From onerous responsibility to exciting opportunity: a feasibility study of the potential for commercially viable grazing of re-created heathland on The Stiperstones, South Shropshire

A report for Shropshire Hills AONB, English Nature, The Countryside Agency and Shropshire Wildlife Trust

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Summary

- The aim of the study was to consider the grazing regime needed to develop the conservation value of one existing heathland and three heathland restoration (following clearance of conifer plantations) sites on The Stiperstones, and to evaluate the economic viability of that grazing regime.

- We recommend the continuation of the current Hebridean sheep grazing, with half the breeding flock producing cross-bred lambs from a terminal sire for meat, the other half producing pure-bred lambs for flock replacements and pure-bred wethers (sold as hoggets) for meat.

- In addition to the sheep grazing, we recommend introduction of cattle grazing, using Welsh Black cattle, all of which would be bred pure.

- Two economic scenarios were considered, representing opposing extremes: in one a local Estate, which owns two of the sites and already grazes one, took on the grazing of all four sites; in the other an independent grazier, located outside the immediate locality, became responsible for managing the grazing regime, starting it as an entirely new operation.

- Determining the economic viability of the grazing scheme entailed consideration of species and breeds of grazing stock, the husbandry regime, stock health plans, investments of labour, equipment and capital, herd and flock gross margins, fixed costs and area payments accruing on the land.

- The enterprise gross margins were estimated to be £1,851 for the 76-ewe flock and £2,754 for the cattle herd, comprising 10 cows.

- The fixed costs and capital valuation for the operation when run by the Estate were estimated to be £7,308 and £34,296 respectively; the equivalents for an outside grazier, running the regimes with no existing complementary farm base, would be considerably greater at £12,754 and £45,067.

- The likely changes in area payments in three example years (2006, 2009 and 2012) were computed, and have been used to complete progressive annual budgets for both the Estate- and grazier-run operations. These budgets clearly show how the system's financial prospects would be primarily determined by the overall income generated by area payments. The fact that the Estate has already secured a significant share of these payments places it in a much better position from which to run the operation.

- The comparative budgets indicated that the Estate might generate sufficient profit to recover 99% of the annual costs of all its investment by 2012, by which time an outside grazier would only be able to recoup just 36% of his/her investment.

- Various options for marketing the products were evaluated and the best option in economic terms was found to be direct / retail selling of meat, although this would entail a greater effort and costs on the part of both the participating farmer business and the owners/managers of the sites. Comparative marketing budgets for cattle suggested the gross margin per head could range from £288 to £578, depending on marketing option; equivalent figures for sheep ranged from £20 to £43 (cross-bred lambs) and £35.50 to £72 (Hebridean hoggets). The higher values are dependent on developing a retail sales market and possibly a 'Stiperstones' brand.

- However, the overall operational budgets indicate that income from livestock production is likely to contribute a less significant proportion of total income compared to area payments. Even if a premium doubling the sale price of the meat could be achieved, it would only enable an outside grazier to lift the annual return on his/her investments for 2012 from 36% to 65%, still leaving profitably well short of sustainability.

- We conclude that the Estate is best placed to take on the grazing of The Stiperstones sites, but that the landowners should be aware that the Estate probably has its own business agenda. The sites are unlikely to attract and retain a new grazier unless he/she has already made most of the required investment in an established livestock operation that could complement the Stiperstones operation.

- The grazing regime described provides 'an exciting opportunity': re-introduction of grazing to sites last grazed over 30 years ago and managing others to bring them back into favourable condition. Well-managed grazing would contribute to achieving conservation objectives and could raise the profiles of The Stiperstones and the Shropshire Hills AONB, strengthen the sites' links to the local economy and provide added interest for visitors. In delivering all of this the recommended grazing system would, in large measure, achieve the genuine, joined-up sustainability that the conservation ethic should aspire to.

1.0 Rationale for Proposed Grazing Regime

The main objective for grazing on The Stiperstones National Nature Reserve and other sites within the SSSI is to facilitate the restoration and maintenance of mixed heathland vegetation mostly comprising predominantly dwarf shrub species such as heather, bilberry and cowberry. These heathland plants, particularly heather, can be damaged by overgrazing so stocking has to be limited to levels which avoid this, particularly in the autumn, when susceptibility to grazing damage is heightened.

1.1 Stock choice and limits on stocking rates

Cattle and sheep are primarily adapted to a grazing diet and are unlikely to maintain optimal health and productivity if they do not have sufficient access to herbaceous pasture, and probably will not sustain themselves fully on a diet composed entirely of dwarf shrub species. Once the vegetation is fully restored on these sections of The Stiperstones, acid grassland is expected to occupy less than 25% of their total area, a situation that will severely restrict the system's carrying capacity. These physiological limitations of the animals should provide an inherent safety device to help prevent overgrazing of the heather.

All of which means that the ecological and agronomic considerations are largely compatible and should combine to provide a robust raft of checks and controls that will help to regulate the stocking regime adequately. The numbers of animals proposed here have therefore been set at levels that are consistent with current experience of a) grazing established heath (Black Rhadley), b) grazing areas that are already going through the restoration process from conifer plantation (Gatten and The Nipstone) and c) the stocking guidelines from the existing ESA agreement at Black Rhadley, which at 1.5 ewes/ha equates to just under 1 cow for every 5ha.

Perhaps a greater management problem than overgrazing is the risk of under-stocking, which would fail to adequately contain colonisation by tree and shrub species such as birch, rowan and sallow. Limiting scrub encroachment is a key objective for the proposed grazing regimes and will, if it is to be achieved, require some livestock to be held on all compartments throughout the summer months. Failure to maintain browsing levels would allow tree and shrub species to consolidate new shoots with woody tissue that will continue to resist browsing after the animals have returned. Winter stocking alone cannot therefore be relied on to control scrub development, although it could still play an important role in diversifying the structure of rank grassland and breaking up bracken stands.

We think that it is important to have this mix of grazing species. Sheep are more selective feeders and actively seek out preferred areas for grazing within the grass/heath mosaic. They will normally gravitate to patches of grassland within the heathland mosaic and avoid stands of heather, a trait that suits them admirably to a number of these management objectives. They have narrow mouths that can also browse very efficiently, selectively stripping leaves and soft

shoots from sapling trees and shrubs up to a height of about 1m. The Hebridean is a breed of sheep that is particularly valued for its conservation grazing abilities and has already proved effective in assisting the restoration of heathland on The Stiperstones.

1.2 Cattle grazing

Cattle are more generalized feeders, ingesting different plant species and types of vegetation more in accordance with their overall availability. This usually ensures that a significant amount of the ranker, less palatable material is removed, creating opportunities for fresh vegetative growth and seed germination while at the same time enhancing the sward's structural diversity. Furthermore, cattle, having a heavier footfall, can physically break up thick mats of fallen dead material and plant litter, something that, elsewhere in England, has already been found to help control bracken dominance and promote recovery of heathland communities following removal of conifer plantation. They are often keen browsers, particularly when adult, with the ability to reach shoots up to heights of 2m, although the impact they have may be somewhat dispersed and inconsistent, allowing unfavoured areas to escape damage. However, they are usually more disposed to enter and utilize those areas that sheep customarily avoid, including mires and flushes, and dense heather stands. We feel confident that, starting with a small herd of specially selected suckler cows on Black Rhadley, a compartment that has already benefited from regular pulses of cattle grazing, it will be possible to integrate them to very good effect within the overall system.

Although, as yet, there is no direct experience of using cattle for heathland restoration on The Stiperstones, they have proved to be a very effective tool elsewhere in the UK, particularly in the recovery of limestone heath following conifer removal at Whitbarrow NNR, Cumbria. There, an assortment of native breeds is being successfully used to graze rank grassland, break up lying conifer brash, and stimulate establishment of heather and juniper. It is reasonable, therefore, to suppose that they will also prove helpful on The Stiperstones, where many similar issues need to be dealt with.

We consider the most appropriate cattle breed for The Stiperstones to be the Welsh Black, partly because it is already prevalent in the area and therefore likely to be easily available and readily marketed, but also because it has the key characteristics of hardiness and thriftiness that will be needed to ensure its survival and productive viability in the harsher grazing environments of The Stiperstones. It will be important to source the foundation stock from farms that depend on these same traits; advice on this should be sought from the breed society (see Appendix 1).

The main drawback of the Welsh Black is that it is too numerous to be defined as 'At Risk' and will not qualify for this grazing supplement if/when any of the project land is entered into the Higher Level Scheme (HLS) of the new Environmental

Stewardship Scheme (ESS). Nor is it eligible for the Traditional Breeds Meat Marketing Company, which specialises in rare breeds. We have, however been able to suggest alternative measures for enhancing the income that can be generated by this breed in our proposal.

We also expect other species of grazing livestock, such as the Exmoor Ponies that are already used on the Gatten, to have a part to play. Goats and even pigs could also be introduced in order to achieve specific management objectives, but probably only in particular parts of the site. These, however, will not be included in this feasibility study as they appear not to offer any advantages in sustaining the project economically and the costs of managing them will need to be justified and borne, directly or indirectly, by the conservation partners.

We therefore consider that the core of the grazing system will comprise a mixture of Hebridean sheep and Welsh Black cattle, which, between them, can deliver the specified ecological targets whilst, at the same time generating significant income from sales of animals or their products. We have designed an integrated grazing regime, covering all the specified management compartments, making recommendations for the initial number of animals, and production classes within the two livestock enterprises and indicating how and why these may vary as the system develops. We anticipate that the grazing regime will alter over time in the light of the vegetational changes that its various impacts produce.

1.3 Financial viability

Financial performance is the other key issue to be addressed in this proposal and income will need to be generated by the livestock enterprises in order to provide a sustainable living for the person or persons who undertake to manage the grazing on behalf of the project partners. A key new proposal of the plan, therefore, is the inclusion of rearing and finishing enterprises in which the sale of breeding and prime stock produced in conjunction with The Stiperstones helps generate sufficient income to pay for the grazing management.

Marrying economic output with ecological goals on The Stiperstones, where the land is so intrinsically unproductive, will be difficult, but we feel confident it can be achieved provided that areas of flexibility within the proposed system have been adequately signposted and that the constraints have been clearly defined. One such constraint will be the attitude of the grazier, whose commitment and co-operation will be essential ingredients for the plan's success. We emphasise that conservation grazing is a specialist environmental service that makes considerable demands on the persons who provide it. Keeping a conservation grazier motivated to deliver The Stiperstones' management priorities in the longer term will depend on continuing to adequately reward them for their efforts and expertise and compensate them for any financial sacrifices they may be called upon to make. We feel that there is scope for implementing this principle through the various area payment schemes that we have identified and quantified. We

should, however, also point out that not all graziers will be equal in this respect: the fact that the Linley Estate already has a large proportion of the Single Payment entitlements and their own ESA agreement means that they are much better placed to make a financial success of it than is any other candidate.

We stress that the grazing regime outlined here represents our best guess of what is needed, based on information provided by site managers and our own limited acquaintance with the grazing areas. It must therefore be subject to ongoing scrutiny and open to changes in the light of experience. The two main changes that it brings to the existing operation are a) the introduction of cattle and b) the move from barren to breeding ewes, both of which will need to be closely monitored. If the trends observed do not further the ecological objectives, or if the welfare of the livestock appears to be unduly compromised, the regime will have to be modified. Any such changes, however, will still have to be reconciled with the new economic imperative that accompanies the requirement for the system to support itself financially.

The greatest demands for this kind of flexibility stem from the introduction of cattle into The Stiperstones grazing mix, particularly on the areas of heath restoration where there is, as yet, almost no vegetation that would sustain such large animals and some uncertainty about how much more there will be once the heath has been restored. We are therefore of the opinion that cattle, particularly the younger ones (<2 years old), will struggle to maintain themselves if forced to graze these areas, unassisted. Even the more mature and self-sufficient beasts, such as dry cows in the 3-4 months prior to calving or older in-calf heifers, will probably need significant amounts of feed supplements if they are to remain in good physical condition. We feel, however, that this could still be a helpful option as a means of breaking up the dense mats of conifer litter that cover the south facing slopes of The Rock.

1.4 In-bye Land

The best way of maximising flexibility in implementing the grazing plan lies in ensuring that the grazier who is eventually recruited to run the system has sufficient land and buildings to accommodate any imbalances or temporary excesses of livestock from The Stiperstones. This ‘in-bye’ land, to offer a seemingly appropriate analogy with the hill farming sector, will need to be fertile, low lying, fairly level, well drained and secure. It should include sufficient area for producing most of the hay and silage needed to overwinter all animals that are not needed for winter grazing on The Stiperstones itself.

We have estimated the likely winter forage requirements (2286 small bales of hay, each weighing 20kg) on the assumption that the cattle will obtain very little sustenance from the heathland, at least initially, although the sheep flock may prove to be more self-supporting. This, we estimate, could be provided by around 10-12ha of reasonably productive meadowland, capable of yielding around 200

small bales per hectare. We accept that many farmers are keen to avoid the extra costs and labour associated with small hay bales and have made allowance, in our calculations, for 100 large bales to be made instead of 1000 small ones, applying the customary conversion factor of 10 small bales to one large one. An additional area of in-bye will also be needed as summer pasture, for grazing yearling store cattle, older steers as they come up to finishing and any ewes that have had twins, amounting to another 8ha or so. The in-bye will also be needed to accommodate adult stock at calving and lambing, which in April can be reasonably accomplished out of doors, as long as some buildings are available nearby for emergencies.

We consider the availability of this 20ha of additional land to be a crucial requirement for the success of the proposed grazing regime and the ability to provide it will be a key consideration in the eventual choice of grazier. We have viewed some nearby fields owned by the Linley Estate that seem eminently suitable and have already been earmarked for inclusion in The Stiperstones project by the Estate, should they secure an agreement to run the project. These fields provide a useful example of the kind of land that will be needed to complement and support the more challenging heathland grazing on The Stiperstones, thereby establishing a model of an integrated conservation grazing system that might be applied elsewhere.

For this approach to succeed, we feel it is important that the management of the in-bye land should be consistent with the rest of the system's ecological goals. The coherence of The Stiperstones brand would, we feel, be severely compromised if the in-bye land was to be subjected to high levels of chemical input and other highly interventionist measures geared towards maximising livestock output. Although the extra production gained might seem at first glance to be a cost effective strategy, it would undoubtedly impinge on the integrity of the system's image, constraining the potential for adding value to the produce coming from it.

Evaluating the economics of these two approaches for the management of the in-bye is beyond the scope of the present review, but we feel confident that it would make more sense to opt for a larger area of less intensively managed land than a smaller area that was higher yielding but risked sullying the image of The Stiperstones system because of dubious environmental credentials. There appear to us to be three factors that together mean that a more extensive approach to management would afford the most economically sustainable option for the acquisition and management of the in-bye land. These are:

a) the extra income from agri-environment and other area-based payments,
b) the savings made on the cost of applying fertilizers and sprays and re-seeding of worn-out pastures and
c) the added value that an untarnished conservation brand will more easily generate.

Unfortunately it is not possible to do a proper comparative budget that might confirm this until a specific area of land has become available for assessment.

1.5 Organic registration

We have made passing reference in this review to the possibility of certifying The Stiperstones system as an organic operation, something that is likely to have significant implications for both habitat management and livestock husbandry practices. Again this is not something that we have been able to assess fully, but it should be noted that all the land in the conservation grazing system would need to be organically registered, including the grazier's own fields. If the grazier continues to run their farm with chemicals it will be necessary to establish clear lines of separation between that unit and an organic Stiperstones' operation.

We strongly recommend seeking further specialist advice if this option is to be properly considered, some of which is available free of charge through the Defra-funded Organic Conversion Information Service (OCIS Tel.: 0117 922 7707; further information from www.defra.gov.uk/farm/organic/farmers/ocis.htm). This takes the form of up to 1.5 days of on-site guidance that would allow the information to be tailored to the specific situation on The Stiperstones. English Nature is already sponsoring development of a network of NNR managers interested in exploring the possibilities for managing their sites using organic principles. It would be important to make contact with this Organic NNRs group, who communicate mainly through an internet chatgroup, ORGANNRs which is managed under contract by one of us (contact: billgrayson@farmersweekly.net).

As a first step, we suggest using a management aid that has been developed to assist site managers determine the applicability of organic practices to achieving their site's nature conservation objectives. The Organic Decision Tree, compiled by the Elm Farm Research Centre (EFRC) on behalf of English Nature, leads the user step-wise through the key issues that will have to be fully resolved before the site manager can be confident of embarking on organic conversion without jeopardizing the conservation management objectives. The Organic Decision Tree is available from the EFRC website:
www.efrc.com/manage/authincludes/article_uploads/art035.pdf

2.0 Grazing Regimes

The grazing regimes for sheep and cattle are shown in diagrammatic form below (Figures 1 and 2), followed by a text description for each species.

2.1 Grazing Regime Description: Sheep

2.1.1 Sourcing foundation stock

We propose using the existing flock of 76 Hebridean ewes as the foundation flock for the new grazing regime, which will be based on 70 ewes. Twenty-five of the existing ewes lambed in April 2006 and this signalled the start of the new plan. The remaining 31 ewes will be lambed for the first time in the spring of 2007. Any increase in flock size thereafter will be achieved through recruitment of home-bred replacements so that the most suitable animals can be selected according to their ability to cope with the conditions presented by heathland restoration.

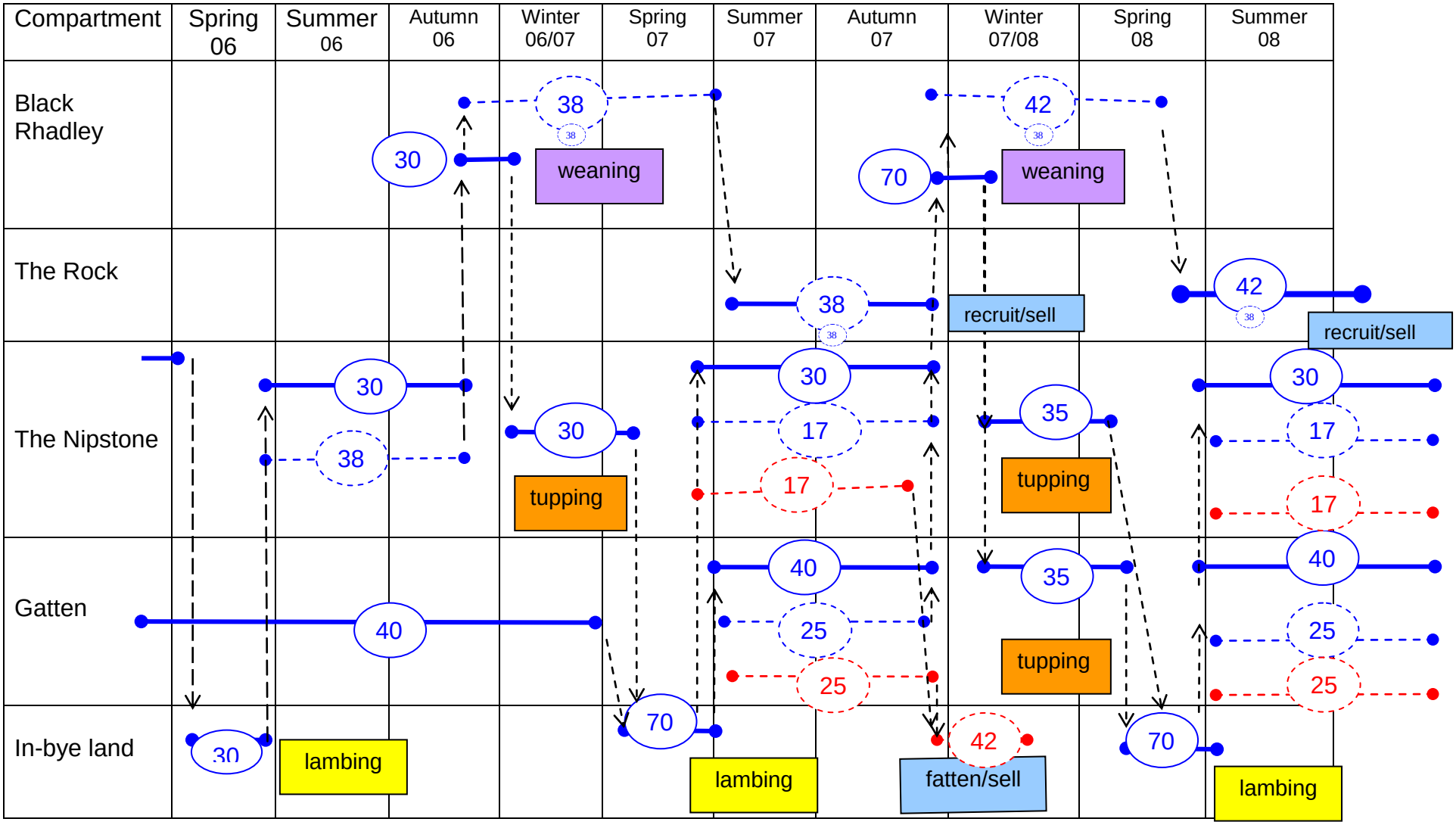
2.1.2 Breeding policy

We do not recommend flushing the ewes, i.e. putting them on an increased plane of nutrition, at tupping since this is likely to result in an excess of lambs being born, raising the welfare stakes for ewes struggling to rear twins on pastures of lower nutritional value.

We recommend that half of the 70 ewes are tupped with a Hebridean ram to produce the pure bred progeny from which all flock replacements will be selected. It is likely that the average ewe should survive in the flock for 5 years, so that on average 14 ewes will need to be culled (or drafted) and replaced each year. Assuming that each ewe rears 1.25 lambs there will be 42 pure Hebridean lambs each year giving a total of 21 females from which to select the best replacements or cater for any expansion in the size of the flock. As the existing flock is very even aged it is recommended that a proportion of the flock is drafted earlier to make way for younger cohorts, starting with 6 ewes in 2006 to bring the ewe flock down to the base of 70.

The other half of the ewes will be put to a terminal sire such as Suffolk, Texel or other large breed with good conformation. The lambs from these ewes will be larger, better shaped and should be capable of finishing before their first winter. These will be the enterprise's main source of income generation when sold through a specialist outlet. We recommend trialling a range breeds for crossing onto the Hebridean in order to find the

Figure 1. Stiperstones Grazing Scheme Design - Sheep



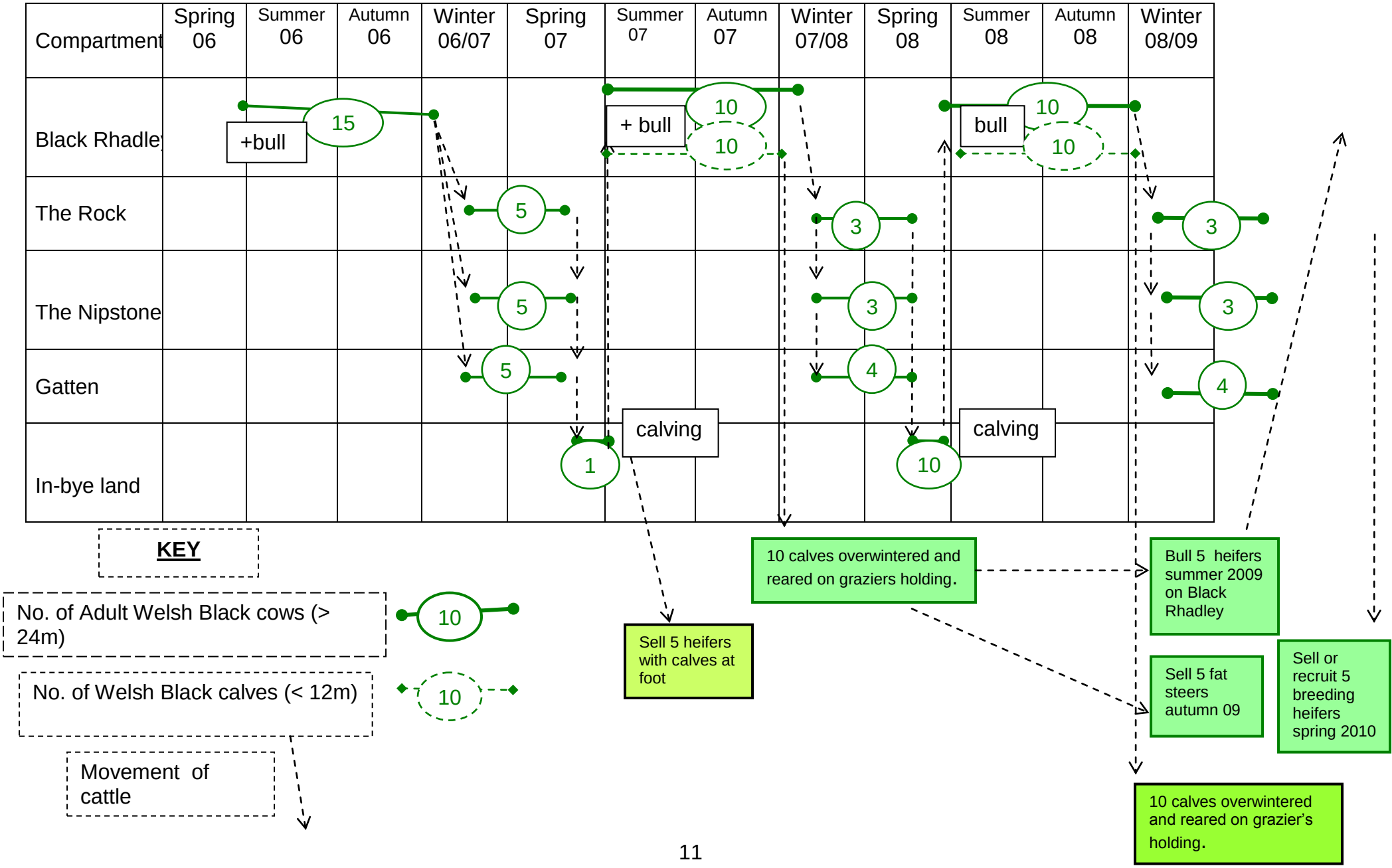
Number of Adult Hebridean ewes (>12 months)

No. of Hebridean lambs/hoggs (<12m)

No. of cross-bred lambs (<12m)

Movements between compartments

Figure 2. Stiperstones Grazing Scheme Design - Cattle



best fit; the Hebridean Sheep Society may also be able to advise. Experience of other breeders suggests that size need not be too much of a constraint, since the Hebridean ewe seems to have the ability to successfully deliver lambs out of even the largest meat breeds. However, first-time lambers should not be cross-bred to reduce the likelihood of difficulty during lambing.

2.1.3 Rearing lambs

The ewes will need to be moved to enclosed in-bye fields for lambing, somewhere where the grazier is able to supervise them adequately to ensure that initial losses are minimized. Once all the lambs are born, the couples can be split into two groups, 30 sets going to the Nipstone and 40 to the Gatten, a stocking level that follows neatly on from the current one. Any over-thin ewes (condition score <2) with twins at foot will either need to be kept back on better grazing or monitored very closely to ensure that they are able to cope when put out on the hill. The stocking rate will thus have increased on these two compartments compared with the current grazing regime by virtue of the lambs at foot. Careful monitoring will be needed to ensure that the grazing is working, with daily checks for at least the first 6 weeks of the summer to ensure that the site objectives and the welfare needs of the sheep are being met satisfactorily.

2.1.4 Weaning lambs

The lambs will need to be weaned from the ewes in August or September. This is best done by removing the ewes from the grazing compartment, leaving the lambs in a familiar situation, thus reducing some of the stress that they inevitably suffer. We believe that the crossbred lambs should be capable of finishing before Christmas if moved to in-bye land, supporting fairly mesotrophic neutral (i.e. moderately productive) grassland. The pure Hebrideans, however, will need much more time and could be kept ‘ticking over’ on Black Rhadley, where the extensive summer grazing with cattle should have provided an open mosaic of heath and acid grass that should supply much of their nutritional needs for most of the winter months, with strategic supplementary feeding. If they begin to fail to thrive as the winter progresses they can still be brought back to the in-bye land once the sale of cross-bred lambs has made room for them.

2.1.5 Tupping and overwintering the ewes

After weaning, the ewes need to be split into two equal sized groups, one for putting to the terminal ram, the other to go to a Hebridean. The latter should include any flock replacements being put to the ram for the first time. Both groups can continue to graze the Nipstone and Gatten compartments into the winter, simply introducing their respective rams at whatever stage is needed to produce lambs at the required time the following spring. If lambing is to be done outdoors, April is a fairly good compromise in terms of the need for better weather and the need to get the best of any early season grass on the enclosed fields. This would require the rams to be released in mid-November. The experience of lambing the small group of ewes tupped in the autumn of 2005 will be invaluable in

establishing the calendar for the flock. It is sensible to remove the rams after 5-6 weeks running with the ewes in order to prevent an overly protracted lambing season.

Any ewes that fail to lamb in the spring can be sold as culls or possibly retained for further fattening if a specialist market for mutton can be identified and developed. Feeding supplements to the pregnant ewes is likely to be necessary, especially in late winter as the flock approaches lambing time, a situation trialled this winter with the first group of in-lamb ewes. Feeding of supplements is a crucial consideration for safeguarding the welfare of the ewes and hopefully the regular movement of feeding sites will allow it to continue on a regular basis without compromising the management of the site. If necessary the flock could be moved to enclosed in-bye land for more intensive periods of feeding that would not threaten any management objectives.

2.1.6 Hoggs and shearlings

The pure Hebridean lambs will only grow slowly in their first winter, but in spring they should begin to respond and by May they ought to be ready to start grazing The Rock. This will be the most challenging compartment for grazing animals, since very little grass has yet developed, following clearance of the conifers. The situation will need to be closely monitored to ensure that the hoggs have adequate grazing for their needs and the option of providing supplements should be considered if they appear to be struggling at any stage. After shearing they will have become fully mature and efficient grazers and can be kept going on this compartment for as long as they are proving useful. From mid-summer, any wethers (male castrates) should begin to reach a marketable size and condition and can be sold accordingly, having identified suitable specialist markets for them in advance. The best of the gimmers (females) should be retained as breeding replacements, and join the ewe flock some weeks before tupping. Female shearlings that are surplus to requirements can either be sold as pedigree breeding stock at any of the rare breed sales (see Appendix 1) or fattened for meat along with the wethers.

2.2 Grazing Regime Description: Cattle

2.2.1 Sourcing stock

The Welsh Black cattle will have to be purchased to start the enterprise, ideally from a farm where they have been bred and reared to cope with upland heath conditions. This is likely to mean making a direct approach to potential suppliers, probably via the breed society (see Appendix 1), although the experimental husbandry farm at ADAS Pwllpeiran (see Appendix 1) may also be able to help since they successfully rear Welsh Blacks in a moorland setting.

We recommend buying 15 bulling heifers at 18-24 months of age. If acquired in the spring or early summer they can be run with a Welsh Black bull throughout the later part of the summer, which will set them to calve in

the following spring. The bull may be bought or hired in, again hopefully from a farm where he will have already encountered upland heath. We understand that Red Water disease is not endemic to The Stiperstones area, but should that prove not be the case it will be crucial to ensure that all incoming cattle have been born and reared on farms which also have the disease. This will have given the animals every chance to develop immunity to the disease in their crucial first few months of life, when the symptoms experienced are not life-threatening, as they usually are if the pathogen is not encountered until later in life.

2.2.2 Breeding policy

We recommend that all 15 heifers are mated in their first summer at The Stiperstones whilst grazing on Black Rhadley. This will ensure that they begin to add value as quickly as possible, as well as reducing the risk of any protracted delay causing them to get too fat and failing to hold in calf. Subsequently it is proposed that five of them be sold either as in-calf heifers prior to calving or with the calf at foot. This will generate some early cash flow into the enterprise whilst also allowing the best ten animals to be retained, having seen how well they cope with conditions in the first season.

Subsequently the remaining ten cows will rear their calves over the summer months, whilst running with a bull to continue the production cycle. Most of them should be able to keep this up for as many as 10 years. Replacement heifers will therefore need to be brought into the herd at regular intervals of, on average, one per year. It would be best to begin recruiting replacements well before all the original ten cows are worn out, making space for them by removing poorer performing individuals, wherever possible selling with calves at foot to get the best price.

If the bull is purchased he will need to be replaced every third year so that he does not mate with his own daughters. This change can be more easily arranged if a bull is hired in just for the times when he is needed.

2.2.3 Calving the cows and rearing the calves

The cows should be well supervised throughout calving, a requirement that can best be met by moving them back to the grazier's own in-bye land. Ear tags need to be fitted and bull calves castrated with rubber elastrator rings, two jobs that are best done soon after birth. We do not recommend keeping bull calves entire for their first few months of life, partly because of the welfare issues associated with surgical castration and partly because of the significant check to growth that it usually causes, something that is likely to impair grazing performance during the crucial post-weaning period. The cows and calves should all be moved onto Black Rhadley as a group as soon as there is sufficient growth of herbage in the grassy areas (average sward height 7-10 cm). Careful monitoring should be maintained throughout the first few weeks whilst they settle into their new environment, observing the body condition of the cows, the health of the calves and the state of the pasture. Although we have deliberately set a low stocking rate initially in order to minimize the risk of overgrazing and damage to dwarf

shrub communities, the vegetation still needs to be monitored closely to ensure that the objectives are being delivered. If the average sward height is reduced to less than 5cm the cattle are likely to suffer and should be moved to fresh pasture until the sward has recovered. Access to such lay-back land will need to be considered in conjunction with the grazier, especially in the first two years of the project, when the impact of the grazing regime is being determined. After a year or two of implementing the grazing regime, the number of animals can be more accurately determined in relation to the desired vegetational outcomes and seasonal / annual variation.

2.2.4 Weaning

Weaning should be undertaken at the end of the grazing period, November or December when the calves are 7-8 months old. As with the sheep, the newly separated calves are likely to experience less stress if they remain in a familiar environment after the cows have been removed to their winter grazing. This might be done on Black Rhadley, simply taking the cows to another parcel of land out of earshot and sight of the calves. Once things have settled down, the calves may be taken back to the grazier's own holding either to be housed or wintered outside. Alternatively, if the calves are to be in-wintered it might be better to move all the cattle into the building initially and then separate them by a gate or other partition through which they can see and touch each other. This is perhaps the least stressful way of weaning cattle and normally results in both cows and calves accepting the situation within a week or so.

The calves must receive adequate supplies of supplementary feed to ensure that their growth rate is not checked too severely following the loss of the dam's milk. They will need a nutritious diet comprising well made hay or silage supplemented with a good quality concentrate, containing 14-16% protein. In some respects over-wintering outside may be a better option, since it reduces risks of pneumonia. As a hardy breed, the Welsh Blacks will be well able to withstand the winter weather, provided they have access to natural shelter and a satisfactory diet. The land they are wintered on must be fairly well drained to minimize the severity of poaching. We advise against use of ring feeders for this same reason; small bales of hay are a better option. The ten calves will entirely clear up two or three bales every day with very little wastage if the hay is reasonable quality and spread widely across part of the field. And if the feeding area is relocated each day any damage to the sward will be quickly repaired when it starts to grow in spring.

2.2.5 Dry Cows

The cows will initially need to be moved to an area of poor quality pasture to help in 'drying off' the milk supply following weaning. We suggest that The Gatten would be suitable for this purpose being sufficiently far away to allow them to forget their calves if the latter have been left on Black Rhadley. They can remain on the Gatten for as long as they are doing a good job of eating down the ranker grasses. It would be possible to shut them onto Gatten Marsh for a while, although, at this time of year, this

would not help in browsing back the birch and willow scrub. Special attention should be paid to the condition of the cows at this time and any that are thin (condition score <2.5) or suddenly begin to lose condition should be removed to better grazing or given supplementary feed. Their dung should be checked for parasite eggs, and treatment provided if a problem is detected. Once they have recovered from the stress of weaning, the cows may be moved to other compartments as necessary, working back towards the southern end of The Stiperstones ridge. They may be provided with supplementary feed if the available herbage is insufficient to sustain them, again using small bales rather than a ring feeder to minimize long term damage. It may prove to be a positive restoration measure when the cows are fed in selected areas of the site since seeds falling from hay made later in the summer could help establish grasses and herbs, kick-starting the return to grazed habitat. However, hay should only be fed on the restoration areas, not on the SSSI.

2.2.6 Grazing the Yearling Cattle (12-18 months)

Having come through their first winter in good condition, the young store cattle will be capable of continuing the rest of their growth at grass. However, having carefully inspected the heathland available to them on The Stiperstones, we think it unlikely that they will be able to cope with such rough pasture at this age and therefore recommend that they spend their second summer grazing the more fertile in-bye land provided by the grazier at a density of around 2 or 3 per ha, although the precise stocking rate will depend on the productivity of the grassland they are on. They should be able to achieve a growth rate of around 0.5 kg/hd/day without any supplements so that by the start of their second winter they will weigh about 300-350 kg each.

2.2.7 Wintering the Store Cattle (18-24 months)

We think it would probably be best to keep the store cattle on the grazier's holding, either housed or out of doors, for their second winter. It might be useful, eventually, for some of these older stores to be out-wintered on the heath as part of the conservation grazing work, but we recommend deferring this for a year or two to assess the implications more accurately, having seen how well the cows have coped and what impact they have had. As their digestive system matures, these older store cattle should be able to move onto the more nutritionally challenging areas of grazing, such as the Nipstone, which they might be able to tackle during their second winter provided they have access to feed supplements. If this option is eventually adopted, they would probably benefit from being with the cows when they initially tackle it so that they have the chance to learn from the experience of the older animals. They will undoubtedly need significant nutritional supplementation to ensure that they are able to cope with the low quality diet that this heathland would present in winter. If or when this winter grazing is attempted, it would be best to start with the breeding heifers since they do not have to meet the 30 month deadline within which the steers must be finished.

2.2.8 Finishing the Steers (24-30 months)

The male cattle should all be marketed for meat, which, as things stand now, for prime animals, as opposed to culls, is restricted to animals under 30 months, despite the lifting of the ban in November 2005. Any of The Stiperstones' steers that fail to meet the 30 month deadline would therefore probably have to be sold as cow beef which is currently yielding less that two thirds of the prime market price. To achieve the best price as prime beef, the steers would need to weigh around 500kg and have reached condition score 3-4L, when slaughtered at or sometime before the age of 30 months. This means that they will need to put on some serious growth as they come out of their second winter weighing around 350-400 kg at condition score 2-2.5. This should, however, still be a realistic proposition, provided that the animals are healthy and have access to good quality grazing in the weeks leading up to slaughter. The potential for achieving this compensatory growth (i.e. a dramatic acceleration in weight gain when cattle are introduced to good quality pasture following a lean period on a lower plane of nutrition) is by now a well established phenomenon as far as British cattle breeds are concerned.

So the 5 steers would spend their final summer grazing in-bye land and go for slaughter as soon as they are fit, the first of them possibly as early as May in years when the spring flush is well advanced. The slower ones will have until the autumn before the risk of missing the 30 month cut-off becomes a serious issue. Various proposals for marketing these steers are outlined later in this report.

2.2.9 Rearing the Heifers (24-36 months)

We suggest that all of the heifers be kept back for breeding apart from any obviously unsound ones, which should instead be fattened alongside the steers. The ones selected for breeding will need to be fit but not overfat when they are put to the bull if they are to stand the best chance of conceiving (condition score 3 is ideal). If they are too thin coming up to bulling it would be sensible to offer feed supplements in good time to allow them to improve their chances of a successful mating. They will need to run with a bull for at least 6 weeks in June, during which time they can be moved across with the cows and calves whilst they are being bulled on Black Rhadley. They can return to a separate grazing area of The Stiperstones after holding to service by the bull. They could, if needed, continue grazing the heathland, perhaps moving between compartments to extend the benefits of cattle grazing until well into the winter. As they come up to calving in April, however, they will need additional feeding if they begin to noticeably lose condition. Timing their sale will be a matter of choice and convenience, depending on the circumstances at the time. They could be sold straight off The Stiperstones, about a month ahead of calving, or they could be taken home for the grazier to supervise the birth of the calves. They will fetch a better price if sold with calves at foot. It could pay to research the dates and venues of the regular Welsh Black sales (see Appendix 1 for 2006 dates), since these events are usually well subscribed and could generate wider interest in The Stiperstones project. We would recommend retention of any heifers, which have performed

outstandingly well as these are likely to have particularly valuable genes to contribute to the future development of the herd.

2.2.10 In-bye land for excess animals

It is important to have this facility within the system so that threat of damage from overgrazing can be quickly averted by removal of some, or all, of the offending group of animals. Most of the uncertainty regarding the ability of these proposals to deliver the necessary conservation objectives comes from the introduction of the cattle grazing and success will largely depend on the circumstances of the individual farmer who is taken on to manage the grazing operation. It will be especially important that the grazier has access to sufficient lay-back land with which to support the heathland grazing. More fertile and productive pasture will clearly be needed to provide the means for a) growing sufficient winter fodder to get all The Stiperstones animals, but chiefly the cattle, through the winter, b) accommodate any excess animals at whatever time of year overgrazing on The Stiperstones begins to become evident and, c) provide good quality pasture for finishing animals reliably by the end of the summer before they exceed the 30-months deadline. The in-bye land will also be needed for accommodating cows at calving, ewes at lambing and for any sick or injured animals no longer able to sustain themselves on the heath. This probably amounts to: a) *c.* 10-12 ha of meadow for hay production (producing 2000 bales of hay minimum at 170-200 x 20kg bales per ha.), b) *c.* 8ha of fertile summer grazing for 10 yearling store cattle, and 5 or more finishing cattle, up to 20 ewes with twins, and any sick or injured individuals as necessary. We have assumed that, as in the case of the Linley Estate, the prospective grazier will already have his/her own holding from which to provide this extra land. Any other candidate for the role who lacks these resources will need to demonstrate the capacity to quickly secure them if they are to offer a genuine alternative.

2.2.11 Other facilities and infrastructure

Building space enough to house 10 cows and their calves, together and separately, may also be important, if the proposal to out-winter them is found to be unworkable. Sufficient barn space for storing hay, straw and other feeds will also be needed. Specialist equipment is needed for handling cattle, such as a crush and heavy duty hurdles which are usually sited at a static location to which the animals are transported as necessary for routine tasks such as Defra health testing. Alternatively, specialist mobile handling facilities might be purchased, which would allow these tasks to be undertaken on The Stiperstones land, reducing stress for the animals and disruption to their grazing routine. Mobile bowsers are also likely to be needed at some stage to maintain access to fresh water during times of drought or failure of the mains supply. The need to move stock between grazing compartments that are separated by road will require the grazier to have a specialist towing vehicle, a stock trailer and plenty of heavy duty gates or hurdles for catching, loading and transporting cattle.

3.0 Livestock Health Plan: Welsh Black Cattle

3.1 Stock Details

This plan relates to a herd of Welsh Black cattle, initially numbering 15 cows. The herd would be assembled in order to help maintain open conditions on areas of heathland re-creation on The Stiperstones, through the known grazing and browsing ability of Welsh Black cattle. As well as achieving the conservation grazing objectives, the herd would be expected to contribute to the financial viability of the overall enterprise. We recommend that cattle only be purchased from herds that are participating in the Welsh Black Cattle Society's Herd Health Scheme, which reduces the likelihood of buying in cattle with, for example, Johne's disease.

All 15 of the cows would be run with a bull for the first time from early summer 2006 through to early winter 2006. Calving would be in late spring / early summer 2007. As noted in Section 2.2, the 2007 calving will mark the start of the cattle enterprise and is the basis of the cattle grazing regime outlined. In 2007 five cows would be sold, either in-calf or with calves at foot. The calves of the remaining ten cows would be kept for up to 30 months before being marketed for meat (steers and poorly performing heifers) or put to the bull (most heifers). Each year at least one of the latter would be retained as a herd replacement, the others sold in-calf or with calves at foot. The original cows should be gradually disposed of according to their performance (better performers retained for longer) and eventually on the basis of their ability to maintain good condition on the heath.

By selecting the best performing cows the breed qualities of thriftiness and hardiness would be retained and reinforced. The long-term objective is to establish a self-contained herd; however, should new animals be brought in (e.g. hired bulls) an isolation procedure is to be implemented before the new animals join the main herd.

3.2 Grazing, supplementary feeding, shelter and water

The cattle would graze four heathland areas: Gatten, Nipstone, Black Rhadley and The Rock. The grazing of these areas would be shared with the flock of Hebridean sheep and, for Gatten, four Exmoor ponies. For the three months preceding and one month following calving the cows should be given supplementary feeding; one month before calving they should be brought onto in-bye land to allow close monitoring of condition and calving.

The total area of grazing is approximately 103ha, possibly increasing to 142ha by 2009/10. Current indications are that both the quantity and quality of grazing should be adequate to keep the proposed 15 cows (in 2006, 10 plus followers thereafter) in adequate condition throughout the year subject to small amounts of hay and concentrates being provided during severe weather, and supplementary feeding either side of calving.

Cattle hay racks and feeding troughs may need to be acquired. Mineral supplements are not thought to be necessary, but at Gatten the cattle would have access to a mineral block provided for the ponies (this is a 'Rock-Mins Standard' block and is suitable for all livestock). All the sites are elevated and exposed, but trees, gorse, hollows, and, at Nipstone, rock outcrops, provide some shelter from the elements whatever the wind direction.

Water supplies at Gatten, The Rock and Black Rhadley are spring-fed. The springs appear reliable but water bowsers are available should they fail. At Nipstone mains water is piped to drinking troughs; it may be possible to provide piped water at The Rock in future.

3.3 Lookering arrangements

Livestock risk assessments have been carried out; these set out a lookering regime in which, under normal circumstances, the herd would be inspected daily. When the system is well established and proven it may be possible to reduce the number of inspections to, say, three per week but, conversely, additional visits should be made if there are concerns in respect of weather or health issues. At least twice-daily visits should be made during calving (this is the minimum stated in the welfare code). A regime of lookering should be agreed between the grazier / farmer and the landowner, especially if staff and/or volunteers are involved in stock checks.

Lookers should receive appropriate training; their duties include visual assessment of the condition of the animals, assessment of forage availability together with the need for any supplementary feeding, and confirmation of the availability of uncontaminated water. Condition of cows should be monitored on a monthly basis, with particular care in the 6 weeks before the introduction of the bull and during the three months before calving; supplementary feeding should be adjusted if cows have a condition score of <2.5.

3.4 Disposal of carcasses

English Nature is registered with the National Fallen Stock Scheme, for which the helpline number is 0845 054 8888. In future the grazier / farmer contracted to run the herd would need to decide whether to register with the National Fallen Stock Scheme or to pay for proper disposal of individual dead animals in accordance with current legislation. Currently OTM cattle that die on farm can be disposed of free through the TSE surveillance unit, telephone 0800 525890.

3.5 Herd records

Herd and movement records, ear tags and cattle passports would be the responsibility of the grazier / farmer contracted to run the herd.

3.6 Storage of medicines and disposal of sharps

There is a locked medicine cabinet at English Nature's premises at Rigmoreoak, Pennerley, on The Stiperstones; sharps containers are also kept in this cabinet. The Farm Animal Medicines Record Book is kept at these premises. In future correct storage and use of medicines, safe disposal of sharps and keeping an up to date Farm Animal Medicines Record Book would become the responsibility of the grazier / farmer contracted to run the herd.

3.7 Contact numbers

The first point of contact would be the grazier / farmer contracted to run the herd.

If necessary, contact:
Tom Wall: Site Manager 01743 792294, or, in an emergency, 01588 660561; mobile 07900 405359. (N.B. mobile phone reception on The Stiperstones is fragmentary, so although a mobile number is given, the first contact should be via landline numbers, where a message should be left).

Veterinary Surgeons: Allwood & Jones (where the principal contact is Lloyd Jones) 01588 638356, or as directed by grazier / farmer contracted to run the herd.

3.8 Diseases

The following diseases may be encountered but our recommendation is that the presence of these should be determined before intervention or routine use of vaccines, anthelmintics etc. This is to a) lessen the likelihood that the parasites / diseases will develop resistance, b) to enable the herd to develop immunity to, or tolerance of, locally occurring diseases and c) to reduce herd maintenance costs.

- Gastrointestinal nematodes: institute regular faecal egg count of *c.* 20% of the herd (e.g. at turnout, mid season and housing) concentrating on newly weaned calves and individuals that are less thrifty. Treat only if egg numbers exceed recommended thresholds (to be confirmed by vet for each parasite) or individual animals showing possible indicators of high worm numbers e.g. scouring.

- Liver fluke: establish presence of fluke in cows by faecal examination and determine whether intermediate host (mud snail *Limnaea*) present in springs and other wet areas. If symptoms of fluke (weight loss, scour, anaemia, eggs in faeces) or snail absent do not treat for fluke infection. N.B. eggs do not appear in faeces until later in year after adults have developed in the liver.

- Red water: it is understood that red water disease is not endemic in south Shropshire. However, if it is found on any of the grazing sites bought-in animals should come from an area where they will have been exposed as calves to the red water disease organism and hence acquired immunity.

- New Forest eye disease: can occur at any time but more prevalent during hot, dry spells when flies and or dust abundant.

- Interdigital dermatitis: may occur if stock stand in mud for extended periods.

- Flies: bites may cause allergic reaction in some individuals. Fly repellents may help, but are not fully effective. Deltamethrin-based pour-on insecticides are better (e. g. Spot-on).

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- Lice**:** be aware of the possible occurrence of lice mainly during winter months on housed cattle, and check during routine round-ups or inspect suspect individuals showing persistent rubbing and hair loss around tail and neck.

- Johne's disease: there is a relatively high incidence of Johne's disease in Welsh Black cattle. Stock should only be purchased from herds certified as free of the disease.

3.9 Other considerations

- Avermectins: avoid on grounds of potential environmental impacts

- Trace elements: blood samples are to be taken if the growth of calves is not satisfactory with a view to providing minerals as necessary.

- Bovine TB: The cattle will be subject to periodic testing for TB (anything from 1 to 4 years), as part of a government control strategy. This has to be done on all cattle over 24 months. The grazier will need to have a plan for gathering all the animals requiring testing at a convenient point. Special facilities, such as a cattle crush, are needed to allow the vet to inject the animals safely on the first visit and, on the repeat visit 3 days later, to observe the injection site for immune reactions. The herd will have to be registered with the State Veterinary Service to ensure that it complies with the laws on animal health.

- Brucellosis: Most herds also have to be tested at two-year intervals for this disease that causes abortion, again as part of a government funded control strategy. It is based on a blood test and facilities must be available for securing cattle safely in a crush whilst the vet removes the sample, usually from the underside of the base of the tail. This can be a convenient opportunity for strategic collection of additional blood samples for mineral or metabolic analyses.

3.10 Calendar of condition checks and interventions

The calendar below (Table 1) is based on possible occurrence. Interventions in italics should only be used if found necessary after faecal egg counts etc. To be agreed by owner of the cattle, owner's veterinary surgeons and the landowner.

Table 1. Calendar of condition checks and interventions for cattle

Month	Non-breeding cattle	Breeding cows and calves
January	• Treat housed cattle with Spot-on if showing signs of lice. • Monitor condition of in- and out-wintered animals visually or manually as appropriate. • Adjust feeding regime as necessary to maintain condition score >2.	• Monitor condition by handling. (Quieter older animals should not need restraint). • Adjust feeding regime as necessary to maintain condition score >2.
February	Monitor condition and adjust feeding.	Monitor condition and adjust feeding.
March / April	• Check for foot overgrowth in housed and outwintered cattle and trim as necessary. • Submit aggregate samples from each group for faecal egg counts. Treat if appropriate. • Turn housed cattle out to graze when sward height is 8-10 cm. • Sell surplus heifers (3-4), either in-calf or with calves at foot.	• Monitor condition by handling. • Calve all cows and replacement heifers (1-2) on in-bye land. Tag and notify birth of all calves to BCMS, castrate bull calves. • Check and trim cows' feet as necessary. • Submit aggregate sample from cows and separate sample from bull for faecal egg counts. Treat if appropriate before moving to hill. • Move to hill land when sward is 8-10cm high.

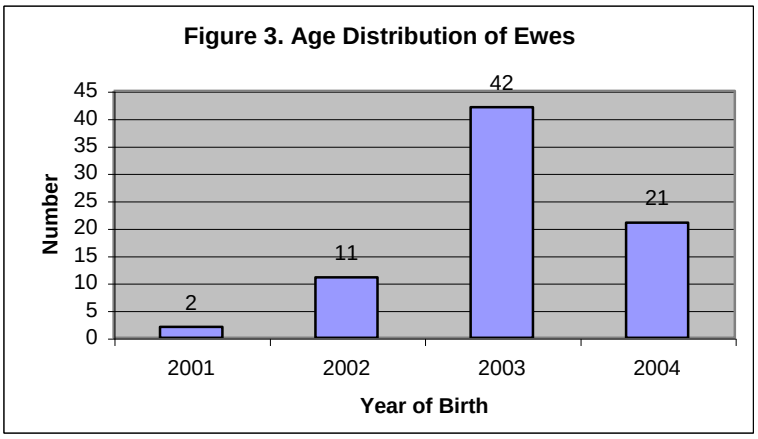
May - August	• Monitor condition of pasture and livestock. Check for disease symptoms, injuries, etc and respond accordingly. • Bull in with heifers May 20th Monitor bulling of individuals and note any failing to hold to service. • Treat for ticks or flies as necessary with Spot-on.	• Monitor condition of pasture and livestock. Check for disease symptoms, injuries, etc and respond accordingly. • Bull in with cows July 1st. Monitor bulling of individuals and note any failing to hold to service. • Treat for ticks or flies as necessary with Spot-on.
June		
July		
August		
September -November	Sell fat steers finished off meadow aftermaths	
October		
November		• Move cows and calves to calves' winter quarters and undertake weaning routine. Move cows to winter grazing after weaning. • Submit aggregate sample from calves for faecal egg counts of worms and fluke. Treat group if appropriate. Ditto unthrifty cows. Treat as appropriate. • Pregnancy test cows. Cull barren cow(s)
December		Observe housed calves closely for symptoms of pneumonia and treat promptly with antibiotic as necessary.

4.0 Livestock Health Plan: Hebridean Sheep

4.1 Stock Details

This plan relates to a flock of Hebridean sheep, numbering 76 ewes and one ram, currently owned by English Nature; all are registered with the Hebridean Sheep Society. The flock was acquired in order to help maintain open conditions on areas of heathland re-creation on The Stiperstones, through the known browsing ability of Hebrideans and selection of registered animals was deemed to be the best way of securing the breed's attributes. It was not a commercial flock.

The flock was assembled from numerous sources in 2003 and 2004. The age profile of the ewe flock is shown in Figure 3. The ram was born in 2004.



Twenty-five of the ewes lambed for the first time in April 2006, producing 33 live lambs, and it is anticipated that all the ewes will be lambed in subsequent years. As noted in Section 2.1 the 2006 lambing will mark the start of a new phase for the flock and is the basis of the sheep-grazing regime outlined. Breeding is for the purpose of acquiring replacements, with adult animals disposed of according to the state of their teeth and general condition, but they will probably not be kept beyond five years of age.

In 2006 25 ewes produced 33 surviving lambs (132%); of the lambs just 11 were females. These will be retained as flock replacements so that the flock may reach 87, less any losses and any older females drafted as suggested in Section 2.1. As the ewes were lambing for the first time their resources had not been drained by feeding lambs in the previous year; from 2007 onwards they will have fed lambs in the previous year and we anticipate a slightly lower lambing percentage – for the gross margins etc. we have assumed an average of 125%.

As well as achieving the conservation grazing objectives, in future the flock will be expected to contribute to the financial viability of the overall enterprise and once the desired number has been reached most ewes will be cross-bred with a terminal sire breed. However, ewes lambing for the first time should be pure-bred to minimize lambing difficulties that might be experienced by a first-time lamber put to a larger breed.

Otherwise pure-breeding will be restricted to the best performing ewes and would aim to provide sufficient female replacements (14 p.a.) to maintain the flock. By selecting the best performing ewes the breed qualities of thriftiness, hardiness and ease of lambing will be retained and reinforced.

The long-term objective is to establish a self-contained flock; however, should new animals be bought in (e.g. unrelated rams) an isolation procedure is to be implemented and vaccinations considered before the new animals join the main flock.

4.2 Grazing, supplementary feeding, shelter and water

The sheep currently graze two areas: Gatten Plantation and Nipstone (both heathland). At the Gatten Plantation grazing is shared with four Exmoor ponies. As detailed elsewhere grazing will, at some future time, be extended to include Black Rhadley and The Rock. On all sites grazing will be shared with Welsh Black cattle.

The total area of grazing amounts to approximately 103ha, possibly increasing to 142ha by 2009/10. Current indications are that both the quantity and quality of grazing is adequate to keep the current 77 animals in adequate condition throughout the year subject to small amounts of hay and concentrates being provided during severe weather, and supplementary feeding of the lambing flock.

Hay racks and feeding troughs are available. Mineral supplements are not thought to be necessary, but at the Gatten Plantation the sheep have access to a mineral block provided for the ponies (this is a 'Rock-Mins Standard' block and is suitable for all livestock). All the sites are elevated and exposed, but trees, gorse, hollows, and, at Nipstone, rock outcrops, provide some shelter from the elements whatever the wind direction.

Water supplies at Gatten Plantation, The Rock and Black Rhadley are spring-fed. The springs appear reliable but water bowsers are available should they fail. At Nipstone and mains water is piped to drinking troughs. It may be possible to provide piped water at The Rock in future.

4.3 Lookering arrangements

Livestock risk assessments have been carried out; these set out a lookering regime in which, under normal circumstances, the flock would be inspected daily. When the system is well established and proven it may be possible to reduce the number of inspections to, say, three per week but, conversely, additional visits should be made if there are concerns in respect of weather or health issues. At least twice-daily visits should be made during lambing. A regime of lookering should be agreed between the grazier / farmer and the landowner, especially if staff and/or volunteers are involved in stock checks.

Lookers should have received appropriate training; their duties include an assessment of the condition of the animals, assessment of forage availability together with the need for any supplementary feeding, and confirmation of the availability of uncontaminated water. Condition scoring of pregnant ewes should be conducted at tupping and six weeks before lambing; supplementary feeding should be adjusted if ewes have a condition score of <2.0.

4.4 Disposal of carcasses

English Nature is registered with the National Fallen Stock Scheme, for which the helpline number is 0845 054 8888. In future the grazier / farmer contracted to run the flock would need to decide whether to register with the National Fallen Stock Scheme or to pay for proper disposal of individual dead animals in accordance with current legislation. Currently older

sheep that die on farm can be disposed of free through the TSE surveillance unit. (In first instance contact Worcester Animal Health Divisional Office, 01905 767111).

4.5 Flock records

Flock and movement records are currently kept at English Nature's premises at Rigmoreoak, Pennerley, Minsterley, Shropshire SY5 ONE. In future flock and movement records would become the responsibility of the grazier / farmer contracted to run the flock.

4.6 Storage of medicines and disposal of sharps

There is a locked medicine cabinet at English Nature's premises at Rigmoreoak, Pennerley, on The Stiperstones; sharps containers are also kept in this cabinet. The Farm Animal Medicines Record Book is kept at these premises. In future correct storage and use of medicines, safe disposal of sharps and keeping an up to date Farm Animal Medicines Record Book would become the responsibility of the grazier / farmer contracted to run the flock.

4.7 Contact numbers

The first point of contact would be the grazier / farmer contracted to run the flock.

If necessary, contact:
Tom Wall: Site Manager 01743 792294, or, in an emergency, 01588 660561; mobile 07900 405359. (N.B. mobile phone reception on The Stiperstones is fragmentary, so although a mobile number is given, the first contact should be via landline numbers, where a message should be left).

Veterinary Surgeons: Allwood & Jones (where the principal contact is Lloyd Jones) 01588 638356, or as directed by grazier / farmer contracted to run the herd.

4.8 Diseases

The following diseases may be encountered but our recommendation is that the presence of these should be determined before intervention or routine use of vaccines, anthelmintics etc. This is to lessen the likelihood that the parasites / diseases will develop resistance, to enable the flock to develop resistance to, or tolerance of, locally occurring diseases and to reduce flock maintenance costs.

- Clostridial diseases: discuss with veterinary surgeon whether current programme of routine vaccinations is necessary. Only continue if losses are likely.

- Pneumonia: discuss with veterinary surgeon and vaccinate only if necessary; vaccine can be combined with clostridial disease vaccines e.g. Heptavac-P.

- Orf: discuss with veterinary surgeon whether current programme of routine vaccinations is necessary. Only continue if outbreaks are likely (although previous use of vaccine may mean virus is now present on sites).

- Gastrointestinal nematodes: cease current routine use of wormers. Institute regular faecal egg count of 10% of the flock. Treat only if numbers are rising or individual animals showing possible indicators of high worm numbers e.g. scouring. Tapeworms: institute faecal egg count for lambs and treat only if tapeworm present in numbers likely

to cause unthriftiness or treat individual animals showing indicators of high tapeworm numbers e.g. many segments in droppings.

- Liver fluke: establish presence of fluke in sheep by faecal examination and determine whether intermediate host (mud snail *Limnaea*) present in springs and other wet areas. If fluke or snail absent do not treat for fluke infection.

- Fly strike: regular checks for signs especially during high-risk periods (humid, warm weather during May-October). Scouring lambs particularly vulnerable and should be dagged and treated for gastrointestinal nematodes. Treat at-risk animals with Vetrazin spray; infected sheep should have all maggots removed, wounds sprayed with antibiotic, wool clipped short over infected region and well beyond, and sprayed with Vetrazin.

- Lice and scab**:** be aware of the possible occurrence of lice and scab and check during routine round-ups or of suspect individuals. In the event of a scab outbreak use Cydectin or Dectomax.

- Scrapie: most Hebrideans are in Group 3 of the five classes recognized under the National Scrapie Plan (NSP), meaning they are moderately susceptible to 'classic' scrapie. Some breeders are selectively breeding for the most resistant genotype (ARR/ARR), which prior to the NSP was found in *c.*5% of the Hebridean population. It may be worthwhile having lambs tested for scrapie genotype and retaining those with the more resistant genotypes (Groups 1 and 2) *provided* these are equally capable of maintaining condition on the heathland and successfully rearing lambs. Under those circumstances it may also be advisable to purchase Group 1 rams when replacing stock rams.

4.9 Other considerations

- Avermectins: avoid on grounds of potential environmental impacts

- Lambing: aim for singles rather than twins

- Trace elements: blood samples are to be taken if the growth of lambs is not satisfactory with a view to providing minerals as necessary.

4.10 Calendar of condition checks and interventions

The calendar below is based on current practice. Interventions in italics should only be continued if found necessary after faecal egg counts etc. To be agreed by owner of sheep, owner's veterinary surgeons and the landowner.

Table 2. Calendar of condition checks and interventions for sheep

Month	Non-breeding sheep	Breeding sheep and lambs
Jan		
Feb (early) (mid)	Faecal egg count *Clostridial vaccination booster* Treatment for gastrointestinal nematodes if necessary Check feet and condition	Faecal egg count *Clostridial vaccination booster, ewes* Treatment for gastrointestinal nematodes if necessary Check feet and condition
Mar/ Apr		Lambing on in-bye land *Vaccinate lambs with Scabivax (Orf vaccine) at 2-3 days old*
May		Lambs: faecal egg count Treatment for gastrointestinal nematodes if necessary Lambs: *Clostridial booster first dose*
Jun		Lambs: *Clostridial booster second dose at 2-3 months old*
Jul	Shear, check feet and condition	Shear ewes, check feet and condition Wean lambs Lambs: faecal egg counts Treatment for gastrointestinal nematodes if necessary
Aug		
Sep	*Clostridial vaccination for new animals only.* Faecal egg count Treatment for gastrointestinal nematodes if necessary Check feet and condition	Tups to in-bye land; isolate for 3 weeks Ewes: pre-tupping check on ewes Check feet and condition of all stock
Oct	*Second Clostridial vaccination 4-6 weeks after the first for new animals only*	Put tups to the ewes
Nov		
Dec		

5.0 Husbandry Regime

The proposed husbandry regime is presented diagrammatically below, showing tasks to be completed daily, weekly, monthly and at scheduled intervals. We have erred on the side of caution and recommended daily stock checks to ensure animal welfare requirements are fully met. It may be possible to relax the frequency of stock checks a little when the system and the stock are proven and if problems have been few.

The annual total labour required is estimated as 1812hr, an average of almost 35hr per week over 52 weeks. Allowing for periods of leave (if the grazier is able to accommodate such periods) the management of the grazing could be equated to full-time employment for one person. However, some of the daily stock checks might be undertaken by volunteers, provided these are adequately trained and a reliable rota can be established.

Figure 4. Husbandry Regime for sheep and cattle on The Stiperstones

Months

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Time
Daily Routine	**Daily headcount and check for disease and injury. Check water supplies & suitability of pasture**			Check pregnant cows/ewes at least twice daily									1460 hrs (4hr/ day)
	Provide supplementary feed as needed									**Provide supplementary feed as needed**			
Weekly routines	**Check boundaries and repair as necessary. Visually assess and record condition score of selected reference animals. Update all required records: livestock movements, sales & purchases, births & deaths, medicines bought and administered.** Maintain stocking history for each grazing compartment												208 hr (4hr/wk)
Monthly Routine	Condition-score pregnant ewes and cows by handling Attend to nutrition of anything < 2				Select and sell finished Hebridean wethers					Select and sell finished cross-bred lambs			40 hr (4hr/ month for 10 months)
				Select and sell breeding heifers				Select and sell finished steers					
Sched-uled Tasks				**Lamb-ing / Calving (c 60 hrs)**	**Fly strike control for sheep (4 hrs)**	**Lamb faecal egg counts (2hrs)**	**Shear-ing (6 hrs)**	**Fly-strike control for sheep (4 hrs)**	**Wean Lambs Assess ewes and sell culls Pur-chase ram(s) (16 hrs)**		**Tuppin g (4 hr)**	**Wean Calves. (House ?) Faecal egg counts - fluke. Blood test minerals and trace elements (8 hr)**	104 hr ***Annual Total 1812 hr***
					Bull to heifers	**Bull to cows**							

6.0 Operational Budgets

The financial budgets setting out the expected income and costs associated with management of the proposed grazing regime are available as a separate Excel workbook to allow insertion of new data and exploration of the effect of varying the parameters; the Excel spreadsheets include explanatory notes and are designed to stand alone. However, to allow this document to also stand alone the main elements of the Excel spreadsheets are summarised below as a series of tables with a brief description of each in Sections 6.2 – 6.4.

6.1 Rationale for the Financial Budget for a Conservation Grazing System for The Stiperstones

We have compared the economic outcomes of two contrasting options at key stages over a six year period from 2006 to 2012, by which time the project should be well established.

Option 1: The Linley Estate assumes responsibility for managing the entire Stiperstones system, including land occupied by English Nature and Shropshire Wildlife Trust, and provides sufficient in-bye land, buildings and other assets to operate the grazing regimes as proposed. The Estate meets all expenses and retains all income generated by the livestock. The Estate claims all the area payments that it is eligible for on its own land (Single Payment and ESA/HLS) together with the Hill Farm Allowance (and its successor scheme) on all the grazing land, regardless of ownership. The conservation bodies (Shropshire Wildlife Trust and English Nature/Natural England) claim Single Payment and HLS for their own land wherever possible.

Option 2: An outside grazier is recruited to run the grazing system, someone without a stake in any of The Stiperstones land. This person, or persons, will similarly manage the livestock as an independent business whilst ensuring that the grazing prescriptions are met. They will be allowed to claim the Single Payment and HLS on as much of The Stiperstones land as possible and the Hill Farm Allowance (and its successor scheme) on all of it. The Linley Estate will continue to claim its own ESA and SP monies, and these payments will not be available to support the grazing. The grazier is assumed to provide all the remaining assets needed to operate the system: in-bye land, buildings, livestock, vehicles, machinery, and equipment.

These two possibilities represent the most relevant choices for comparison, one that is well known and conveniently situated, the other much more tentative and uncertain. The Linley Estate is very well placed geographically and strategically and has already expressed interest in the idea of co-operating with English Nature to provide the grazing. The Estate's contract farmer is already familiar with the land and its limitations and is known, albeit not well, to the conservation staff on the ground. The Estate may already have access to specialist marketing opportunities that would offer better returns on sales of produce from the system. The one potential drawback with the Linley Estate is that it is clearly pursuing a definite agenda of its own, one that may not attach the priority to achieving conservation objectives that will be needed to ensure that the chances of their being realised are always maximised.

A better alternative might therefore be to recruit a specialist conservation grazier who could bring an established commitment to habitat management, someone who would be relied on to do everything possible to make the proposals work from the conservation perspective. Such a dedicated conservation grazier would, however, probably start from a much less favourable position, financially and practically, perhaps needing to locate and secure most of the founding assets before the scheme could get off the ground.

6.2 Sheep Flock Gross Margin

The gross margins for the sheep enterprise are shown in Table 4. As explained in Section 1.2 the gross margins are based on a flock of 76 breeding ewes, with half the flock bred pure to a Hebridean ram and half cross-bred to a terminal meat sire. Each ewe may be expected to rear 1.25 lambs each year (95 lambs in total). The 45.1 cross-bred lambs are all sold at 6-12 months for meat, realising £34.50 each (total £1,556.81) from which variable costs of £14.50 per lamb (total £654.31) must be deducted. Pure-bred Hebridean ram lambs are castrated and the wethers are sold for meat at 15-18 months, realising £46.00 each (total £985.98 for 21.4 surviving wethers, allowing for 5% post-weaning mortality). Variable costs for the wethers are estimated as £19.50, allowing for the longer time they are kept (total £417.97). For pure-bred Hebridean ewe lambs, after allowance for flock replacements and losses, 4.8 will be available to be sold for breeding as shearlings at £50.00 each (total £240.00) less variable costs of £19.50 each (total £92.63).

We estimate that 11.4 ewes will be drafted out of the breeding flock each year; total value £228.00 and that 3.8 ewes will be culled (total value £38.00). Rams will be replaced every second year at a cost of £50.00 p.a., which is offset by the £20.00 p.a. value of the culled rams.

Thus totalling the various outputs yields £3,066.29 from which total variable costs of £1,214.91 are deducted to give a **sheep enterprise gross margin of £1,851.44**.

6.3 Cattle Herd Gross Margin

Table 5 shows the gross margin calculations for the cattle enterprise and Section 1.3 described the basis for the data. It is anticipated that each of the ten cows will rear 0.95 calves p.a. and that 0.85 calves p.a. will be sold allowing for the occasional loss. Male calves will be castrated and the 4.75 steers p.a. will have a carcase value of £513.00 each (total £2,436.75). The variable costs of rearing the steers are £225.00 each, total £1,068.75.

There will be an average of 4.75 female calves p.a., but one will be retained as a herd replacement, leaving 3.75 heifers to be sold at a value of £600.00 each (total £2,250.00). The variable costs of rearing the heifers are also £225.00 each, total £843.75.

Each year an average of 0.8 cows will be sold as culls, realising £280.00 p.a. Every third year a 3 year old replacement bull will be bought at £1500.00 to give an average replacement cost £500 p.a. Every third year a 6 year old bull will be sold at £600.00 (equivalent to £200.00 p.a.).

Thus totalling the various outputs yields £5,166.75 from which total variable costs of £2,412.50 are deducted to give a **cattle enterprise gross margin of £2,754.25**.

6.4 Fixed Costs

Table 6 compares the Fixed Costs for the Linley Estate and for a grazier. There are few extra costs for the Linley Estate, which is already running sheep and beef enterprises on an adjoining holding. A grazier, however, if starting from scratch, has extra costs that are specific to the Stiperstones project. There is a need to pay for more farm machinery for haymaking, muck spreading etc. (or to incur additional costs from contracting out these tasks), along with hiring casual and relief labour to cover for busy times and holidays,

acquiring more equipment, setting up and running an office and taking out insurance. Repair costs are the same for both and refer only to items in the project. Vehicle costs are greater for the grazier, who would probably be based further away, and travels an estimated 5000 miles annually in running the project.

The cost of renting in-bye land is greater for the grazier who would have to pay the full market rate, which is likely to be greater than the notional rental value on land already occupied by the Estate. Interest payments for the grazier are also higher due to greater initial capital investment. Thus the **estimated total fixed costs for a grazier is £12,754 compared to £7,308 for the Linley Estate**.

6.5 Valuations

Table 7a shows the valuation of the inputs the Linley Estate would need to make to the Stiperstones grazing project. The total valuation for the breeding herd and flock is £8,575.00 and for the store stock is £11,220.00. To feed these animals for a winter period reckoned at 150 days would require 2,286 conventional (20kg) bales, although the equivalent of 1000 such bales could be fed as big bale silage to reduce costs of production. The estimated total forage valuation is therefore £3,772.00, plus £390.00 for sugar beet nuts. The total farmstock (livestock + feedstuffs) valuation is therefore £23,567.00.

The Estate would need to purchase some additional capital items: a mobile cattle crush, mobile pens and bowsers, representing a capital equipment investment of £8,000.00 for which the standard depreciation rate of 8% gives an estimated annual replacement cost of £640.00. Fencing and installation of a water supply on some sites is estimated to cost £2,729.00, with grant aid. No allowance is made for depreciation of these fixed assets, although a figure has been suggested to cover annual property repairs as a fixed cost. Summing this one-off investment with the cost of capital equipment and the farmstock value gives **the total valuation of £34,296.00.** The interest that would be payable on this amount of working capital, if borrowed the standard rate of 6%, is £2,057.76.

Table 7b shows the valuation of the inputs a grazier would need to make to the Stiperstones grazing project. Farmstock estimates are the same as for the Linley Estate, but capital investments would be greater, as a grazier may need to acquire a Landrover, a stock trailer, a tractor and various implements in addition to those items that the Linley Estate would need to acquire. Thus the total value of the capital equipment needed by a grazier would be £21,500.00, with depreciation at the standard 8% rate costing £1,720.00. Adding the capital equipment to the farmstock valuation gives **a total investment of £45,067.00,** worth £2,704.02 p.a. in interest at the 6% rate.

6.6 Area Payments 2006

Tables 8a and 8b show the area payments for 2006 that the Linley Estate and a grazier could claim respectively. The assumptions made in compiling these data are:

- The Environmentally Sensitive Area agreement on Black Rhadley and The Rock continues, with the Linley Estate claiming the payments.
- The Nipstone is entered into the Higher Level (HLS) of the ESS Scheme with the ‘Cattle Grazing’ and ‘At Risk Breeds’ supplements claimed.
- The plantation area at Nipstone called Big Wood is entered into HLS as above as soon as the remaining conifers are cleared and the land is available for grazing.

- Although The Gatten is ineligible for the time being as English Nature owns it, it may become eligible with the formation of Natural England.
- Either the Linley Estate or the grazier will claim HFA payments on all land with the 20% enhancement for cattle, and either low stocking rate or woodland.
- No historic component is included in the calculations; we assume English Nature and the Shropshire WT were not claiming sheep or cattle subsidy during the reference years.

It is apparent from Tables 8a and 8b that **the viability of the grazing enterprise on The Stiperstones depends on full utilization of the Single Payments**. If the Linley Estate becomes the partner in grazing The Stiperstones some, possibly all, of the area payments will be needed. Single Payments should be claimed by the Shropshire WT on The Nipstone and by English Nature (Natural England) on Gatten from 2007. Shropshire WT should purchase new entitlements for Nipstone Big Wood as soon as it becomes available for grazing. There are no data on the cost of purchasing entitlements as trading has barely begun, but estimates are £100/ha for SDA and £20/ha for moorland. Some or all of these Single Payments can be passed on to the Linley Estate if needed; otherwise the Shropshire WT can retain them.

Thus the total area payments to the Linley Estate would be £9,228.56 comprising:

- Single Payment £596.57 before 10% modulation (£536.91 after modulation, excluding the historic component).
- HFA £2,512.20 plus 20% enhancements (£502.45), total £3,014.65
- ESA £5,677.00

Although not included here, the Linley Estate would probably be able to claim the historic component that will attach to its Single Payment entitlements, so increasing the total from that shown above.

With the Linley Estate as partner the total area payments payable to the conservation agencies would be £2,687.06 comprising:

- Single Payment £837.84 before 10% modulation (£754.06 after modulation)
- HLS of ESS £1,933.00

If a grazier becomes the partner the elements outlined above would be similar except that **all the area payments available to Shropshire WT and Natural England would be needed** as the Linley Estate will retain the area payments on Black Rhadley and The Rock. Thus the total area payments payable to the grazier would be £5,701.70 comprising:

- Single Payment £837.84 before 10% modulation (£754.06 after modulation)
- HFA £2,512.20 plus 20% enhancements (£502.45), total £3,014.65
- HLS of ESS £1,933.00

Under these circumstances the total area payments payable to the Linley Estate would be £6,213.91 comprising:

- Single Payment £596.57 before 10% modulation (£536.91 after modulation, excluding the historic component).
- ESA £5,677.00.

Table 4. Whole Flock Gross Margin

						total variable costs	total output
Whole Flock Statistics							
no of ewes	76		lamb mortality/ewe	0.10			
ewes/ram	38		lambs sold/ewe	1.05			
			lambs retained/ewe	0.20			
lambs born/ewe	1.35		cull ewes sold/ewe	0.15			
lambs reared/ewe	1.25		ewe mortality/ewe	0.05			
Gross Margin for each Cross-bred lamb							
deadweight price/kg	£2.30	/kg					
dead weight	15.00	kg					
value of sales	£34.50						
			no. of lambs sold	45.1			£1,556.81
concentrates	£3.50						
vet & med	£3.00						
miscellaneous	£3.00						
forage costs	£5.00						
					total variable costs	£654.31	
	variable costs/lamb	£14.50					
Gross Margin for each Hebridean wether							
deadweight price/kg	£2.30	/kg					
deadweight (kg)	20.00	kg					
value of carcase (£)	£46.00						
			no of wethers sold	21.4			£985.98
concentrates (£)	£5.00						
vet & med	£4.00						
miscellaneous	£4.00						
forage costs	£6.50						
	variable costs/ wether	£19.50			total variable costs	£417.97	

Table 4. Whole Flock Gross Margin (continued)

Gross Margin for each Hebridean Shearling ewe						
live sale value	£50.00					
			no. of shearlings sold	4.8		£240.00
concentrates	£5.00					
vet & med	£4.00					
miscellaneous	£4.00					
forage costs	£6.50					
	variable costs/ewe	£19.50				
				total variable costs	£92.63	
Draft Ewes						
			no. of draft ewes sold	11.4		£228.00
live sale value	£20.00					
Cull Ewes						
			no of cull ewes sold	3.8		£38.00
live sale value	£10.00					
Cull/Draft Rams						
live sale value	£40.00		no of cull rams sold	0.5		£20.00
Replacement Rams						
cost per head	£100.00		no of rams bought	0.5	£50.00	
			enterprise totals		£1,214.91	£3,066.29

Enterprise Gross Margin	**£1,851.39**

Table 5 Whole Herd Gross Margin

Herd statistics

no of cows	10	calves sold/cow	0.85
no of bulls	1	calves retained/cow	0.10
calves reared/cow	0.95	cull cows sold/cow	0.08
calf mortality/cow	0.05	cow mortality/cow	0.02

Steers

deadweight price	£1.90	/kg					
carcase weight	270	kg					
carcase value	£513.00		no of steers sold	4.75		value of sales	£2,436.75
concentrates	£100.00						
vet & med	£30.00						
bedding	£15.00						
miscellaneous	£15.00						
forage costs	£65.00						
variable costs/hd	£225.00						
			total variable costs	£1,068.75			

Breeding Heifers

sale value	£600.00		no of heifers sold	3.75		value of sales	£2,250.00
concentrates	£100.00						
vet & med	£30.00						
bedding	£15.00						
miscellaneous	£15.00						

Table 5 Whole Herd Gross Margin (continued)

	forage costs	£65.00					
	variable costs/hd	£225.00					
				total variable costs	£843.75		
Cull Cows							
	sale value	£350.00	no of culls sold	0.8		value of sales	£280.00
Bulls							
3-yearly	sale of 6 year old bull	£600.00				value of sales	£200.00
3-yearly	purchase of 3 year old bull	£1,500.00		average annual replacement cost	£500.00		
				Enterprise Totals			
				variable costs	£2,412.50	sales	£5,166.75

Enterprise Gross Margin	**£2,754.25**

Table 6. Fixed Costs for Linley Estate and for a Grazier

Annual Fixed Costs for Estate

cost item		annual amount
contractors		£0.00
equipment		£250.00
consumables		£200.00
labour		£0.00
water		£150.00
power		£100.00
office		£50.00
publications		£50.00
insurance/admin		£150.00
machine repairs		£450.00
property repairs		£600.00
extra fuel for farm vehicle		£250.00
0ther farm vehicle costs		£250.00
rental value for in-bye land:-		
amount (ha)	20	
value/ha	£100.00	£2,000.00
advertising		£250.00
legal & professional		£500.00
debt/interest/finance		£2,057.76
total fixed costs		**£7,307.76**
rent		To be determined

Annual Fixed Costs for Grazier

cost item		annual amount
contractors		£800.00
equipment		£500.00
consumables		£200.00
labour		£800.00
water		£150.00
power		£200.00
office		£350.00
publications		£150.00
insurance/admin		£600.00
machine repairs		£450.00
property repairs		£600.00
fuel farm vehicle		£1,000.00
0ther farm vehicle costs		£1,000.00
rental value for in-bye land:-		
amount (ha)	20	
value/ha	£125.00	£2,500.00
advertising		£250.00
legal & professional		£500.00
debt/interest/finance		£2,704.02
total fixed costs		**£12,754.02**
rent		To be determined

Table 7a. Valuation for Linley Estate

Livestock and working capital

Class	Quantity	Unit Price £	Value £	
Breeding Stock				
stock bull	1	1,500.00	1,500.00	
cows	10	500.00	5,000.00	
breeding ewes	75	25.00	1,875.00	
ram	2	100.00	200.00	
		total breeding stock		**£8,575.00**
Growing Stock				
calves @ foot	10	100.00	1,000.00	
yearling stores	10	300.00	3,000.00	
finishers	5	400.00	2,000.00	
in calf heifers	5	400.00	2,000.00	
bulling heifers	5	350.00	1,750.00	
hoggs & shearlings	42	35.00	1,470.00	
		total store stock		**£11,220.00**
Forage				
hay	1286	£2.00	£ 2,572.00	
straw	200	£1.00	£ 200.00	
silage	100	£10.00	£ 1,000.00	
		total forage valuation		**£3,772.00**

Annual Forage Budget *(small hay bales)*

	No. 20kg bales for 150 day winter
Breeding Stock	
stock bull	75
cows	750
breeding ewes	225
ram	10
Growing Stock	
calves @ foot	
yearling stores	300
finishers	300
in calf heifers	250
bulling heifers	250
hoggs & shearlings	126
total	**2286**

(NB: 1 bale silage =10 bales hay)

Capital Equipment

mobile crush	£3,000.00
mobile pens	£2,000.00
bowsers	£3,000.00
total	**£8,000.00**

total equipment £8,000.00

depreciation @ 8% £640.00

Table 7a. Valuation for Linley Estate (continued)

Concentrates				
Sugar Beet Nuts (kg)	3000	£ 0.13	£390	
				£390.00
			total farmstock	**£ 23,567.00**

other capital costs	
fence and water supply	£2,729.00
total valuation	**£34,296.00**
interest @ 6%	**£2,057.76**

Table 7b. Valuation for a Grazier

Livestock and working capital

Class	Quantity	Unit Price £	Value £	
Breeding Stock				
stock bull	1	1,500.00	1,500.00	
cows	10	500.00	5,000.00	
breeding ewes	75	25.00	1,875.00	
ram	2	100.00	200.00	
		total breeding stock		**£8,575.00**
Growing Stock				
calves @ foot	10	100.00	1,000.00	
yearling stores	10	300.00	3,000.00	
finishers	5	400.00	2,000.00	
in calf heifers	5	400.00	2,000.00	
bulling heifers	5	350.00	1,750.00	
hoggs & shearlings	42	35.00	1,470.00	
		total store stock		**£11,220.00**
Forage				
hay	1286	£2.00	£ 2,572.00	
straw	200	£1.00	£ 200.00	
silage	100	£10.00	£ 1,000.00	
		total forage valuation		**£3,772.00**

Annual Forage Budget *(small hay bales)*

	No. 20kg bales for 150 day winter
Breeding Stock	
stock bull	75
cows	750
breeding ewes	225
ram	10
Growing Stock	
calves @ foot	
yearling stores	300
finishers	300
in calf heifers	250
bulling heifers	250
hoggs & shearlings	126
total	**2286**

(NB: 1 bale silage =10 bales hay)

Capital Equipment

Land rover	£6,000.00
stock trailer	£2,500.00
mobile crush	£3,000.00
mobile pens	£2,000.00
bowsers	£3,000.00
tractor	£2,500.00
implements	£2,500.00
total	**£21,500.00**

total equipment	**£21,500.00**
depreciation @ 8%	**£1,720.00**

Table 7b. Valuation for a Grazier (continued)

Concentrates

Sugar Beet Nuts (kg)	3000	£ 0.13	£390
			£390.00

total farmstock £ 23,567.00

total valuation £45,067.00

interest @ 6% £2,704.02

Table 8a. Area Payments for the Linley Estate 2006 (for assumptions see text Section 6.6)

			Sites					Total for Linley Estate
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	None	English Nature	
Single Payment	**SDA Non-moorland**	**Area**	0	29.75	19.33	0	32.71	**81.79**
		Historical	0	?	0	0	0	**0**
		Flat Rate	0	478.98	311.21	0	526.63	**478.98**
	Moorland SDA	**Area**	51.35	0	0	0	0	**51.35**
		Historical	?	0	0	0	0	**0**
		Flat Rate	117.59	0	0	0	0	**117.59**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	0	32.71	**81.79**
		Payment	0	738.4	479.77	0	811.86	**2030.03**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
ESA		**Area**	51.35	29.75	19.33	Ineligible	Ineligible	**100.43**
		Payment	3594.50	2082.50	0	Ineligible	Ineligible	**5677.00**
HLS		**Area**	0	0	19.33	0	0	**19.33**
		Payment	0	0	579.90	0	0	**579.90**
	Cattle/Breeds Supplements		0	0	1353.10	0	0	**1353.10**

Table 8b. Area Payments for a Grazier 2006 (for assumptions see text Section 6.6

			Sites					Total for Grazier
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	None	English Nature	
Single Payment	**SDA Non-moorland**	**Area**	0	29.75	19.33	0	32.71	**81.79**
		Historical	0	?	0	0	0	**0**
		Flat Rate	0	478.98	311.21	0	526.63	**837.84**
	Moorland SDA	**Area**	51.35	0	0	0	0	**51.35**
		Historical	?	0	0	0	0	**0**
		Flat Rate	117.59	0	0	0	0	**117.59**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	0	32.71	**81.79**
		Payment	0	738.4	479.77	0	811.86	**2030.03**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
ESA		**Area**	0	0	0	Ineligible	Ineligible	**0**
		Payment	0	0	0	Ineligible	Ineligible	**0**
HLS		**Area**	0	0	19.33	0	0	**19.33**
		Payment	0	0	579.90	0	0	**579.90**
	Cattle/Breeds Supplements		0	0	1353.10	0	0	**1353.10**

6.7 Area Payments 2009

Tables 9a and 9b show the area payments for 2009 that the Linley Estate and a grazier could claim respectively. The assumptions made in compiling the data in Table 9a are:

- The Linley Estate transfers Black Rhadley and The Rock, with both grazing supplements (for 'cattle grazing' and 'breeds at risk'), into the moorland habitat category of the Higher Level of ESS to generate greater payments than the current ESA.
- The Linley Estate continues to claim all these HLS payments on their own land.
- Shropshire WT enters the Nipstone Big Wood into the HLS of ESS with 'Cattle Grazing' and 'At Risk Breeds' supplements in 2006 following clearance of the remaining afforested area
- Gatten is in Natural England occupation and is eligible for the HLS of ESS
- Natural England claims Single Payments on Gatten, assuming that title has been transferred from English Nature following re-organisation of the rural agencies.
- The Linley Estate will claim payments from the new hill farming support scheme that is intended to replace HFA in 2007 on all the land in the system
- Single Payments will be fully utilized with the flat rate element increased to 40% by 2009
- Shropshire WT claims Single Payments on The Nipstone and Nipstone Big Wood, having purchased 8.6 'Other SDA' entitlements

Other points to note are that:

a) The entry of the 8ha Nipstone Big Wood into the HLS of ESS could provide a convenient opportunity for the Linley Estate to transfer from the current ESA agreement to HLS.
b) Although the extra HLS payments that Natural England may be able to claim for Gatten have been included, they are not crucial to the viability of the system since the Linley Estate is expected to secure a good return on all its investments it had made (93% and 97% in 2009 and 2012 respectively). This means the payments could be retained by Shropshire WT and Natural England and used to support the system in other ways;
c) In the absence of details on the replacement scheme for HFA we have budgeted payments based on the 2006 HFA.
d) We have not included any historic component for the Linley Estate's entitlement; this component progressively declines throughout the budgeting period, but can be expected to boost the return on investments in the early years to levels well above the 53% forecast here.

Thus the total area payments to the Linley Estate would be £14,531.66 comprising:

- Single Payment £3,579.40 before an estimated 12% rate modulation (£3,149.87 after modulation, excluding the historic component).
- HFA £2,725.66 plus 20% enhancements (£545.13), total £3,270.79
- HLS £8,111.00

With the Linley Estate as partner the total area payments payable to the conservation agencies would be £10,967.26 comprising:

- Single Payment £5,571.89 before an estimated 12% rate of modulation (£4,903.26 after modulation)
- HLS of ESS £6,064.00.

The assumptions made in compiling the data in Table 9b showing area payments under an outside grazier are:

- The Linley Estate continues to claim all ESA/HLS payments on its own land.
- Shropshire WT enters the Nipstone Big Wood into the HLS of ESS with 'Cattle Grazing' and 'At Risk Breeds' supplements in 2006 following clearance of the remaining afforested area
- The Gatten is in Natural England ownership and is eligible for the HLS of ESS
- The grazier will claim payments from the new hill farming support scheme that is intended to replace HFA in 2007 on all the land in the system
- Single Payments will be fully utilized with the flat rate element increased to 40% by 2009
- Shropshire WT lease their Single Payment entitlements (including for Nipstone Big Wood, having purchased 8.6 'Other SDA' entitlements) with the land to the new grazier
- Natural England leases their Single Payments on Gatten (assuming that title has been transferred from English Nature following re-organisation of the rural agencies) with the land to the new grazier.

Other points to note are that:

a) The Linley Estate will receive a considerable annual payment from their existing ESA agreement, or any HLS agreement that replaces it, together with their Single Payments. The new grazier is responsible for meeting all the contractual obligations of these two schemes and consideration should therefore be given to negotiating a contribution from the Linley Estate to support the grazing system. This is particularly appropriate if higher HLS payments are realised as these depend directly on the good offices of the grazier, courtesy of the two grazing supplements that are generated entirely by the livestock enterprise adopted by the grazier.
b) The HLS payments on Shropshire WT and Natural England's land holdings have been budgeted as income for the grazier since they are crucial to the proposal's viability: any new grazier would be unable to secure sufficient return on their investment without those payments. Thus Shropshire WT and Natural England would claim the HLS payments and pass them on to the grazier.
c) In the absence of details on the replacement scheme for HFA we have budgeted payments based on the 2006 HFA.
d) We have not included any historic component in Single Payment estimates.

Thus the total area payments to the grazier would be £14,489.67 comprising:

- Single Payment £5,857.82 before modulation (£5,154.89 after modulation, excluding the historic component).
- HFA £2,725.66 plus 20% enhancements (£545.13), total £3,270.79
- HLS £6,064.00

The total area payments to the Linley Estate would be £11,260.87.

6.8 Area Payments 2012

Tables 10a and 10b show the area payments for 2012 that the Linley Estate and a grazier could claim respectively. The assumptions made in compiling the data in Table 10a are:

- Linley Estate continues to claim all HLS payments on their own land.
- All the land held by conservation agencies is still in HLS with 'Cattle Grazing' and 'At Risk Breeds' supplements.
- The Linley Estate continues to claim payments from the new hill farming support scheme that replaces HFA in 2007 on all the land in the system.
- In the absence of any details of the new scheme to replace HFA we have

budgeted payment values from the 2006 HFA
- Single Payments continue to be fully utilized with the flat rate contribution now increased to 100% with 15% deduction for modulation.

Other points to note are that:

a) The annual payments to the conservation agencies can be retained to help support the grazing system if needed, although the business looks to be largely viable if the Linley Estate is running the project (i.e. generate a 97% return on labour and capital).
b) The Estate's entitlements have lost their entire historic payment component.
c) The Single Payments claimed by the conservation bodies represent a considerable sum.

Thus the total area payments to the Linley Estate would be £16,429.85 comprising:

- Single Payment £5,938.89 before an estimated 15% rate modulation (£5,048.06 after modulation).
- HFA £2,725.66 plus 20% enhancements (£545.13), total £3,270.79
- HLS £8,111.00

With the Linley Estate as partner the total area payments payable to the conservation agencies would be £14,316.19 comprising:

- Single Payment £9,708.46 before an estimated 15% rate modulation (£8,252.19 after modulation)
- HLS of ESS £6,064.00.

The assumptions made in compiling the data in Table 10b for the outside grazier are:

- Linley Estate continues to claim all HLS and Single Payments on its own land.
- All the land held by conservation bodies is still in HLS with 'Cattle Grazing' and 'At Risk Breeds' supplements and the annual payments are passed on to the grazier in order to help make their business viable
- The grazier will continue to claim hill farming support scheme payments on all the land in the system.
- In the absence of any details of the new scheme to replace HFA we have budgeted payment values from the 2006 HFA.
- Single Payments are fully utilized with the flat rate contribution now increased to 100% less modulation deductions of 15%.
- Shropshire WT and Natural England continue to lease their Single Payment entitlements to the grazier so that he/she may claim the annual payment on all the non-Linley Estate land.

Thus the total area payments to the grazier and conservation agencies would be £17,586.98 comprising:

- Single Payment £9,708.46 before modulation (£8,252.19 after modulation)
- HFA £2,725.66 plus 20% enhancements (£545.13), total £3,270.79
- HLS £6,064.00

The total area payments to the Linley Estate would be £13,159.06.

6.9 Progressive Annual Budgets and Comparisons

Tables 11a and 11b summarise the budgets for 2006, 2009 and 2012 for the Linley Estate and for an alternative grazier respectively, allowing comparison of how the system performs financially over time under the two options.

The Linley Estate (Table 11a) is clearly best placed to manage the grazing on a sustainable economic basis, achieving a level of profit that rises year on year, and which, by 2012, represents practically a full return on all its investments. Over this period the extra amount needed to achieve financial viability falls from £5,142.54 (2006) to £63.15 (2012). This is mainly due to the area payments it receives from its own land and is achievable even without any price premium for marketing of specialist quality products. Other factors in the Estate's favour are its close proximity to The Stiperstones, the fact that it already runs sheep and beef enterprises and has a quantity of more productive in-bye land and farm buildings that can be committed to supporting the project. At the same time the conservation bodies are also able to claim a significant sum of money annually from their own area payment schemes, money that can be invested in managing The Stiperstones more effectively.

In contrast, the grazing system is unlikely to generate a viable profit when operated by an outside grazier if he/she has to start the livestock business from scratch; the amount needed to achieve financial viability is £19,918.69 in 2006, falling to £11,212.27 in 2012. This is mainly because the Linley Estate retains such a large proportion of the combined area payments and is unlikely to use them to support the grazing. Additionally the grazier has to a) find considerably more capital to invest in setting up the project and b) will incur higher fixed costs annually since there is less scope for the kind of economies of scale and location that the Estate would enjoy. A new grazier will need to secure the use of additional land and buildings with which to complement and support the conservation grazing, assets that are likely to be more costly than the ones the Estate already has convenient access to.

It is possible that an alternative grazier could be found who already has at least some of the required infrastructure and machinery, but it is not feasible to speculate on the numerous permutations that are possible. Such a grazier could be shown the data we have presented and would need to determine for him/herself whether the grazing scheme is viable.

Although the opportunities for increasing the value of the outputs are explored in the next section we feel that this is unlikely to generate sufficient improvement for an alternative grazier: in stark terms even if the prices gained for livestock sales were to be double the values assumed in the budget, the grazier would still only achieve a 65% return on all investments by 2012, suggesting that, in this instance, even effective marketing is unlikely to make the system genuinely sustainable in economic terms.

Thus to attract an outside grazier, with no existing infrastructure, in 2006 the conservation agencies would need to find almost £20,000, in addition to their area payments, especially as any marketing premium is likely to be minimal in the first year of operation. In 2012 the conservation agencies would still need to provide over £11,000 , although by then a marketing premium may be contributing to the financial viability of the grazing scheme.

6.10 Conclusions

We conclude that a partnership with the Linley Estate represents the better of the two options considered but recommend that:

- **Any agreement with the Linley Estate is carefully drawn up to make the conservation objectives very clear and that continuation of the agreement is dependent on achieving those conservation objectives**
- **Shropshire WT and English Nature/Natural England claim and retain the available area payments on The Nipstone / Nipstone Big Wood and Gatten respectively.**

If, for any reason, the Linley Estate does not take on the grazing the conservation agencies managing the sites will need to find the resources, estimated to be £20,000 in 2006, to contract a grazier.

Table 9a. Area Payments for the Linley Estate 2009 (for assumptions see text Section 6.7)

			Sites					Total for Linley Estate
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	Shropshire WT	Natural England	
Single Payment	**SDA Non-moorland**	**Area**	0	29.75	19.33	8.6[1]	32.71	**90.39**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	2873.85	1867.28	830.76[1]	3159.79	**8731.674**
	Moorland SDA	**Area**	51.35	0	0	0	0	**51.35**
		Historical	0	0	0	0	0	**0**
		Flat Rate	705.549	0	0	0	0	**705.549**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	8.6	32.71	**90.39**
		Payment	0	738.4	479.77	213.45	811.86	**2243.48**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
ESA		**Area**	51.35	29.75	0	0	0	**81.1**
		Payment	3594.50	2082.50	0	0	0	**5677.00**
HLS		**Area**	51.35[2]	29.75[2]	19.33	8.6	32.71[3]	**19.33**
		Payment	1540.8	892.5	579.9	258.0	981.3	**4252.5**
	Cattle/Breeds Supplements		3595.2	2082.5	1353.1	602.0	2289.7	**9922.50**

[1] Shropshire WT purchase 8.6 'Other SDA' flat rate entitlements for Nipstone Big Wood @ *c.* £100 each

[2] Black Rhadley and The Rock transferred to HLS to take advantage of higher area payments with cattle and breeds supplements

[3] Eligibility of Gatten for HLS to be ascertained following transfer to Natural England

Table 9b. Area Payments for a Grazier 2009 (for assumptions see text Section 6.7)

			Sites					Total for Grazier
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	Shropshire WT	Natural England	
Single Payment	**SDA Non-moorland**	**Area**	0	0	19.33	8.6	32.71	**60.64**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	0	1867.28	830.76	3159.79	**5857.824**
	Moorland SDA	**Area**	0	0	0	0	0	**0**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	0	0	0	0	**0**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	0	32.71	**81.79**
		Payment	0	738.4	479.77	213.45	811.86	**2243.48**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
ESA		**Area**	0	0	0	0	0	**0**
		Payment	0	0	0	0	0	**0**
HLS		**Area**	0	0	19.33	8.6	32.71[1]	**60.64**
		Payment	0	0	579.9	258.0	981.3	**1819.2**
	Cattle/Breeds Supplements		0	0	1353.1	602.0	2289.7	**4244.80**

[1]Eligibility of Gatten for HLS to be ascertained following transfer to Natural England

Table 10a. Area Payments for the Linley Estate 2012 (for assumptions see text Section 6.8)

			Sites					Total for Grazier
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	Shropshire WT	Natural England	
Single Payment	**SDA Non-moorland**	**Area**	0	29.75	19.33	8.6	32.71	**60.64**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	4762.98	3094.73	1376.86	5236.87	**14471.439**
	Moorland SDA	**Area**	51.35	0	0	0	0	**51.35**
		Historical	0	0	0	0	0	**0**
		Flat Rate	1175.92	0	0	0	0	**1175.92**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	8.6	32.71	**81.79**
		Payment	0	738.4	479.77	213.45	811.86	**2243.48**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
HLS		**Area**	51.35	29.75	19.33	8.6	32.71	**141.74**
		Payment	1540.8	892.5	579.9	258.0	981.3	**4252.5**
	Cattle/Breeds Supplements		3595,2	2082.5	1353.1	602.0	2289.7	**9922.50**

Table 10b. Area Payments for a Grazier 2012 (for assumptions see text Section 6.8)

			Sites					Total for Linley Estate
			Black Rhadley	**The Rock**	**The Nipstone**	**Nipstone Big Wood**	**The Gatten**	
Area (ha)			51.35	29.75	19.33	8.6	32.71	**141.74**
Entitlement			Linley Estate	Linley Estate	Shropshire WT	Shropshire WT	Natural England	
Single Payment	**SDA Non-moorland**	**Area**	0	0	19.33	8.6	32.71	**60.64**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	0	3094.73	1376.86	5236.87	**9708.464**
	Moorland SDA	**Area**	0	0	0	0	0	**0**
		Historical	0	0	0	0	0	**0**
		Flat Rate	0	0	0	0	0	**0**
Hill Farm Allowance	**Severely Dis-advantaged**	**Area**	0	29.75	19.33	8.6	32.71	**81.79**
		Payment	0	738.4	479.77	213.45	811.86	**2243.48**
	Moorland	**Area**	51.35	0	0	0	0	**51.35**
		Payment	482.18	0	0	0	0	**482.18**
HLS		**Area**	0	0	19.33	8.6	32.71	**60.64**
		Payment	0	0	579.9	258.0	981.3	**1819.20**
	Cattle/Breeds Supplements		0	0	1353.1	602.0	2289.7	**4244.80**

Table 11a. Progressive Annual Budgets for the Linley Estate to Operate the Stiperstones Grazing System

		2006		2009		2012		Assumptions / Notes
								3% annual inflation of variable costs and static prices
Enterprise Gross Margins (£)	Sheep	1,851.39		1,783.73		1,615.63		
	Cattle	2,754,25		2,530.55		2,286.10		
	Total		4,605.64		4,269.28		3,901.73	
Less Fixed Costs (£)		7,307.76		7,985.39		8,725.85		3% annual inflation of fixed costs
Net Margin (£)			-2,702.12		-3,716.11		-4,824.12	
+ Estate Land Area Payments (£)		9,228.56		14,531.66		16,429.84		Estate receives SP and ESA / HLS payments on its own land + HFA on all land
Area payments for Conservation Agencies (£)		*2,687.06*		*10,967.26*		*14,316.19*		
Profit for Linley Estate (£)			6,526.43		10,815.55		11,605.73	Net Margin less Fixed Costs plus Area Payments
% Investment Represented			56		93		99	(Profit ÷ total value of investments) x 100
Deficit			5,142.45		853.33		63.15	Extra amount needed to achieve viability

Return on investments	Labour	1,000 hours @ £10.00 per hour			£10,000	Labour and machinery costings from figures supplied by Linley Estate + 450 hours for cattle enterprise
	Capital (start-up and working)	Total (£)	34,296	Interest @ 3% (£)	1,028.88	Lower investment costs due to parallel operation of livestock enterprises and sharing of equipment
		Machinery only (£)	8,000	Depreciation @ 8% (£)	640.00	
Total Value of Investments					11,668.88	

Table 11b. Progressive Annual Budgets for a Grazier to Operate the Stiperstones Grazing System

		2006		2009		2012		Assumptions / Notes
								3% annual inflation of variable costs and static prices
Enterprise Gross Margins (£)	Sheep	1,851.39		1,783.73		1,615.63		
	Cattle	2,754,25		2,530.55		2,286.10		
	Total		4,605.64		4,269.28		3,901.73	
Less Fixed Costs (£)		12,754.02		13,936.66		15,228.97		3% annual inflation of fixed costs
Net Margin (£)			-8,148.38		-9,667.38		-11,327.24	
+ Area Payments for non-Estate Land (£)		5,701.70		14,489.67		17,586.98		Grazier receives SP and HLS payments for all non-Estate land + HFA on all land
Area payments for Linley Estate (£)		*6,213.91*		*8,826.87*		*13,159.06*		*Estate receives SP and ESA / HLS payments for all its own land*
Profit for Grazier (£)			-2,446.68		4,822.29		6,259.74	Net Margin less Fixed Costs plus Area Payments
% Investment Represented			-14		28		36	(Profit ÷ total value of investments) x 100
Deficit (%) and (£)		114%	£19,918.69	72%	£12,649.72	64%	£11,212.27	Extra amount needed to provide full return on all investments

Return on invest-ments	Labour	1,800 hours @ £8.00 per hour			£14,400.00	Labour costed @AWB management rate
	Capital (start-up and working)	Total (£)	45,067.00	Interest @ 3% (£)	1,352.01	Compared to investing capital in an investment account
		Machinery only (£)	21,500.00	Depreciation @ 8% (£)	1,720.00	Annual re-investment to maintain value of machinery
Total Value of Investments					17,472.01	

7.0 Marketing Livestock and their Products

The income generated from sales of live animals for breeding, or for slaughter, together with the development of specialist markets for produce such as meat, wool and hides will all influence the financial viability and hence the prospects for sustaining the grazing regime in the long-term. This section reviews the various outlets and compares options for increasing the income that may be generated by exploiting them more successfully.

7.1 Marketing Breeding Livestock

There is currently a demand for hardy, native breeds of cattle and sheep for conservation grazing projects. This demand may increase as the impacts of CAP reform take effect, with extensive grazing systems possibly replacing the more intensive systems favoured by the previous headage payments. In addition, recent acceptance by the European Commission of the U.K.'s proposals for inclusion of 'grazing with cattle' and 'native breeds at risk' in the Higher Level of ESS (worth up to £70 per hectare) may further increase demand. The various options for marketing breeding stock and their advantages and disadvantages are set out in Table 12.

Table 12. Options for marketing breeding stock

Option	Advantages	Disadvantages
Local Auction Mart	• Low mileage for transporting stock • Frequent – animals can be entered throughout the year • Low entry costs	• Probable low prices for 'non-commercial' stock, especially primitive sheep • No premium for pedigree stock
Rare Breed Sales	• Dedicated sales concentrate interested purchasers • Prices usually reflect pedigree / registered status	• No local sales – nearest are Chelford (mid-Cheshire), Melton Mowbray (Leics.) and Frome (Somerset). • Greater transport costs • Limited window: most in September – October. (One spring sale at York). • Relatively high entry costs (vary between sales) • Some sales have closing dates 6-8 weeks before sale • Stock has to be registered with appropriate breed society • May not accept breeds not on the RBST's Watchlist (although most do accept other traditional breeds)
Private sales through farming press	• No transport costs – purchaser comes to vendor • Reaches wide (but relatively general) readership • Price can be set by vendor	• Advertising costs (but probably no more than sale entry costs)

Private sales through specialist rare breed publications	• No transport costs – purchaser comes to vendor • Price can be set by vendor • May be posted on website at little extra cost	• Reaches narrow but interested readership • More expensive to advertise than in general farming press
Private sales through specialist conservation publications e.g. Eco-Lots	• Free advertising (including website) • No transport costs – purchaser comes to vendor • Reaches narrow but specialist readership • Price can be set by vendor	

None of the above options guarantees a sale, except possibly a local auction mart provided no, or a very low, reserve is placed on the stock.

It is not clear whether there would be a market for mature Hebridean ewes no longer required for conservation grazing (the equivalent of draft hill ewes) amongst breeders. Such ewes could be expected to produce five further crops of lambs. As such they may have some value; a best guess would be not more than £20.00, markedly less than value as mutton or even as products such as burgers and sausages. However, if an annual draft of good quality breeding stock could be produced, a regular market may become established as breeders and conservation graziers become aware of it, but this would take some years.

Registering the animals with the appropriate breed society would enhance sales of all stock for breeding, but this requires:

- membership of the breed society (current Hebridean Sheep Society (HSS) annual fee is £15.00)
- payment of registration fees (the current HSS fees are £1.85 for ewe lambs, £3.50 for shearling ewes, £6.50 for rams of all ages)
- birth notification of all lambs that might be registered
- pedigree breeding and recording e.g. using a single ram with each group of ewes and recording dams of all lambs.

Thus if 24 purebred ewe lambs were bred each year, of which 14 might be retained as flock replacements, the 10 that could be sold as breeding stock would incur charges of approximately £4.00 each before any advertising costs or entry fees were paid. Mature ewes would have similar costs assuming they had been registered in their first year (although the more sheep sold for breeding the less per head for the £15.00 HSS membership fee).

An advertisement for 25 Hebridean shearling ewes placed in Eco-Lots in June 2005 produced three enquiries, although only one of the enquirers came to view the sheep. That purchaser selected 17 ewes at an agreed price of £1050 (£61.76 per head). The purchaser accepted that the ewes would remain on the conservation grazing site until October. To both view and collect the sheep the purchaser made round trips of approximately 300 miles.

In October 2005 Hebridean shearling ewes at York sale (generally considered the main sale for Hebridean sheep) averaged £55.22 and ewe lambs £31.68; from this must be

deducted entry fees of £3.00 per ewe and £2.00 per ewe lamb.

Private purchases of Hebridean ewes and ewe lambs in autumn 2005 cost £45.00 and £35.00-£45.00 respectively.

There are a number of sales of Welsh Black cattle (Appendix 1) and the Welsh Black Cattle Society website carries advertisements from members. There are a number of costs involved in registering Welsh Black cattle:

- Membership £35.00 p.a. + VAT
- Initial registration of herd prefix: £23.50 + VAT
- Herd record book £5.87 incl. VAT
- Registration of heifers under six months of age £10.00 + VAT
- Registration of heifers over six months of age £10.00 + VAT
- Registration of bulls £30.00 + VAT (bulls must be DNA tested at an additional cost of £21.50 + VAT)
- Registration of steers £3.52 incl. VAT

On the basis of ten cows calving each year, and equal numbers of male and female calves, the five heifers would cost at least £13.50 + VAT (registration fee + proportion of membership fee) and the five steers *c.* £7.00 + VAT (registration fee + proportion of membership fee). However, steers would only need to be registered if marketed as guaranteed Welsh Black beef. In the first year there would be the additional costs for the herd prefix registration and herd record book.

7.2 Recommendation for Selling Breeding Stock

The recommended strategy would be to advertise surplus purebred, pedigree stock in Eco-Lots throughout the year (even if stock is not available throughout the year). If surplus breeding stock remains in August these should be entered for rare breed sales (Hebrideans) or Welsh Black Cattle Society sales, or sold for meat.

However, it would be more cost and time efficient not to register stock. In this case sales for breeding should be excluded and all lambs and calves not needed as flock and herd replacements should go for meat. Two factors (may) militate against this course:

- the conservation of genetic resources requires purebred, pedigree recording i.e. if the breeding stock are not registered they cannot contribute to the (admittedly peripheral) aim of conserving genetic resources
- we understand that the 'grazing with cattle' and 'native breeds at risk' payments of the higher tier of ESS are dependent on use of registered purebred pedigree stock.

The latter is more important to the economic viability of the grazing scheme, and the additional payments have been included in area payment budgets.

7.3 Marketing of Finished Stock

There is a growing, but still small, market for rare breed meat and with additional effort put into appropriate marketing the meat can command a premium. Two case studies illustrate the potential, but also the issues that may arise:

Case Study 1: Heathland Hebridean Lamb
(With thanks to Julian Small, English Nature)

This is an initiative by Julian Small on behalf of English Nature and three flocks of Hebridean sheep grazing heathland in North Yorkshire: the Escrick Estate and Yorkshire Wildlife Trust (YWT) on Skipwith Common and the Ministry of Defence at Strenshall Common. A trial was started in November 2005 with limited promotion to members of the YWT and Friends of Skipwith Common, plus a free advertisement in Eco-Lots. Julian considers that creating a single brand to cover the three flocks has worked well.

Average carcase weights from the first two batches were: lambs 12kg and wethers 20kg.Both lamb and mutton are offered in whole or half boxes. A whole box of lamb weighs 12-14kg and costs £77.00, a half box (6-7kg) £44.00; for mutton the equivalent weights and prices are 16-18kg, £66.00 and 8-9kg, £40.00 respectively. All prices are inclusive of delivery and a 10% discount is offered to members of the YWT and Friends of Skipwith Common. A recipe sheet is included with each order.

In the first three months the equivalent of 65 animals had been sold, of which mutton represented 20%. Julian considers the prices to be a little low for the costs involved, especially for the mutton; currently the administration costs, borne by English Nature, which acts as 'banker', are £3.00 per order, but this could decrease if the scheme becomes permanent. An estimated 200 animals a year could be sold.

Another initial difficulty was finding a local butcher who would prepare and package the meat for mail order. CCM Foods in Skipton, some 60 miles from the conservation sites, is currently used. If marketing under a single brand is to continue, a non-profit making partnership would be needed, and when the Heathlands Project Officer post ends the administration would need to be shared between the partners.

Case Study 2: Shropshire Wildlife Trust Rhos Fiddle Nature Reserve
(With thanks to John Hughes, Shropshire Wildlife Trust)

Marketing of organic beef and lamb solely to members of the Shropshire Wildlife Trust with support from the Countryside Agency. Focuses on Trevor Wheeler, whose Hebridean sheep and Highland cattle graze Rhos Fiddle. Trevor runs a flock of around 80 Hebrideans – some pure bred, some crossed with Texel and Lleyn. Trevor is registered organic and all his animals are sold via Graig Farm Organics.

If the meat is going to supermarkets animals are sent for slaughter to Merthyr Tidfil. If the meat is to be sold mail order by Graig Farm then Trevor will personally take the animals to Griffiths at Leintwardine on the abattoir's organic day. Slaughter at Merthyr automatically attracts a £1.50 per lamb haulage charge, but the round trip to Leintwardine takes three hours.

While there is naturally some variation in the size of the lambs, in 2006 they are averaging 14-15kg killed out. Trevor is paid £3.10 per kg (equivalent to ~£45 per head). This is retailed as whole or half Rhos Fiddle lamb boxes £10.06 and £10.57 per kilo respectively (equivalent to ~£145-£150 per head). This is the same price as other organic lamb boxes, as the partners agreed it would be counter-productive to add any additional premium to the price.

For mail order, Graig Farm employs its own team of butchers, packers etc. and has fairly

high fixed costs: Bob Kennard says it costs approximately £15 simply to mail order to a customer!

Selling the lamb:
SWT put a flier into its members' magazine, which is sent to over 4000 addresses. This generated 100+ expressions of interest. A letter, when the first batch of lambs was ready, resulted in some 20 sales. Given the barriers put in the way of potential customers (registering interest, having to order via the web etc.) the level of response seems very good. Having personally tasted the meat John vouches that it is an excellent product.

Some issues have arisen:

- *Due to a misunderstanding (Trevor thought Graig Farm wanted mountain lamb size), for the second batch Trevor selected the smallest lambs – some of which were rejected by Graig Farm. A fall-out followed and no more Rhos Fiddle lambs have yet been sent to Graig Farm.*

- *Slaughter, butchery, and mail order are all fixed costs irrespective of the size of the lamb, so small lambs mean less profit all round.*

- *Customers are not used to small lambs with little meat and the market for small lambs is not a strong one: people are used to lowland fat lambs. However, they are ideal for the increasing number of smaller families. This market needs to be developed.*

- *Carcase size – Graig Farm had originally assumed Trevor's lambs would be equivalent to "mountain lamb" (8-10kg killed out). In fact they turned out to be an equivalent size to "lowland small lambs". This is good as it improves profitability.*

- *Trevor is already receiving an organic premium. He had expectations that he would receive even more for his Rhos Fiddle branded lambs. This wasn't possible without increasing the cost to customers. It may be that he is able to gain a locational premium without worrying about organic status. This would have the benefit of not tying him to limited organic abattoirs and butchers.*

- *The only way Trevor can derive more value is by direct selling (he already sells organic vegetables at farmers' markets). However, he still needs an outlet for the volume of his lambs and Graig Farm appears to be his best (only?) alternative. The partners need to understand the resource implications and markets for any direct selling.*

- *Some work needs to be done on non-meat products. For example, there is one UK organic tannery located in Herefordshire that has developed a market for sheep skins that retail at the same price as the meat (see below).*

7.4 Options for Marketing Finished Stock

The various options for marketing finished stock and their advantages and disadvantages are set out in Table 13.

Table 13. Options for Marketing Finished Stock

Option	Advantages	Disadvantages
Live through local auction mart	• Low mileage for transporting stock • Frequent – animals can be entered throughout the year • Low entry costs	• Low prices for 'non-commercial' stock, especially primitive sheep • No added value from use of rare breed on conservation grazing
Through local butcher	• Low mileage for transporting stock • Regular – animals can be supplied throughout the year	• Needs butcher willing to accept 'non-commercial' carcases and market as specialist product • Little added value from use of rare breed on conservation grazing
Traditional Breeds Meat Marketing Co.	• Established infrastructure – butchers and, if needed, finishing units • Recommends A. H. Griffiths, Leintwardine as a suitable abattoir. • Specialises in rare breeds • Markets meat as specialist, fully traceable product • Local butcher (D. W. Wall & Son in Craven Arms and Ludlow) • Local finishing unit for cattle: Mr. D. Charlesworth, Market Drayton • Better returns e.g. beef £2.35 per kg *c.f.* commercial rate of £1.83 per kg; lamb £2.61 per kg *c.f.* commercial rate of £2.34 per kg (TBMM Co. figures)	• Only takes breeds on RBST's Watchlist and some other traditional breeds. • No local finishing unit for sheep: nearest are at Stafford or Stanford Bridge (Worcs.). • Imposes a levy (£0.94 per head for Hebridean and up to £22.33 per head for beef cattle, including VAT). • Additional paperwork involved. • Some finishing units will not take horned cattle or entire male sheep • Will penalise, or even reject, carcases with poor conformation

Graig Farm	• Established network for organic produced meat • Experience of meat from conservation grazing e.g. Rhos Fiddle • Uses A. H. Griffiths, Leintwardine as a suitable abattoir. • No special arrangements other than telephone call from producer to report delivery day • Provides full butchery, packaging, labelling and mail order service.	• Need for organic status and annual fee of £550 for certification. • Could not take more carcases before previous batch sold. • No, or only small, premium on standard organic price (e.g. beef currently £2.45-2.60/kg; lamb £3.00/kg c.f. £2.50 conventional). • Will penalise carcases with poor conformation. • Does not currently supply beef, but willing to do so • Could only be used if The Stiperstones system is converted to organic status, which would entail additional costs and possibly constrain some aspects of habitat management.
Specialist butchers (not via TBMM Co.) See notes on D.W. Wall & Son and The Great Tasting Meat Co. below table	• May allow marketing as a specialist product linked to the local landscape • May provide full butchery, packaging, labelling and mail order service. • May take non-rare breeds	• May need to deliver stock to more distant abattoir
Private sales to restaurants / public houses	• Allows marketing as a specialist product linked to the local landscape • Adds value and returns, but outlets are also seeking to maximise profits	• Greater demands on staff / farmer's time for marketing • More bureaucracy in running business • Need to find cutting and packaging plant • Outlets may require regular supply unless persuaded to sell as seasonal speciality • Risk that outlet will change hands / policy / style or go out of business, leaving no market
Private sales to general public (or to specialist groups e.g. members of Shropshire WT).	• Allows full marketing as a specialist product linked to the local landscape • Maximises value added and returns	• Greater demands on staff / farmer's time for marketing • More bureaucracy in running business • Need to find cutting and packaging plant for mail order

Two specialist butchers and a new retail outlet were contacted to establish whether they would be willing to take stock from The Stiperstones:

7.4.1 D. W. Wall & Son

This local (Craven Arms and Ludlow) company is an accredited butcher with the Traditional Breeds Meat Marketing Co. and is well known in the project area. However, the owner was reluctant to become involved in any additional marketing scheme, explaining that the company was contracted to TBMM Co. He might be willing to take animals through the TBMM scheme, but not directly: he stated that he already found it difficult to sell all the carcasses (especially those of primitive sheep) produced through TBMM. He also had concerns about the yield from carcasses raised on The Stiperstones. The company does not have its own abattoir and uses A. H. Griffiths at Leintwardine; the owner would be willing to butcher carcasses (£100-120 for a beast, £15-20 for a lamb) but indicated that delivery charges from A. H. Griffiths would be additional and that it would therefore be less expensive to use A. H. Griffiths' butchery service. Contact details: D. W. Wall & Son, Corvedale Road, Craven Arms, Shropshire SY7 9NL. Tel: 01588 672308. Website: www.wallsbutchers.co.uk

7.4.2 The Great Tasting Meat Co.

Based in Nantwich, this company is also an accredited butcher with the Traditional Breeds Meat Marketing Co. The owner (Andrew Jackson) would be willing to consider taking animals from The Stiperstones, but was not familiar with Hebridean carcasses. The company uses Tom Newton, Haslington (near Crewe; telephone 01270 581646) as an abattoir; this is an estimated 65 miles (100 km) from The Stiperstones. Mr. Jackson described Newton's as a small, careful and welfare-friendly abattoir and the carcasses could be collected from the abattoir. The Great Tasting Meat Co. would do the butchering, but the owner was not sure how much he would charge as he doesn't usually do butchering for other people – he thought a beast might be in the range £160-200. The company has a mail order business and would be willing to consider marketing meat from The Stiperstones that way; the company's delivery charges are £7.50 for the first 15kg, 25p per kg thereafter. Meat is sent out in insulated boxes with a cool pack and a return bag, allowing the customer to return the empty box for re-use. Contact details: The Great Tasting Meat Co., Gate Farm Shop, Poole, Nantwich, Cheshire CW5 6AL. Tel: 01270 625781. Website: www.greattastingmeat.co.uk

7.4.3 Ludlow Food Centre

Another possibility that was investigated was the Ludlow Food Centre (LFC), due to open in September 2006. The manager, Sandy Boyd, explained that the primary purpose of the LFC was to create an outlet for the tenant farmers of the Earl of Plymouth's Estates, who could supply both organic and non-organic Aberdeen Angus beef. However, if sales of beef were sufficient LFC would consider taking beef from other producers. As well as the butcher's shop within LFC, it is intended to develop internet sales of meat. The planning permission for the LFC specified that 80% of the products sold must come from four counties: Shropshire, Herefordshire, Worcestershire and Powys, but the emphasis is on local produce. Meat from The Stiperstones would therefore be welcome as a local product. LFC is not yet sufficiently

advanced to discuss costs.

The LFC would therefore consider other interesting products that might appeal to new customers, but only if the producer became involved in the processing and/or marketing of the product; LFC would not act solely as a retail outlet. LFC provides training opportunities in processing and marketing; thus a producer may sell some cuts through the LFC butcher but, using the training kitchen, develop processed products from the less popular cuts.

One means of adding value has been suggested (by Nicki Port, see Section 7.6.2): smoking the meat. This was said to add value with little extra cost, but would depend on there being a local smokehouse and successful marketing of an even more specialist product. No further research was undertaken on this possibility.

The options above are not mutually exclusive e.g. some stock could be sold through the TBMM Co., others privately. This would allow time for a market for private sales to develop, which could take some time. It is not possible to determine demand for private sales, especially in an essentially rural area where alternative sources (farm shops, farmers' markets, local butchers) of meat may be readily available. Shrewsbury is the only sizeable population centre in the area.

However, targeting members of conservation organisations managing The Stiperstones (without undermining existing schemes such as Rhos Fiddle) is likely to be the best option for promoting private sales. This would require the co-operation of Shropshire Wildlife Trust, National Trust etc. If local 'Friends of' groups exist these would be particularly valuable. Offering a discount to members of relevant organisations is likely to increase sales through the sense of saving money and as a benefit that could increase overall membership.

If a product is developed and becomes established, but there are insufficient private sales, a wider market might be sought through free advertising in Eco-Lots. Alternatively, approaches to one or two up-market restaurant-type outlets might be worthwhile, seeking to ensure that the seasonality of the product is understood and promoted.

The marketing of Rhos Fiddle meat, with its emphasis on the farmer, is interesting and worth emulating. If the farmer is middle-aged or over, his/her experience and commitment may be the selling point; conversely, if the farmer is young, his/her enthusiasm and need to make a living while working in harmony with wildlife and landscape conservation could be equally effective (provided that is not too compromised by his/her other farming enterprises). This farmer-orientated approach, with sufficient mention of the local landscape and the value of conservation grazing, makes for an interesting, personalised, marketing 'story'.

7.5 Budgets for Marketing Finished Stock

We have prepared marketing budgets for four options: 'standard' (i.e. selling through a fatstock market), TBMM Co., Graig Farm and Direct / Retail sales in

which the Linley Estate or grazier market The Stiperstones meat directly to the public (e.g. through a farm shop) or to a narrower, but targeted, customer base (c.f. Heathland Hebridean) or via a specialist outlet such as The Great Tasting Meat Co. Although TBMM Co. does not accept Welsh Black it is included in the cattle marketing budget so that, if a breed other than Welsh Black is eventually adopted, the likely returns are known (after allowance for variation in carcase weight between breeds).

7.5.1 Cattle Marketing Budget

Table 14 shows the marketing budget for cattle for the four options; see Table footnotes for additional clarification. In each case the finished weight of the beast is considered to be 270kg. Variable costs are also the same for each option, except for Graig Farm where the purchase of organic feeds increases the fixed costs by *c.*10%. The price per kg varies between £1.90 for the standard option, to £6.00 for the direct/retail sales option, but for the latter a 65% yield of saleable meat is assumed and killing, cutting and handling charges of £250.00 must be deducted. For TBMM Co. the company's £20.00 levy must be deducted.

Thus the gross margins per head range from £288.00 for the standard option to £578.00 for the direct / retail sales. However, it should be remembered that the latter involves more input in terms of marketing and perhaps development of a brand. TBMM Co. and Graig Farm provide intermediate returns, but the former would need a change of breed and the latter organic registration with its associated costs.

With the expected average production of 4.75 fat steers per year, the marketing gross margins would range from £1,368.00 for the standard option to £2,745.00 for the direct / retail sales.

7.5.2 Sheep Marketing Budget

Table 15 shows the marketing budget for sheep for the four options, divided into autumn finished cross-bred lambs and spring / summer finished Hebridean hogget (i.e. wethers or females aged 12-18 months); see Table footnotes for additional clarification.

For the cross-bred lambs the carcase weight is estimated to be 15kg, with an 85% yield of saleable meat for the direct / retail sales option. Variable costs are again *c.*10% for the organic Graig Farm option and the TBMM Co. levy is £0.94 per head. The price per kg varies from £2.30 (standard) to £6.00 (direct / retail sales). Thus the gross margins vary from £20.00 (standard) to £43.00 (direct / retail sales), but with the same caveats as for cattle concerning marketing and branding for the latter.

With the expected average production of 45 crossbred lambs per year, the marketing gross margins would range from £900.00 for the standard option to £1,935.00 for the direct / retail sales.

For the Hebridean hoggets carcase weight is estimated to be 20kg, again with an 85% yield of saleable meat for the direct / retail sales option. Variable costs are £19.50 per head + *c.*10% for the organic Graig Farm option; the

TBMM Co. levy is £0.94 per head. The price per kg varies from £2.75 (standard) to £6.50 (direct / retail sales). Thus the gross margins vary from £35.50 (standard) to £72.00 (direct / retail sales). With an expected average production of 21 wether lambs per year, the marketing gross margins would range from £745.50 for the standard option to £1,512.00 for the direct / retail sales.

From these data it might appear that Hebridean hoggets are a better option, suggesting that the entire flock should be pure-bred. However, there are some factors that suggest our proposal would be better, at least in the short to medium term:

- If the flock was entirely pure-bred all the Hebrideans would need to be over-wintered, possibly leading to overgrazing or the need for more in-bye land.
- Inclusion of autumn finished cross-bred lambs spreads the income to the enterprise, easing possible cash-flow issues.
- Cross-bred lambs are always likely to find a ready market, whereas Hebridean hogget is a specialist product that, despite its eating quality, may not command a high price through standard outlets.
- In the early stages marketing 42 Hebridean hoggets, all finishing at much the same time, may be challenging; variable costs will increase the longer they are kept.

Thus until a market has been identified and developed we consider the inclusion of cross-bred lamb production has advantages. If a market develops an increasing proportion of the Hebridean flock may be pure-bred to meet the demand.

Table 14. Marketing budget for cattle

	Standard	TBMM Co.[1]	Graig Farm	Direct / Retail Sales	
Finished beast carcase weight (kg)	270	270	270		270
% yield	-	-	-		65
Weight of meat (kg)	-	-	-		175.5
Price per kg (£)	1.90	2.35	2.50		6.00
Sale value (£)	513.00	634.50	675.00		1,053.00
Variable costs	225.00	225.00[2]	250.00[3]		225.00
Killing charge (£)	-	-	-	80.00	
Cutting charge (£)	-	-	-	120.00	
Handling charge (£)	-	-	-	50.00	
Processing / Marketing costs	-	20.00	-		250.00[4]
Gross margin (£)	**288.00**	**389.50**[2]	**425.00**		**578.00**

[1] Included for comparison purposes; TBMM Co. does not accept Welsh Black Cattle
[2] Does not include additional cost of registering breeding stock with the appropriate breed society: registration costs vary.
[3] Variable costs greater due to purchase of organic feeds; does not include organic registration
[4] Total of killing + cutting + handling charges

Table 15. Marketing budget for sheep

a) Autumn finished cross-bred lambs					
	Standard	TBMM Co.[1]	Graig Farm	Direct / Retail Sales	
Finished lamb carcase weight (kg)	15	15	15		15
% yield	-	-	-		85
Weight of meat (kg)	-	-	-		12.75
Price per kg (£)	2.30	2.61	3.10		6.00
Sale value (£)	34.50	39.15	46.50		76.50
Variable costs	14.50	14.50[1]	16.00[2]		14.50
Killing charge (£)	-	-	-	4.00	
Cutting charge (£)	-	-	-	10.00	
Handling charge (£)	-	-	-	5.00	
Processing / Marketing costs	-	0.94	-		19.00
Gross margin (£)	**20.00**	**23.71**	**30.50**		**43.00**
b) Spring / Summer finished Hebridean hoggets					
	Standard	TBMM Co.	Graig Farm	Direct / Retail Sales	
Finished hogget carcase weight (kg)	20	20	20		20
% yield	-	-	-		85
Weight of meat (kg)	-	-	-		12.75
Price per kg (£)	2.75	3.00	3.50		6.50
Sale value (£)	55.00	60.00	70.00		110.50
Variable costs	19.50	19.50[2]	22.00[3]		19.50
Killing charge (£)	-	-	-	4.00	
Cutting charge (£)	-	-	-	10.00	
Handling charge (£)	-	-	-	5.00	
Processing / Marketing costs	-	0.94	-		19.00[4]
Gross margin (£)	**35.50**	**39.56**[2]	**48.00**		**72.00**

[1] Included for comparison purposes; TBMM Co. does not accept cross-bred sheep
[2] Does not include cost of registering Hebridean breeding stock with the breed society (see Section 7.1)
[3] Variable costs greater due to purchase of organic feeds; does not include organic registration
[4] Total of killing + cutting + handling charges

7.6 Summary of Options for Marketing Finished Stock

Responsibility for selecting the best marketing options rests ultimately with the individual or organisation charged with the task of managing the grazing regime as part of their own business operation. This will be true for both the Linley Estate and an outside grazier and in the discussion below both will be referred to as 'the grazier'.

Although financially the best option is direct/retail sales, implementing such a strategy successfully depends on the grazier being willing and able to become actively involved in marketing and the development of a brand that will attract sales from a carefully targeted market. This option is also likely to need support from the land managers, as in the Shropshire WT's and English Nature's involvement in Rhos Fiddle and Heathland Hebrideans respectively.

As the market does not yet exist, whereas the Hebrideans are already breeding, a short-term outlet may be needed. Selling Hebrideans through the Traditional Breeds Meat Marketing Co. may fill this gap, with the added advantage that D. W. Wall could provide a local outlet for the local product. TBMM Co. would pay less than some options and involves some paperwork, but does not require involvement in the marketing process. However, the most significant drawback is TBMM Co.'s non-acceptance of Welsh Black. To market beef through TBMM Co. would require a change to Belted Galloway, Galloway or Traditional Hereford.

Until a local market has been developed, The Great Tasting Meat Co. may also provide an outlet. Details of the costs and services provided by The Great Tasting Meat Co. are less clear, and would need to be agreed between the grazier and the company. It has the disadvantage of requiring live transport of stock for approximately 65 miles, but would accept Welsh Black and has experience of marketing beef and lamb. The owner may need to be convinced of the value of Hebridean carcases if sold through the company's retail outlet, but would provide a full cutting, packing, labelling and mail order service. No additional paperwork would be required.

The Graig Farm option may be attractive if the grazier has, or is willing to acquire, organic status; for The Stiperstones there would be at least a one-year conversion period and organic registration would involve additional paperwork and an annual £550 certification fee. Graig Farm offers a full service of cutting, packing, labelling and mail order and would pay more but requires the marketing and sales to be developed by the producer. Beef may be more difficult as it would be sold on a 'selection box' basis rather than the half or whole lamb boxes for lamb.

7.7 Recommendations for Marketing Finished Stock

- The grazier should start the process of finding markets as soon as an agreement has been reached e.g. by clarifying charges that would be made by The Great Tasting Meat Co.
- Hebridean wethers born in 2006 and finished in 2007 are offered either to The Great Tasting Meat Co. directly or to TBMM Co. (whichever provides the best return). If the former, finished stock is taken to Tom Newton's abattoir for slaughter and carcases are collected from the abattoir by The Great Tasting Meat Co., which cuts, packages, labels and distributes the meat. If

the latter, TBMM Co. will advise on arrangements, but is likely to specify A. H. Griffiths.

- If the grazier is willing, a marketing programme directed at members of local conservation organisations involved with the management of The Stiperstones is initiated.
- Marketing literature should tell the story of the farmer as well as linking the product to landscape and nature conservation and emphasising its local status.
- If sales are initially insufficient additional outlets should be sought through free advertising (e.g. Eco-Lots) and / or selected local restaurants.
- If at any stage sales of meat are inadequate to absorb all the production excess finished stock should be sold through TBMM Co. or The Great Tasting Meat Co.
- Organic registration can only be contemplated with a) confidence that the various management objectives can be achieved within the constraints of organic standards and b) the full commitment of the grazier. If that commitment is forthcoming marketing through Graig Farm would be the best option for selling finished animals as it would allow development of a local, niche brand as well as attracting customers who prefer to purchase organic produce. The procedure for directly selling organic meat under a Stiperstones brand would be essentially the same as for non-organic product, except that both the abattoir and the cutting plant would need to be organically certified.

7.8 Marketing of Wool and Skins

7.8.1 Wool

It is not expected that wool will make a significant contribution to the financial viability of the grazing scheme for two reasons:

1. Hebridean wool is generally worth very little if sold to the British Wool Marketing Board (BWMB), which pays minimum prices for black or dark brown wool. Value depends on wool quality: most Hebridean fleeces are classified as Orkney Dark but better fleeces may be Shetland Dark Grey and Black. In 2005 these were worth a maximum (i.e. for skirted, rolled, uncontaminated fleeces) of 13p and 18p per kg respectively. A typical Hebridean fleece weighs 1-2kg.

2. Although clean Hebridean fleeces can be sold to handspinners, those from conservation grazing generally have too much plant matter embedded in the fleece to be attractive to private buyers.

However, a few points relating to the wool clip should be made:

- The owner of the sheep is legally obliged to register with BWMB, as are all owners of more than four sheep. There is no cost for registration.
- As a rare breed Hebrideans are exempted from the requirement to sell the wool to BWMB; this exemption is granted by BWMB and could be revoked at any time. While the exemption is in force Hebridean wool can be sold to handspinners, commercial spinning companies etc., as well as to the BWMB.

- Owners are obliged to ensure their sheep are shorn annually under animal welfare regulations.
- Shearing costs are likely to significantly exceed the value of the wool and should be taken into account in determining the overall economics of the enterprise.
- If wool is sent for processing transportation or postage costs will be incurred.
- Hebrideans will, to a greater or lesser extent, shed their fleece during the summer. The extent to which this occurs varies between individuals; breeding ewes will shed more readily than other individuals as a result of nutritional demands or hormonal influences on the growth of the wool. Sheep that are shedding their fleece can look very scruffy and may cause concern amongst the public.

To register with the BWMB contact:

British Wool Marketing Board,
Wool House,
Roydsdale Way,
Euroway Trading Estate,
Bradford,
West Yorkshire BD4 6SJ.

Tel: 01274 688666 Fax: 01274 652233 e-mail: bwmb@compuserve.com

Further information may also be obtained from the BWMB website www.britishwool.org.uk.

There are a number of companies that provide a spinning and/or weaving service. Contact details for these are given below, with brief notes, but the two problems noted above would also be significant considerations: the products would all be dark brown which limits the market, and contamination of the wool may increase the charges made for spinning.

The Natural Fibre Company: contract spinning. Cornwall Website: www.thenaturalfibre.co.uk

Elvet Woollen Mill: contract weaving and garment manufacture. West Wales. E-mail: enquiries@elvetwoollenmill.com, website: www.elvetwoollenmill.co.uk

Naturals: contract spinning and weaving. The Old Vicarage, Llangybi, Lampeter, SA48 8NB. E-mail: naturals@btinternet.com. Website: www.naturals.uk.com

Hebridean Woolhouse: garments and other woollen products made from Hebridean wool. FREEPOST Hebridean Woolhouse. Tel: 01932 254855. E-mail: khowman@ashgame.co Website: www.hebrideanwoolhouse.com
In some years the Hebridean Woolhouse takes woolclip from members of the Hebridean Sheep Society in exchange for discounted (35%) products, but these then need to be sold (or used) by the purchaser.

7.8.2 Skins

Following a relaxation in the interpretation of the Animal By-products

Regulations 2003 by Defra on 30th September 2005, animal skins can be returned to owners of slaughtered stock for on-farm salting. Some additional paperwork is required to reclaim the skins. It is unlikely that a market will be found for cattle hides, and they will not be considered further.

Sheepskins may be an additional output from the system but, as with wool, the market for dark brown / black sheepskins is limited and heavy contamination with organic matter may be a problem. The only tannery with organic registration in the British Isles is Organic Sheepskins operated by Nicki Port, based in Herefordshire. (See Appendix 1 for contact details). Skins processed by Organic Sheepskins would command an organic premium, and can also be made up into rugs.

Recovery of skins requires the co-operation of the abattoir in separating the required skins and making the first application of salt. The skins would have to be collected, salted again and transported to Organic Sheepskins (or another tannery). The costs of tanning skins are: lambs £25, shearlings £27-30 (both excluding transport costs, no VAT payable). Nicki suggests that for Hebrideans shearling skins make more attractive rugs. On the Organic Sheepskins website individual Hebridean skins retail at £60.00. Thus the 'profit' (excluding time, any additional charges made by the abattoir and marketing costs) could be in the range £20-30 per skin. Without an identified retail outlet the scope for selling processed sheepskins (especially dark brown/ black) is likely to be limited. Possibly the information centre at The Bog would provide an outlet, but at (say) £60.00 it is considered unlikely that there would be sufficient sales to cover all 65 skins produced each year. However, testing the market with skins from one year's production (21) of wethers may be worth considering, provided they are relatively free of contamination.

8.0 Conclusions

There are three elements to a successful and sustainable conservation grazing scheme: delivery of the conservation objectives, financial viability and social value. The first is essential and the conservation grazing scheme needs to be designed and implemented to ensure that the conservation value of the site(s) is maintained or enhanced. Financial viability is desirable and the inputs to and outputs from the scheme should be optimised to make best use of available resources. The social value arising from conservation grazing includes increased employment opportunities and, if the grazing scheme is effective, enhanced landscapes that can be enjoyed by visitors. Both employment and leisure/tourism can contribute to local economies.

However, it must be recognised that if farming was economically viable on conservation sites many would not need a conservation grazing scheme; it is because many conservation sites have low agricultural productivity that they have largely fallen outside mainstream agriculture. Persuading a farmer to adjust grazing intensities and/or times may require a financial incentive. Changes in farm support payments may help address this problem, as the area payments on even low productivity land can be attractive. The skill is then to ensure that these areas are managed with ecological objectives in mind; Black Rhadley may be an example of site which, although used within a commercial farming enterprise, has a condition described as ‘unfavourable, declining’ because of inappropriate grazing.

We have considered the four sites within The Stiperstones area and devised a grazing regime based on Welsh Black cattle and Hebridean sheep. It could be possible to substitute other breeds, but the range of breeds that could flourish on the sites is limited, and other breeds are unlikely to offer advantages (except possibly use of a rare breed of cattle that would attract the HLS supplement for ‘breeds at risk’ and that could be sold through the TBMM Co.). Despite these breeds’ hardiness, the grazing and husbandry regimes we recommend are time consuming, but are required to ensure that the conservation objectives and animal welfare needs are fully met. The time requirements are broadly equivalent to full-time employment for one person, although additional labour may be needed at particular times of year (e.g. lambing, shearing).

In determining the financial viability of the scheme, it is apparent that the agricultural outputs alone will contribute relatively little, even if it were possible to develop niche markets and/or a ‘Stiperstones’ brand. We have not costed the time that would be needed to develop such niche markets or brand, but for it to be successful would require a commitment by the grazier, the managing agencies, or both. Such development would also take time, and in the meanwhile alternative outlets for the products would be required; we have included suggestions of some of the possibilities.

Critical to the financial viability is the allocation of the area payments arising from the Single Payment System. Options are possibly more limited for the four sites under consideration than they might be elsewhere, because the area payments for two of the sites are held by the Linley Estate. This limits the area payments that could be paid to an ‘outside grazier’. We considered two opposing extremes: in one, the Linley Estate takes on the grazing of all the sites, retains the area payments for the two sites the Estate owns with the conservation agencies receiving the area payments for the other two sites. The analysis suggests that this could be economically viable for the Estate and that the conservation agencies would derive an income from the area payments that could be used to improve the management of the areas under their care.

In the alternative scenario an outside grazier takes on all the grazing but the Estate retains the area payments for the two sites it owns. It is very clear that this is not financially viable without some additional input from the managing agencies. There could, however, be advantages: it may allow greater control over the grazing and husbandry regimes with consequent benefits in terms of delivery of conservation objectives, would provide employment for a grazier and may offer a better 'story' on which to develop a brand. Only the conservation agencies can determine whether these possible advantages warrant the additional costs that would be incurred.

Four marketing options for finished stock were considered. Of these direct, retail sales provides the best gross margins for cattle, cross-bred lambs and Hebridean hoggets, but the analysis does not include the additional time and facilities (e.g. cold-store) that would be needed to retail the meat. Direct retail sales also require the commitment of the grazier and may take some time for a market to develop. The second best gross margin was achieved with organic meat sold through Graig Farm but, again, this requires a committed grazier, preferably with all land under his/her management registered as organic. A market for the meat would need to be developed by the grazier and the £550 p.a. organic registration fee would cut into the livestock gross margin. Sales through TBMM Co. are better than 'standard', but would require a change in breed of cattle to a recognised rare or minority breed, and pure-breeding of all the Hebridean ewes. 'Standard' marketing has the advantage of simplicity, but fails to capitalise on the marketing opportunities (in terms of story and brand) that grazing The Stiperstones offers and yields a poor gross margin. Thus we recommend initially selling through established outlets such as TBMM Co. (Hebridean hogget) or The Great Tasting Meat Co. (all finished stock) but seeking to develop a local market for direct sales, initially focusing on Shropshire WT members or other local groups with links to the Shropshire Hills.

Thus this feasibility study has demonstrated the economics of grazing the four sites with traditional or rare breeds and provides a basis for assessing grazing on other sites within the AONB. Bringing additional sites into a single grazing scheme may improve the viability, especially if the managing agencies have control of the area payments or if those additional sites offer facilities such as better quality grazing for over-wintering stock or for lambing/calving. However, this would be offset by additional resource demands.

The grazing regime described does indeed provide 'an exciting opportunity'; re-introduction of grazing to sites last grazed over 30 years ago (such as The Rock) and managing others to bring them back into favourable condition (such as Black Rhadley) is an inspiring prospect. As well as the undoubted nature conservation dividends that would accrue from well-managed grazing, the recommended regime could raise the profiles of The Stiperstones and the Shropshire Hills AONB, strengthen the sites' links to the local economy and provide added interest for visitors, whilst at the same time providing a realistic income for the Linley Estate in return for providing the required grazing regime. In delivering all of this we conclude that the recommended grazing system would be able to achieve in large measure the kind of genuine, joined-up sustainability that the conservation ethic should aspire to.

9.0 Risk Assessments for Cattle and Sheep Grazing on Black Rhadley, Gatten, The Nipstone and The Rock

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**				Late spring to early winter; start and end date dependent on sward condition		
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**				Permanent fencing topped with barbed wire) Gates		
	Site (map)	Black Rhadley Hill	**Water supply**				Natural spring		
	Stock type breeding or not	Cattle Breeding	**Stock checking proposals**				Daily by owner.		
	Number, age, breed	Welsh Black cattle 10 adult cows, plus followers	**Handling facilities**				None		
	Grazing area (ha)	51.35 dwarf shrub / grass heath & scrub	**Access**				Vehicle access to compartment adequate for appropriate stock vehicles		
	Stocking density	1 cow and 0.75 calves per 3.4ha (= 0.4 LU per ha)	**Emergency (e.g. foul weather, ill-health**				Some woodland / scrub shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.		
Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**		**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**				
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.		1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.		1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor coat condition (indicator of copper deficiency). Provide salt lick.		1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural spring in late summer or drought.	2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.		1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.	3	4	12		Monitor; ensure spring is free of contamination and excavate deeper if necessary.		1x3=3
	Accessibility (Physical access, freezing, drought)	Ice, snow cover. Subordinate animals may not be able to access water supply before herd moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.		1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches pre-determined threshold	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning, exposure, injury entering/exiting)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring. If animal trapped call in lifting gear.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects	2	2	4		Monitor; treat with repellent if necessary.	2x1=2
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Check no stock trapped daily. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	No bridges or crossing points on site.						
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Loose dogs possible, but usually with owners and should be on lead.	1	5	5		Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	Worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	1	3	3		Monitor stock condition. Conduct faecal egg counts and worm if necessary. (Do not use avermectins).	1x2=2
	Liver Fluke	Unlikely, but possible if *L. truncatula* present in springs	1	3	3		If present, use flukicide during risk periods	1x2=2
External	Flies	Some individuals suffer allergic reaction to bites.	1	3	3		Treat affected cattle with Deltamethrin insecticide (e.g. Spot-on.	1x2=2
Other (e.g. common and/or local ailments)	New Forest Eye Disease	Can spread rapidly between individuals; most prevalent in warm, dry weather when flies and dust abundant	3	3	9		Frequent checks especially in high-risk periods; prompt treatment of affected animals: eye cream or powder as directed by vet.	2x2=4
	Interdigital Dematitis	May result from standing in muddy areas	1	3	3		Vigilance and prompt treatment	1x2=2
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in herd and in extensive grazing areas	1x1=1
		Weaning	2	3	6		Minimise stress by keeping cow and calf in sight of each other after separation, preferably indoors. If not possible remove cow and leave calf on familiar site.	2x1=2
Negative social interaction (e.g. bullying)		Persistent bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other stock		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead. Ask local residents / lookers to report stray or loose dogs to site manager / grazier immediately.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2

Grazing System Risk Assessment				
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**	Late spring to early autumn; start and finish dates dependent on sward condition
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**	Permanent fencing topped with barbed wire) Gates
	Site (map)	Gatten	**Water supply**	Natural spring
	Stock type breeding or not	Cattle Breeding	**Stock checking proposals**	Daily by owner.
	Number, age, breed	Welsh Black cattle 10 adult cows, plus followers	**Handling facilities**	None
	Grazing area (ha)	32.71 re-created dwarf shrub heath following clear felling of coniferous plantation; small wetter areas / bog	**Access**	Vehicle access to compartment adequate for appropriate stock vehicles
	Stocking density	0.2LU per ha	**Emergency (e.g. foul weather, ill-health**	Some woodland / scrub shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.

Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**	**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**			
BASIC REQUIREMENTS (refer to first freedom)								
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.	1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.	1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor coat condition (indicator of copper deficiency). Provide salt lick.	1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural springs in late summer or drought.	2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.	1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.	3	4	12		Monitor; ensure spring is free of contamination and excavate deeper if necessary.	1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before herd moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.	1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring. If animal trapped call in lifting gear.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects	2	2	4		Monitor; treat with repellent if necessary.	1x2=2
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Check no stock trapped daily. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	Leg injuries (cattle grid)	1	4	4		Don't confine or pressurise cattle near grid: keep escape route open. Gates to willow area both open or both closed	1x2=2
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	1	3	3		Monitor stock condition. Conduct faecal egg counts and worm if necessary. (Do not use avermectins).	2x1=2
	Liver Fluke	Unlikely, but possible if *L. truncatula* present in springs	1	3	3		If present, use flukicide during risk periods	1x2=2
External	Flies	Some individuals suffer allergic reaction to bites.	1	3	3		Treat affected cattle with Deltamethrin insecticide (e.g. Spot-on.	1x2=2
Other (e.g. common and/or local ailments)	New Forest Eye Disease	Can spread rapidly between individuals; most prevalent in warm, dry weather when flies and dust abundant	3	3	9		Frequent checks especially in high-risk periods; prompt treatment of affected animals: eye cream or powder as directed by vet.	2x2=4
	Interdigital Dematitis	May result from standing in muddy areas	1	3	3		Vigilance and prompt treatment	1x2=2
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in herd and in extensive grazing areas	1x1=1
		Weaning	2	3	6		Minimise stress by keeping cow and calf in sight of each other after separation, preferably indoors. If not possible remove cow and leave calf on familiar site.	2x1=2
Negative social interaction (e.g. bullying)		Persistent bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other stock		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead. Ask local residents / lookers to report stray or loose dogs to site manager / grazier immediately.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2

Grazing System Risk Assessment				
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**	Mid-autumn to mid-spring; start and finish dates dependent on sward condition
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**	Permanent fencing topped with barbed wire) Five gates
	Site (map)	Nipstone Rock	**Water supply**	Piped to both blocks
	Stock type breeding or not	Cattle Breeding	**Stock checking proposals**	Daily by owner.
	Number, age, breed	Welsh Black cattle 10 adult cows, plus followers	**Handling facilities**	None
	Grazing area (ha)	26.42 re-created dwarf shrub heath following clear felling of coniferous plantation; further 8.6ha may become available	**Access**	Good vehicle access to and within parts of the compartment for appropriate stock vehicles
	Stocking density	0.2LU per ha	**Emergency (e.g. foul weather, ill-health**	Limited shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.

Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**	**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**			
BASIC REQUIREMENTS (refer to first freedom)								
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.	1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.	1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor coat condition (indicator of copper deficiency). Provide salt lick.	1x2=2
Water	**Lack of availability (Quantity)**	Tank or mains failure	1	5	5		Monitor; provide alternative source (e.g. water bowser) or remove stock.	1x3=3
	Quality (Salinity, Pollutants)	Contamination	2	4	8		Remove contamination; provide alternative source (e.g. water bowser) if necessary or remove stock.	1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before herd moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.	1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, hollows or tree stumps especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning, exposure, injury entering/exiting)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring. If animal trapped call in lifting gear.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds, heavy rain	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects	2	2	4		Monitor; treat with repellent if necessary.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Check no stock trapped daily. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	None on site						
Debris/materials	Leg injuries, eating of plastic	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site						
Shooting	None on site						
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4
Other	Mine shaft	1	5	5		Maintain exclusive fence in good condition.	1x1=1

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006		**Timing or duration of grazing**				Early winter to mid-spring; finish date dependent on sward condition.	
	Assessors	Richard Small & Bill Grayson (advisors)		**Perimeter security**				Permanent fencing to be installed before arrival of livestock ? Gates	
	Site (map)	The Rock (Ritton Woods)		**Water supply**				Natural springs; piped water may be installed in due course.	
	Stock type breeding or not	Cattle Breeding		**Stock checking proposals**				Daily by owner.	
	Number, age, breed	Welsh Black cattle 10 adult cows, plus followers		**Handling facilities**				None	
	Grazing area (ha)	29.75 recently felled coniferous plantation: re-creation of dwarf shrub heath		**Access**				Good vehicle access to and within parts of the compartment for appropriate stock vehicles	
	Stocking density	0.5 LU per ha		**Emergency (e.g. foul weather, ill-health**				Limited shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.	
Type of hazard		**Written assessment of hazard**		**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**	**Re-assessment of Risk**
				Probability x	**Severity =**	**Risk Level**			
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.		1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.	1x2=2
	Impeded accessibility	Snow and ice may impede access		2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.	1x5=5
	Mineral deficiencies	Copper		2	2	4		Monitor coat condition (indicator of copper deficiency). Provide salt lick.	1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural spring in late summer or drought.		2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.	1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.		3	4	12		Monitor; until piped water connected ensure spring is free of contamination and excavate deeper if necessary.	1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before herd moves on.		3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.	1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning, exposure, injury entering/exiting)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring. If animal trapped call in lifting gear.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds, heavy rain	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects	2	2	4		Monitor; treat with repellent if necessary.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Check no stock trapped daily. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	No bridges or crossing points on site.						
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Loose dogs possible, but usually with owners and should be on lead.	1	5	5		Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x4=4

Other		Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4

Type of hazard		Written assessment of hazard	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions**	**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	Worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	1	3	3		Monitor stock condition. Check for scouring and worm if necessary. (Do not use avermectins).	1x2=2
	Liver Fluke	Unlikely, but possible if *L. truncatula* present in springs	1	3	3		If present, use flukicide during risk periods	1x2=2
External	Flies	Some individuals suffer allergic reaction to bites.	1	3	3		Treat affected cattle with Deltamethrin insecticide (e.g. Spot-on.	1x2=2
Other (e.g. common and/or local ailments)	New Forest Eye Disease	Can spread rapidly between individuals; most prevalent in warm, dry weather when flies and dust abundant	3	3	9		Frequent checks especially in high-risk periods; prompt treatment of affected animals: eye cream or powder as directed by vet.	2x2=4
	Interdigital Dematitis	May result from standing in muddy areas	1	3	3		Vigilance and prompt treatment	1x2=2
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in herd and in extensive grazing areas	1x1=1
		Weaning	2	3	6		Minimise stress by keeping cow and calf in sight of each other after separation, preferably indoors. If not possible remove cow and leave calf on familiar site.	2x1=2
Negative social interaction (e.g. bullying)		Persistent bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other stock		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds, heavy rain	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead. Ask local residents / lookers to report stray or loose dogs to site manager / grazier immediately.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006		**Timing or duration of grazing**				Ewes mid-autumn to early winter; lambs mid-autumn to early summer	
	Assessors	Richard Small & Bill Grayson (advisors)		**Perimeter security**				Permanent fencing topped with barbed wire Gates	
	Site (map)	Black Rhadley Hill		**Water supply**				Natural spring	
	Stock type breeding or not	Sheep: breeding		**Stock checking proposals**				Daily by owner.	
	Number, age, breed	70 mature Hebridean ewes with lambs at foot		**Handling facilities**				None	
	Grazing area (ha)	51.35 dwarf shrub / grass heath & scrub		**Access**				Vehicle access to compartment adequate for appropriate stock vehicles	
	Stocking density	1 ewe per 1.4ha (= 0.07 LU per ha)		**Emergency (e.g. foul weather, ill-health**				Some woodland / scrub shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.	
Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**		**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**				
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.		1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.		1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor fleece condition (indicator of copper deficiency). Discuss copper boluses (e.g. Cosecure) with vet. Provide salt lick.		1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural spring in late summer or drought.	2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.		1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.	3	4	12		Monitor; ensure spring is free of contamination and excavate deeper if necessary.		1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before flock moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.		1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning, exposure, injury entering/exiting)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects, but fly-strike possible	2	2	4		Monitor; treat with repellent if necessary. If fly strike occurs treat and consider use of Vetrazin as preventative.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Daily check for trapped stock. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	No bridges or crossing points on site.						
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site.						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; maintain signs on gates.	1x4=4

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	2	3	6		Monitor stock condition. Check for scouring and worm if necessary. (Do not use avermectins).	2x1=2
External (e.g. fly-strike, sweet itch)	fly-strike	May be a problem in warm / humid conditions	1	5	5		Maintain vigilance for signs of fly strike during warm, humid periods. Treat infected sheep and consider use of Vetrazin if occurrence becomes regular.	1x4=4
Other								
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in flock / herd and in extensive grazing areas	1x1=1
Negative social interaction (e.g. bullying)		Persistent bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other animals (excluding dogs)		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds, heavy rain	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**				Year round except during late pregnancy and lambing period (March-April)		
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**				Permanent fencing topped with barbed wire Three gates, one cattle grid.		
	Site (map)	Gatten Plantation	**Water supply**				Natural springs		
	Stock type breeding or not	Sheep: breeding	**Stock checking proposals**				Daily by owner.		
	Number, age, breed	40 mature Hebridean ewes	**Handling facilities**				Hurdles		
	Grazing area (ha)	32.71 re-created dwarf shrub heath following clear felling of coniferous plantation; small wetter areas / bog	**Access**				Good vehicle access to and alongside compartment for appropriate vehicles; in winter access to handling areas may require tractor		
	Stocking density	1 ewe per 1.2ha (= 0.08 LU per ha)	**Emergency (e.g. foul weather, ill-health**				Some woodland / scrub shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.		
Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**		**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**				
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.		1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.		1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor fleece condition (indicator of copper deficiency). Discuss copper boluses (e.g. Cosecure) with vet. Provide salt lick.		1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural spring in late summer or drought.	2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.		1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.	3	4	12		Monitor; ensure spring is free of contamination and excavate deeper if necessary.		1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before flock moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.		1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground and tree stumps, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects, but fly-strike possible	2	2	4		Monitor; treat with repellent if necessary. If fly strike occurs treat and consider use of Vetrazin as preventative.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Daily check for trapped stock. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	Leg injuries (cattle grid)	1	4	4		Don't confine or pressurise sheep near grid: keep escape route open. Gates to willow area both open or both closed	1x2=2
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site.						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4

		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	2	3	6		Monitor stock condition. Check for scouring and worm if necessary. (Do not use avermectins).	2x1=2
External (e.g. fly-strike, sweet itch)	fly-strike	May be a problem in warm / humid conditions	1	5	5		Maintain vigilance for signs of fly strike during warm, humid periods. Treat infected sheep and consider use of Vetrazin if occurrence becomes regular.	1x4=4
Other								
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in flock / herd and in extensive grazing areas	1x1=1
Negative social interaction (e.g. bullying)		Bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other animals (excluding dogs)		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds, heavy rain	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**				Late spring to late autumn		
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**				Permanent fencing topped with barbed wire) Five gates		
	Site (map)	Nipstone Rock	**Water supply**				Piped to both blocks		
	Stock type breeding or not	Sheep: breeding	**Stock checking proposals**				Daily by owner.		
	Number, age, breed	30 mature Hebridean ewes	**Handling facilities**				Hurdles		
	Grazing area (ha)	26.42 re-created dwarf shrub heath following clear felling of coniferous plantation; further 8.6ha may become available	**Access**				Good vehicle access to and alongside compartment for appropriate vehicles; in winter access to handling areas may require tractor		
	Stocking density	1 ewe per 0.9 ha (= 0.1 LU per ha)	**Emergency (e.g. foul weather, ill-health**				Limited shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.		
Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**		**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**				
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.		1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.		1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor fleece condition (indicator of copper deficiency). Discuss copper boluses (e.g. Cosecure) with vet. Provide salt lick.		1x2=2
Water	**Lack of availability (Quantity)**	Tank or mains failure	1	5	5		Monitor; provide alternative source (e.g. water bowser) or remove stock.		1x3=3
	Quality (Salinity, Pollutants)	Contamination	2	4	8		Remove contamination; provide alternative source (e.g. water bowser) if necessary or remove stock.		1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before flock moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.		1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, hollows and tree stumps, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects, but fly-strike possible	2	2	4		Monitor; treat with repellent if necessary. If fly strike occurs treat and consider use of Vetrazin as preventative.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Daily check for trapped stock. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	None on site						
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site.						
Shooting	None on site.						
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4
Other	Mine shaft	1	5	5		Maintain exclusive fence in good condition.	1x1=1

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	2	3	6		Monitor stock condition. Check for scouring and worm if necessary. (Do not use avermectins).	2x1=2
External (e.g. fly-strike)	fly-strike	May be a problem in warm / humid conditions	1	5	5		Maintain vigilance for signs of fly strike during warm, humid periods. Treat infected sheep and consider use of Vetrazin if occurrence becomes regular.	1x4=4
Other								
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in flock / herd and in extensive grazing areas	1x1=1
Negative social interaction (e.g. bullying)		Bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other animals (excluding dogs)		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds, heavy rain	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x3=3

Grazing System Risk Assessment									
Proposed Grazing System	**Date**	March 2006	**Timing or duration of grazing**				Early summer to late autumn.		
	Assessors	Richard Small & Bill Grayson (advisors)	**Perimeter security**				Permanent fencing to be installed before arrival of livestock ? Gates		
	Site (map)	The Rock (Ritton Woods)	**Water supply**				Natural springs; piped water may be installed in due course.		
	Stock type breeding or not	Sheep: breeding	**Stock checking proposals**				Daily by owner.		
	Number, age, breed	Approx. 40 shearling Hebridean ewes	**Handling facilities**				None		
	Grazing area (ha)	29.75 recently felled coniferous plantation: re-creation of dwarf shrub heath	**Access**				Good vehicle access to and within parts of the compartment for appropriate stock vehicles		
	Stocking density	1 ewe per 0.7 ha (= 0.13 LU per ha)	**Emergency (e.g. foul weather, ill-health**				Limited shelter from poor weather (including hot sunshine). Liable to snow cover. Ill animals can be removed to owner's holding.		
Type of hazard		**Written assessment of hazard**	**Assessment of risk (score 1-20)**			**Location(s) on map (✓)**	**Actions to be taken to reduce risk**		**Re-assessment of Risk**
			Probability x	**Severity =**	**Risk Level**				
BASIC REQUIREMENTS (refer to first freedom)									
Food	**Lack of availability (Quantity and Quality)**	Inadequate possibly due to drought conditions, or as quality deteriorates towards end of grazing season leading to malnourishment.	1	5	5		Monitor forage availability, quality and stock condition. Increase checking frequency during drought conditions and towards end of grazing season. Remove some / all stock if necessary.		1x2=2
	Impeded accessibility	Snow and ice may impede access	2	5	10		Supplementary feeding; stockpile hay in advance. Remove stock for winter.		1x5=5
	Mineral deficiencies	Copper	2	2	4		Monitor fleece condition (indicator of copper deficiency). Discuss copper boluses (e.g. Cosecure) with vet. Provide salt lick.		1x2=2
Water	**Lack of availability (Quantity)**	Decreasing supply from natural spring in late summer or drought.	2	5	10		Monitor; provide alternative source (e.g. water bowser) or remove stock.		1x3=3
	Quality (Salinity, Pollutants)	Contamination through poaching around, or animal carcase in, spring; decline in quality with reduced availability.	2	4	8		Monitor; until piped water connected ensure spring is free of contamination and excavate deeper if necessary.		1x3=3
	Accessibility	Ice, snow cover. Subordinate animals may not be able to access water supply before flock moves on.	3	5	15		Monitor; break ice at least daily; provide alternative source (e.g. water bowser) or remove stock.		1x5=5

Type of hazard	Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
		Probability x	Severity =	Risk Level			
PHYSICAL HARM FROM NATURAL ELEMENTS (refer to second and third freedoms)							
Fire	Animals trapped or overcome by smoke from accidental fires or out of control heather burning.	1	5	5		Ensure stock has escape route in the event of fire becoming out of control. Follow good practice codes for heather burning. In emergency open gates or make gap in fencing.	1x2=2
Flood	Unlikely on upland heath site.	1	1	1			
Poisonous plants	Ragwort and bracken only known examples	1	4	4		Monitor ragwort and bracken densities and implement control measures if density reaches ?	1x1=1
Ground conditions (injury)	Injury caused by uneven ground, especially when frightened, excited or driven.	2	2	4		Regular checks on stock. When rounding up drive towards pen slowly and calmly. Veterinary care in event of injury.	1x2=2
Lack of / insufficient suitable resting areas	Physiological stress, unlikely.	1	2	2		Retain extensive grazing area; retain some areas of peripheral woodland / scrub for cover.	1x1=1
Water bodies (e.g. drowning, exposure, injury entering/exiting)	Animals bogged down in mud surrounding spring.	2	3	6		Regular checks on stock and monitor condition of spring.	1x3=3
Weather (extremes of heat, cold, wet) / Shelter	Heat, cold winds, heavy rain	1	4	4		Retain extensive grazing area allowing stock to find shelter; retain some areas of peripheral woodland / scrub for shade / protection from wind.	1x3=3
Insects	Mainly biting / irritating insects, but fly-strike possible	2	2	4		Monitor; treat with repellent if necessary. If fly strike occurs treat and consider use of Vetrazin as preventative.	1x3=3
PHYSICAL HARM FROM MAN-MADE ELEMENTS (refer to third freedom)							
Fences	Cuts, entanglement, bruising	2	2	4		Check and maintain condition of fences. Daily check for trapped stock. If using electric fencing use high visibility strand type (not netting).	1x2=2
Bridges/crossing points	No bridges or crossing points on site.						
Debris/materials	Leg injuries, eating of plastic, snares, pheasant feeders (access to inappropriate feedstuffs)	2	2	4		Remove any litter / debris during regular checks. Liaise with shoot managers.	1x2=2
Electricity supply	None on site.						
Shooting	Scaring of animals; animals shot; eating of cartridges or wads	2	5	10		Liaise with shoot. Collect cartridges and wads.	1x4=4
Vandals	Injuries to animals; fires; cut fences.	1	3	3		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x2=2
Dogs	Chasing, biting by loose dogs possible	1	5	5		Maintain signs encouraging dog owners to keep dogs on lead.	1x4=4
Other	Gates left open	2	2	4		Regular infrastructure checks; install self-closing mechanisms on gates. Maintain signs on gates.	1x4=4

Type of hazard		Written assessment of hazard	Assessment of risk (score 1-20)			Location(s) on map (✓)	Actions	Re-assessment of Risk
			Probability x	Severity =	Risk Level			
DISEASE (refer to third freedom)								
Internal (e.g. parasites)	worms	Unlikely to be a problem on an extensively grazed site but may build up towards the end of the grazing season	2	3	6		Monitor stock condition. Check for scouring and worm if necessary. (Do not use avermectins).	2x1=2
External (e.g. fly-strike)	fly-strike	May be a problem in warm / humid conditions	1	5	5		Maintain vigilance for signs of fly strike during warm, humid periods. Treat infected sheep and consider use of Vetrazin if occurrence becomes regular.	1x4=4
Other								
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM NATURAL FACTORS (refer to fourth and fifth freedoms)								
Inability to demonstrate natural patterns of behaviour		Isolation. Restricted movements	1	3	3		Maintain in flock / herd and in extensive grazing areas	1x1=1
Negative social interaction (e.g. bullying)		Bullying	1	3	3		Monitor; separate if necessary. Eliminate cause.	1x1=1
Fear or distress caused by other animals (excluding dogs)		Interactions between cattle and sheep	1	2	2		Monitor	1x1=1
Weather (extremes of heat, cold, wet) / Shelter		Heat, cold winds, heavy rain	1	4	4		Adequate natural shelter (including shade) and dry land over whole site; maintain peripheral woodland / scrub	1x3=3
PSYCHOLOGICAL STRESS (FEAR OR DISTRESS) FROM MAN-MADE FACTORS (refer to fifth freedom)								
General Public		Noise, chasing, interference	2	2	4		Breed choice, location choice, extensive grazing areas. Maintain signs relating to presence of stock.	1x2=2
Dogs		Chasing, biting	2	2	4		Keep gates locked where possible; on public RoWs install self-closing mechanisms on gates. Erect and maintain signs encouraging dog owners to keep dogs on lead.	1x2=2
Noise (e.g. shooting, aircraft)		Scaring	2	2	4		Keep stock in open area	1x2=2
Vehicles/machinery		Scaring	2	2	4		Ensure all staff, contractors etc. are aware of stock presence. Avoid when stock present but if essential move slowly and restrict to part of site	1x2=2
Vandals		Scaring	2	2	4		Regular stock / infrastructure checks; choice of breed; limit human:animal interactions	1x3=3

Appendix 1. Addresses, contact details and sale dates

ADAS Pwllpeiran, Cwmystwyth, Aberystwyth, Ceredigion, SY23 4AB
Tel.: 01974 282229 Fax: 01974 282302
Website: www.adas.co.uk

Graig Farm Organics, Dolau, Llandrindod Wells, Powys LD1 5TL.
Tel.: 01597 851655 Fax: 01597 851991
E-mail: via website
Website: www.graigfarm.co.uk

The Great Tasting Meat Co., Gate Farm Shop, Poole, Nantwich, Cheshire CW5 6AL.
Owner: Andrew Jackson
Tel.: 01270 625781
Website: www.greattastingmeat.co.uk

D. W. Wall & Son, Corvedale Road, Craven Arms, Shropshire SY7 9NL.
Tel: 01588 672308
Website: wallsbutchers.co.uk

Organic Sheepskins, Lesser Netherton, Harewood End, Hereford HR2 8LA.
Owner: Nicki Port
Tel. 01989 730615
Website: www.organicsheepskins.co.uk

Hebridean Sheep Society, c/o Mrs. J. Wilson (Membership Secretary), Gibshiel, Tarset, Hexham, Northumberland NE48 1RR.
Tel.: 01434 240435
E-mail: hebmembers@btinternet.com
Website: www.hebrideansheep.org.uk

Dates of rare breed sales 2006
Skipton 2nd September 2006
Melton Mowbray 9th September 2006
Carlisle 16th September 2006
Chelford 23rd September 2006
York 7th October 2006

Welsh Black Cattle Society, 13 Bangor Street, Caernarfon, Gwynedd LL55 1AP.
Tel.: 01286 672391
Fax: 01286 672022
E-mail: welshblack@btclick.com
Website: www.welshblackcattlesociety.org

Dates of Welsh Black sales 2006:
Annual summer sale, Dolgellau, 5th May 2006
Annual summer sale, Llandovery, 26th May 2006
Annual sale and pedigree store sale, Abergavenny 11th September 2006
Annual autumn sale, Dolgellau, 20th September 2006
Annual sale, Carlisle, 10th November 2006
Annual winter sale, Dolgellau, 16th January 2007

Appendix 2. Maps of the sites: Black Rhadley, Gatten, The Nipstone and The Rock