certified organic farm? Y N

Has your use of fertiliser and manure changed in the last 10 years, if so how?

| | how | why |
|---|---|---|
| inorganic | | |
| industry by-products | | |

| | | |
|---|---|---|
| fym | | |
| slurry | | |
| legumes | | |

How do you expect this to change in the next 10 years?

| | how | why |
|---|---|---|
| inorganic | | |
| industry by-products | | |
| fym | | |
| slurry | | |
| legumes | | |

Please tell me about how you manage the whole farm:

| | Approx. total area | Inputs (fert & manures) | Grazing period | Livestock no & type (approx.) | Timing of hay cut |
|---|---|---|---|---|---|
| Meadows | | | | | |
| Inbye pastures | | | | | |
| Allotments | | | | | |
| Fell | | | | | |

In terms of your hay meadows, has there been a management change over the past 10 years?

| | % of total hay meadow area (Approx.) | Yes | No |
|---|---|---|---|
| Haylage rather than hay | | | |

| | | | |
|---|---|---|---|
| Big bales rather than small | | | |
| Cut at beginning of July | | | |
| Increased fert | | | |
| Added species rich seed | | | |
| No fertiliser | | | |
| Late cut | | | |

What has been the key driver of these changes to your forage management?
……
……
……
……
……

Is any feed bought in from outside the farm? If yes, what feed and why have you had to buy it in?
……
……
……
……
……

Does shepherding still happen on your farm? Y/N)?
If not why is this so (loss of skills, etc.)?

**Section B: Farm Business**

**5. Farm profitability**

How would you describe the profitability of the farm business over the:

| | last 5 years | next 5 years |
|---|---|---|
| Increasing strongly | | |
| Increasing steadily | | |
| Stable - high | | |

| | | |
|---|---|---|
| Stable - acceptable | | |
| Stable - low | | |
| Fluctuating | | |
| Declining slightly | | |
| Falling sharply | | |
| No profit | | |

In your opinion, what has had the greatest negative effect on the profitability of your farm business? Please rank in order (1 having the most negative effect)

| | |
|---|---|
| Overhead costs – vets, fuel, machinery repairs | |
| Fertiliser prices | |
| Livestock prices | |
| Weather | |
| Rent | |
| Loans | |
| Wages | |
| Other livestock costs – straw, AI, | |
| Feed costs | |
| Contractors | |
| Other (please list) | |

What proportion of your farm income is derived from the following:

| | % |
|---|---|
| Livestock sales | |
| Diversification enterprise | |
| Farm support payments (SPS) | |
| Agri-environment scheme payments | |
| Off farm income (e.g. spouse working off farm) | |
| Private income (e.g. pension, tax credit, savings etc.) | |

Upland reared beef and lamb – is it more marketable and therefore more profitable than lowland reared beef and lamb? Please explain fully your opinion including thoughts on unit cost of production, live weight gain, etc.

The following are activities that may help maintain the family farm. How likely are you to implement these activities on your farm over the next two years? Please tick all boxes that apply.

| Activity | I already do this | I probably will do this | I may, or may not, do this | I probably won't do this | I definitely won't do this |
|---|---|---|---|---|---|
| Maintain native breeds in hefted flocks | | | | | |
| Increase numbers of crossbred sheep | | | | | |
| Add value by direct marketing | | | | | |
| Cost reduction by decreasing external inputs (i.e. feed and fuel) | | | | | |
| Collaborate with neighbours to share equipment & tasks | | | | | |
| Adopt 'easy care' systems | | | | | |
| Go organic | | | | | |
| Farming with wildlife to get maximum environmental payments | | | | | |
| Develop a farm-based diversification business (e.g. campsite, B&B, contracting) | | | | | |
| Diversify outside farming | | | | | |
| Exit the industry | | | | | |
| Other activity, please state | | | | | |

Excluding repairs and maintenance, have any major capital improvements such as those listed below been carried out in the last 10 years?

| | **Investment** **£** | **Grant?** **£** | **Scheme?** | **future plans Please tick** |
|---|---|---|---|---|
| New fencing | | | | |
| Land drainage | | | | |
| Land /improvement | | | | |
| New agricultural buildings | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Conversion of old buildings for non-agricultural enterprises | | | | | |
| New buildings for non-agricultural enterprises | | | | | |
| Farm / forest roads | | | | | |
| Other (specify) | | | | | |
| Other (specify) | | | | | |

Is there anything restricting this future investment plan?
……
…….....
.....
……
……

Do you have a computer? Y N

Do you use the computer as part of managing the farm business – farm accounts, project planning, software for livestock management etc. Please give details
……
……
…….
……
……
……
……
Do you have good access to the internet? Y N

If yes, do you use it to claim for government entitlements – SPS, etc? Y N

If no, the government is moving towards a system where everything will be online (called Digital by Default) – applications for schemes, claims, contact with government departments, by 2016. Do you think you will be able to access the internet by then? Y N
If no please explain why .
……..
……
……

**6. Farm support**

How has the change from production-based subsidies to area based support affected your farm income?

☐ increased ☐ decreased ☐ not sure ☐ % change if known

Any comments?
…….
……
…….

How has the change from HFA to UELS affected your farm income?

☐ increased ☐ decreased ☐ not sure ☐ % change if known

Any comments?
…….
……
…….

The overall CAP budget is set to be reduced which will affect each member states Rural Development Plan budget. Pillar 1 payments are set to decrease further under the next CAP. Pillar 2 type payments will have to demonstrate greater value for money – for example agri-environment schemes, rural development schemes.

How do you think this will affect your farm? ……
……
……
……

Do you feel that there is sufficient financial support for upland farmers? Y N
If no please explain your thoughts on this.
……..
……
……
……

What systems/ mechanisms of support would help you manage your farm in a sustainable way and keep it viable? (short supply chain, premium on produce, local abbatoirs, etc)
……
……
……
……
……

Is your farm part of an agri-environment scheme? Please tick all that apply to your farm.

| | | | | | |
|---|---|---|---|---|---|
| | ELS only (incl UELS) | | Countryside Stewardship | | Other – please state: |
| | OELS | | ESA | | |
| | ELS & HLS | | SWES | | |
| | Woodland Grant Scheme | | Farm Woodland Premium Scheme | | None |

For how long have you received agri-environment scheme payments?

☐ less than 5 years ☐ between 5 – 10 years ☐ between 10 – 20 years ☐ over 20 years

Do you consider the agri-environment scheme payments a vital part of your farm business?

☐ yes ☐ no ☐ not particularly ☐ not sure

What are the strengths and weaknesses of the schemes you are in.
E.g. – payments are regular, flexible / inflexible management prescriptions., simple / difficult to follow or understand

| | Strengths | Weaknesses |
|---|---|---|
| ELS (only) | | |
| ELS/HLS | | |
| WGS | | |
| CSS | | |
| ESA | | |
| SWES | | |

| | | |
|---|---|---|
| FWPS | | |
| Other – please name | | |

If these agri environment scheme payments were to go/be reduced what would happen to your farming systems?

What changes would you have to make?

Thinking about the requirements of the agri-environment scheme(s) you are part of, do you feel that the scheme prescriptions are:

Reasonable? yes no not particularly not sure

Effective from a farming perspective? yes no not particularly not sure

Effective from a wildlife/environmental protection perspective? yes no not particularly not sure

Do you feel that you have sufficient knowledge about the environment to deliver the environmental benefits required under your agri-environment scheme and would you be prepared to participate in training days to help improve your knowledge base or improve others?

Are there any ‘environmental/wildlife-friendly’ measures you have been asked to undertake as part of your agreement that you didn’t want to do? Why?

What would you need to convince you to do them?

Would you like to see better integration between the general public and the farming industry? Y / N

If yes, how do you think this could be achieved?

Do you encourage the public onto your farm – for example through National Open Farm day? Y / N

What do you get out of this?

**Section C: Your perceptions of farming and the environment**

Farmer roles
These days hill farmers are expected to take on many roles. Which of the following roles do
you think are important for you and your farm? Please tick all boxes that apply.

| | Important | Not Important | Don’t know |
|---|---|---|---|
| Food produce | | | |
| Biodiversity conservation | | | |
| Landscape management | | | |
| Water supply and water quality management | | | |
| Renewable energy production | | | |
| Flood prevention | | | |

| | | | |
|---|---|---|---|
| Climate change management | | | |
| Sporting and recreation management | | | |
| Woodland/forestry management | | | |
| Other role – please state: | | | |

The Public's perceptions of farmers
Recent national research shows that farmers are highly valued by the public, both for their food production role and their care for the countryside.

Would you agree that this is the case in your area/ locally?
_ Yes _ No _ Unsure

| |
|---|
| |

What motivates you to farm in the way you have described earlier in the survey?
(eg. tradition always farmed this way and habitat restricts what we can do... or to make the farm economically viable we have to intensify certain parts of the farm)

| |
|---|
| |

Do you know what habitats and species of wildlife you have on your farm? Y N
If yes, please list them here:

| |
|---|
| |

If no, are you interested in knowing? Y N

Do you know how your farming techniques benefit these species and habitats? Y N
If yes, please explain

| |
|---|
| |

If no, would it help you in understanding your agri-environment scheme if you did know how your farming techniques benefited the species and habitats on your farm? Y N

| Comments: |
|---|

Apart from wildlife, what other public benefits do you think your farm and farming practices provide?

| Comments: |
|---|

Is there anything that could be done to increase the benefits your farm provides for society?

| Comments: |
|---|

What support would you need to achieve this?

| Comments: |
|---|

Landscapes that contain a significant proportion of farmland in a semi-natural condition, such as unimproved pastures and hay-meadows or traditional orchards have become known as High Nature Value (HNV) farmland. These are the types of farmland that harbour our most valued habitats and wildlife species, in the UK and across the EU. The landscape that you farm within is being termed as HNV farmland. Do you consider yourself to be a HNV farmer? Y N Maybe

| Please comment: |
|---|

What would you say are the main challenges of being a HNV farmer?

| |
|---|

What would you say are the main benefits of being a HNV farmer?

Do you think climate change presents a risk to your farm business in the future?
_ Yes _ No _ Unsure
If yes, please say how

To what extent do you think climate change is already having an impact on wildlife in the area?

Are these changes positive or negative?

How do you feel your land management could influence the impacts of climate change on wildlife?