# MAR LODGE INDEPENDENT REVIEW PANEL

**REPORT FOR THE BOARD OF**

**THE NATIONAL TRUST FOR SCOTLAND**

**INTO THE MANAGEMENT OF DEER, WOODLAND AND MOORLAND**

**AT**

**MAR LODGE ESTATE**

**NOVEMBER 2011**

# REPORT FOR THE BOARD OF THE NATIONAL TRUST FOR SCOTLAND INTO THE MANAGEMENT OF DEER, WOODLAND AND MOORLAND AT MAR LODGE ESTATE

## CONTENTS

## 1. Introduction:

1.1 The National Trust for Scotland acquired the Mar Lodge Estate from private owners in 1995.

1.2 The Vision for NTS's management of the estate was first set out in the 2006-11 Management Plan. It recognises the unique nature of MLE and envisages the sustainable co-existence of the needs of conservation, a highland sporting estate and access to the land on foot. Importantly it places the NTS's management of the estate within a timeframe of 200 years. In achieving this vision NTS would demonstrate to its many stakeholders that sporting and conservation values could be integrated and that a Highland sporting estate could be managed in such a way as to deliver significant sporting and conservation objectives.

1.3 In practice, over the years there has been greater emphasis directed to one or the other of these paired objectives. Much of the conservation focus over the past 15 years has been on achieving restoration/ regeneration within the Caledonian pinewoods of Glen Derry, Glen Lui and Glen Quoich, pursuing a policy of regeneration without fences.

1.4 This is enshrined in the original Management Agreement with Scottish Natural Heritage (SNH) which at Section B (2-2) notes: "The restoration programme [for woodlands] will be discussed and agreed with FA/SNH in Years l/2; it will agree two targets, the long-term vision of extent of woodland restoration and the short-term targets of regeneration, particularly within the three existing pinewood areas. Up to the end of Year 10, there will be a presumption that the restoration of the Caledonian Pine Forest will be achieved without the use of additional deer fencing, tree planting or use of fertilisers."

1.5 This extract continues:
"In the event of this policy failing to produce natural regeneration through the reduction of deer numbers over a 5-10 year period, the mechanism to achieve regeneration will be fully reviewed at Year 10" [thus 2005/06].

1.6 In practice early efforts at reduction of deer numbers were insufficient to achieve significant regeneration and NTS came under increasing pressure from SNH to deliver on this key objective. The Estate was notionally divided into a Moorland (sporting) Zone and a Regeneration Zone, within which lower densities of deer would be sought. Figures established for what might be appropriate populations to be maintained within the Regeneration Zone were subsequently revised downwards, until in 2008 the decision was taken to implement a policy of zero-tolerance within the Regeneration Zone.

1.7 The long history of heavy culls, with little regeneration to show for it caused concern within members of the NTS own staff, as well as amongst neighbours and the local community. While neighbours in general approved in principle (or had no objection to) the Trust's objectives for woodland restoration, methods and approaches and the general policy of pursuing woodland recovery in the absence of fences were increasingly questioned.

1.8 Sporting neighbours also began to express concerns that the heavy culls undertaken on MLE, especially those targeted on stags over winter (Out of Season) were negatively impacting on their own ability to sustain former sporting quotas. This clearly has implication not just in terms of sporting revenue, but also in relation to erosion of capital values at a time when capital values of sporting estates remain, at least in part, vested in average sporting harvest of deer, grouse and salmon over the preceding 5 year period.

1.9 In parallel with this, representatives of the Easter Trust have also expressed increasing disquiet that, with too strong a focus on delivering on conservational objectives, the Trust was not successfully honouring the terms of the gift by which it acquired the funds for purchase of MLE (Section 2.2). This required sporting objectives to be fully integrated with conservation policies. It was felt by the Easter Trust that there was an overriding emphasis on conservation and that sporting objectives – specifically deer management – and the wellbeing of the local community were being insufficiently considered.

1.10 With this ongoing tension between its various commitments and obligations and against the context of increasing public opposition to their policies at Mar Lodge Estate, the Board of the NTS and representatives of the estates neighbouring MLE agreed to convene an independent review panel [The Mar Lodge Independent Review Panel (MLIRP)] which was established on 31 March 2011.

1.11 Its remit was as follows:
*To conduct an independent evidence-based review of woodland, moorland and deer management at Mar Lodge Estate having regard to the National Trust for Scotland's overall objectives for the Estate and specifically fencing policy, deer culling, the regeneration of the forest and maintaining a sporting estate*
*The Review will be conducted by a small independent group, over a short period of time (say three months) and will take written and oral evidence.*
*Resources, funding and secretarial support will be provided by the National Trust for Scotland.*

1.12 The inaugural meeting of the MLIRP was held on 30 May 2011. The members of the MLIRP are:

David Windmill – Chairman
Professor Rory Putman
Professor Jeff Maxwell

1.13 The Panel has taken written and oral evidence from a wide range of individuals and organisations, summaries of which, together with various documentation and agreements relating to Mar Lodge Estate (MLE), have been made available for public inspection on the website www.marlodgereview.org

1.14 The Panel has reviewed the wide range of documentation relating to the NTS's ownership of MLE. This is important in order to establish the context for the specific issues contained in the remit. However the Panel's priority has been to make recommendations for the future management of MLE for the intended benefit of both MLE and NTS. The following report represents that review and those recommendations to the Board of NTS.

1.15 The Panel's Review has followed a pattern of fact finding, research and understanding; an analysis and evaluation of the existing state of affairs; and developed a rationale for its recommendations and proposals that provide the basis of a management plan specifically concerned with woodland, moorland and deer management at Mar Lodge Estate. This has broadly followed a process of delivering conservation recommended by the Trust[1].

[1] NTS Conservation Principles (2003)

## 2. Objective Review: Obligations and Constraints

2.1 As noted in paragraph 1.1, NTS received two substantial grants enabling it to meet the total capital cost of acquisition of Mar Lodge Estate of £5.75m. Without these grants NTS would have been unable to buy the estate.

2.2 Firstly a grant of £10.277m from the National Heritage Memorial Fund (NHMF) was made comprising £1.5m to fund the acquisition, £8.015m as an endowment and £762k to fund important improvement projects. Details of this agreement can be found in Appendix A.

2.3 Secondly a grant of £4.55m was made by the Easter Charitable Trust (ECT), £4.072m as a contribution toward the capital cost of acquisition and £478k toward building construction. A condition of this grant was a Declaration made by NTS to the Eastrust Company Limited covering the (nine) principles it would follow in the future management of MLE. Details of this Declaration can be found in Appendix B.

2.4 Also in 1995 NTS entered into a 25 year agreement with Scottish Natural Heritage (SNH) which in return for certain annual grant payments committed NTS to managing MLE in a specific manner as set down in 5 year management plans which were to be agreed with SNH. Since the beginning of this Agreement NTS has received approximately £2m from SNH. Details of this Agreement can be found in Appendix C.

2.4 These three agreements together with the three (to date) NTS Management Plans for MLE (Appendix D) are the key documents creating the context for the review the Panel has undertaken. A fourth Management Plan is in preparation. There are however a substantial number of other conditions and constraints which NTS and the senior management at MLE have to consider in managing the estate.

2.5 MLE is one of the most heavily designated areas of land in Scotland. It is part of the Cairngorms National Park (CNP); within its 31,000 hectares there is land designated as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), Special Protection Area (SPA), National Nature Reserve (NNR) and Geological Conservation Review site (GCR). These categorisations not only determine what can or cannot be done in their respective areas but also bring a great deal of attention, both legislative and public, to MLE and how it is being managed by NTS.

2.6 In support of delivery of its conservation objectives within designated areas and explicitly those for regeneration of the Caledonian pine woodland on the Estate, NTS signed a Section 7 Control Agreement with SNH in November 2010 (Appendix E). Its prime purpose is to protect certain designated habitats (SSSI, SAC and SPA) from damage by deer. This agreement lasts until 2020.

2.7 In addition the NTS has principles, policies and plans which apply to the management of all its land and properties throughout Scotland. Examples of these are Wild Land Principles 2002, Conservation Policy, Landscape Policy 2005, Moorland Management Guidelines 2010 etc. Copies of these can be found in Appendix F. There are also specific plans for MLE eg Deer Management Plan, Woodland Forest Plan 2010-30 (Appendix G)

2.8 In the context of deer management MLE is very much part of the wider Grampian area and management within the Estate has the potential to impact upon deer populations on neighbouring properties within both the East Grampian Deer Management Group and the West Grampian DMG areas. NTS should clearly be mindful of the effect that its activities may have on neighbours and on the wider local community.

2.9 A further and important element of the context of this review is the nature of NTS itself. The organisation is a major Scottish institution and charity with over 300k members. It is a guardian of a significant proportion of Scotland's heritage, both built and natural. Its activities are of major interest to people in Scotland and beyond. This can be of enormous benefit to the organisation in terms of political, financial and emotional support but this in turn must be supported by the highest standards of management and performance.

2.10 The financial position of MLE is also relevant to this review. On a purely income and expenditure basis MLE currently operates with an annual deficit. With the benefit of income from the National Heritage Memorial Fund Endowment grant (now valued at £13m+) it produces a surplus. These (restricted) surplus funds are available to NTS only insofar as they are used for investment in MLE. Regard should be had to Schedule 1 (para 4) of the NHMF Agreement (Appendix A) relating to possible repayment of (part of) the grant in the event that not all the grant is required.

2.11 The Panel has emphasised the need for evidence in support of the views that it has received from the wide range of people and organisations it has met. Evidence can take different forms and whilst 'hard facts' are available the nature of some of the issues under investigation required the Panel to take account of less quantifiable evidence. In these cases only where there was consistency in views and comments on particular issues did the Panel take serious note and then allowed a degree of interpretation based on its own experience and knowledge. An analysis of the written submissions and oral evidence taken is presented in Section 3 of this Report.

2.12 The Panel experienced a significant degree of ignorance and/or misunderstanding of the overall context or 'big picture' in which NTS is managing MLE, both inside and outside NTS. The challenges which NTS has at MLE in balancing the objectives of conservation and of a sporting estate are considerable. These and the methods by which it is intended to achieve them have clearly not been communicated at all well to the various stakeholders, both local and further afield.

2.13 This has led to a significant degree of mis-trust with which the NTS (in its ownership of MLE) is viewed by a number of those people the Panel met. This is important to recognise in the future management of the estate and when implementing any recommendations of this review.

2.14 More surprisingly, within the staff and management at NTS and MLE there was also clear evidence that there was no unified and agreed understanding of all the issues and how they were to be tackled. Historically both lateral and vertical transmission of information and decisions has been poor within NTS, exacerbated perhaps by frequent changes of personnel at all levels since 1995.

## 3. Written Submissions Received

3.1 The full text of the written submissions received can be found on the MLE independent Review Web Site (http://www.marlodgereview.org.uk/) and a summary of these, which was used to produce Table 1, can be found in Appendix H

3.2 Table l condenses further the main issues raised in the written submissions and gives an approximate estimate of the proportion of submissions that addressed specific issues.

3.3 The Review Panel, in inviting submissions, sought to be provided with evidence. Many of the submissions did provide some objective supporting evidence but most relied on opinion and personal experience. The Review Panel have analysed all the submissions (irrespective of whether evidence has been provided or not) and has attempted to draw from them the important concerns expressed.

3.4 However, there does appear to be a lack of understanding and knowledge of the obligations that NTS has towards both the Easter Trust as benefactor, and to SNH as a funding agency, as well as to the management of the extensive statutory designated sites on the estate, and latterly to the voluntary Section 7 agreement reached with SNH. It was disappointing that many focused on single-objective management and did not fully embrace the need at MLE to fulfil the demands of management to achieve the multiple objectives to which the NTS is committed.

3.5 Only a small proportion of the submissions (10%) referred specifically to the difficulties of attempting to achieve both conservation (habitat restoration) and maintain Mar Lodge as a sporting estate, expressing concern regarding the potential/actual confusion or even potential incompatibility of the NTS/SNH Management Aims and NTS/Easter Trust Management Principles.

3.6 However, it is notable that that over 40% of the submissions gave explicit support to the NTS objective of restoring the pine woodlands on the Mar Lodge Estate with 18% giving explicit support of the current methods of approach to achieve this objective. Of the latter submissions many were unequivocal regarding the need to continue the intensive culling regime within the Regeneration Zone of the Estate to protect and enhance the regeneration that has so far taken place. This latter group also tended to be unequivocal about doing so without fencing.

3.7 There were many others (25%) while agreeing with the overall objective wished to see alternative approaches used to restore pine woodlands including enclosure fencing, heather burning, scarification, opening mature woodlands (to reduce pressure on new trees) and adoption of proposals from Edwards' Report 'Developing a Regeneration Management Plan for Mar Lodge Estate Native Woodlands' (2009) (Forestry Research).

3.8 The largest proportion of submissions was associated with the perceived impact of the current management approach that involved the intensive culling of deer on the local economy. At least 50% of respondents were concerned and criticised the current management approach and its impact on the ability to access a wild life experience, particularly including deer, for tourists, visitors and stalkers and the consequent impacts on local businesses and community relations.

3.9 Allied to this was the criticism primarily from the local community of the culling methods used, particularly out-of-season and night shooting and their impact on deer welfare – 24%; and, the impact on the sporting interests of neighbouring estates – 28%.

3.10 While there is no doubt that the Mar Lodge Estate reduction cull has had an influence on deer numbers in the area, the Review Panel is equally aware from the evidence provided, that other estates have also reduced deer numbers as a consequence of changed objectives for their estates (Appendix J). Some have also erected fences to influence deer movement and accessibility to certain areas and in particular, alternative areas of winter shelter. These estates must have also contributed to a reduction in deer numbers generally in the Braemar area.

3.11 There was also significant criticism of NTS organisational management and structures, and staff suitability and experience in relation to land/estate/sport management and woodland restoration in the context of effectively managing the Mar Lodge Estate (25% of submissions). Reference was frequently made also to poor communication and a lack of genuine consultation and discussion.

3.12 There were also submissions which drew attention to the many positive things that the NTS had achieved at Mar Lodge Estate and the great potential that exists for further development of its sporting activities, access, and enjoyment of this wild place.

3.13 In formulating its recommendations to the NTS Board, the Review Panel have noted the range of issues raised in the written submissions and the fact that there is considerable polarisation of the views expressed. While most support the restoration of pine woodland on the estate and the maintenance of Mar Lodge as a sporting estate there are very different views as to how this should be achieved.

3.14 On the one hand there are those who wish to see a continuation of the present culling regime in the Regeneration Zone without fencing, while on the other there are those who wish to find and use alternative approaches that include fencing, burning and ground scarification. The challenge for the Review Panel has been to discover whether any of these views can be used constructively to meet the NTS aims, principles, objectives and obligations (legal and moral) agreed for the Mar Lodge Estate, specifically with respect to the management of its woodlands, moorland and deer.

**Table 1. Summary of Main Issues concerning those who submitted written evidence to the Independent Review**

| MAIN ISSUES/IMPLICATIONS FROM WRITTEN SUBMISSIONS (41 Submissions) | Approximate Proportion of Submissions Identifying these Issues (%) |
|---|---|
| Confusion/Incompatibility of NTS/SNH Management Aims and NTS/Easter Trust Management Principles – concern as to feasibility of multiple objective management re conservation and highland sporting estate | 10% |
| Explicit support for Restoration of Pine Woodland | 25% |
| Explicit support for Restoration of Pine Woodland and current methods of achieving this objective | 18% |
| Support for a range of alternative techniques to restore pine woodlands including enclosed fencing, heather burning, scarification, opening mature woodlands (to reduce pressure on new trees) and adoption of proposals from Edwards (Forestry Research) | 25% |
| Concern and criticism of current management approach and its impact on ability to provide wild life experience and (particularly deer) for tourists, visitors and stalkers and consequent impact on local economy and community relations. | 50% |
| Criticism of culling methods and welfare issues re out of season and night shooting | 24% |
| Criticism/comment on impact of MLE reduction cull on neighbouring estates | 28% |
| Criticism of NTS' organisational management and structures, and staff suitability and experience in relation to land/estate/ sport management and woodland restoration. | 25% |

## 4. Deer, Moorland and Woodland Management: Objectives and Achievements

4.1 At the time of our review we note that red deer populations have reached the target originally defined (at a population of around 1650 head), condition of open-hill habitats within the Moorland Zone has been assessed by SNH as being favourable and some significant tree regeneration has been recorded within the Regeneration Zone – although much of this has been recruited only within the last 2-3 years.

**Deer and Deer Management**:

4.2 When the National Trust acquired Mar Lodge Estate, resident populations of red deer on the property were estimated as of the order of 3350, with (in 1995) an estimated 1214 stags and 2140 hinds and calves[2]. The estate also experienced a considerable increase in numbers of, particularly, stags in periods of poor weather over the winter, when animals from neighbouring properties were drawn to the shelter provided by the low-lying glens of the Derry and the Quoich and Glen Lui. Numbers of roe deer within the property were not formally assessed but it is anticipated that these will at that time have been present in comparatively low numbers.

4.3 In the interests of sustaining a sporting interest in red deer-stalking (set at a level of between 80 and 100 stags per annum) [NTS/SNH Management Agreement 1995 Appendix 2 page 2-5] while reducing impacts on areas where tree regeneration was sought, managers established a target population to be sought at stability, of 1650 across the Estate as a whole (as approximately 700 stags, 700 hinds and their 250 calves). We understand that these figures were adopted on the advice of Professor Brian Staines, and we ourselves would support that such a target population is entirely appropriate to sustain a sporting cull of between 80 and 100 mature stags each year. This target is now also formalised within the recent Section 7 Agreement with SNH.

4.4 In subsequent revisions of policy the decision was taken that the property should be more formally zoned into a Moorland (sporting) zone (where the sporting interest might be maintained – although still with due regard to impacts upon designated upland habitats) and a Regeneration zone (where the major emphasis of management is to encourage and enhance regeneration of native woodland). With this division came recommendations for possible target populations which might be accommodated within each Zone. Targets for deer numbers within the Regeneration Zone have however been significantly altered through the years, from an initial 350 to the most recent period which imposed a policy of zero tolerance.

4.5 It is noted that this latter policy was based on disappointing levels of pine tree regeneration and a simultaneous recognition that impacts were caused not so much by a resident population of animals at any given level, but rather by transients, drawing in to the regeneration zone from elsewhere within Mar Lodge Estate, or from adjacent properties, especially over the winter period. Impacts can only satisfactorily be addressed by ensuring minimum presence of deer on a year round basis.

4.6 While the bulk of culling carried out within the Moorland Zone is carried out within the statutory Open Seasons, the Estate has authorisations (formerly from the Deer Commission for Scotland, now from SNH) to shoot animals out of season within the Regeneration Zone and also to shoot at night.

---

[2] see population figures summarised by Richard Luxmoore in MarLodge_historical deer data.xls

4.7 The Estate maintains figures for the total number of stags, hinds and calves culled each year since 1995 (separately within the five beats as North and South Geldie, Dalvorar, Derry and Quoich, which thus permits analysis of those taken within the current Moorland and Regeneration Zones). Regular counts are also undertaken on the property on foot or by helicopter. These are undertaken at least once a year in late winter, and if possible more frequently. Both count and cull figures are available in summary in the spreadsheet compiled by Richard Luxmoore (as in footnote 2)

4.8 Most recent population estimates (January 2011) suggest current red deer populations on the property as 760 stags, 645 hinds and 283 calves. We note that this is at the target initially set for final population number at stability, and is of the correct order to sustain a sporting target of between 80-100 stags as established in the original SNH Management Agreements and subsequently included within the recent Section 7 Agreement with SNH. Numbers however do not necessarily offer a clear indication of population structure overall (especially in regard to age-structure) and while such a population is capable of sustaining at stability an annual harvest of between 80-100 stags, current age-structure within the stag population may require that a proportion of sporting stags taken may be somewhat younger than has been traditionally the case.

4.9 Because of the continuing policy of zero-tolerance (and year-round shooting) within the Regeneration Zone, annual culls over recent years have been of the order of 224 stags (average 2006-2010; range 231-421) and 270 hinds (average 2006-2010; range 84 (?) – 517]. Significantly, of those stags culled (over that same representative period) an average of 217 per year were culled within the Regeneration Zone [Derry and Quoich beats].

4.10 As previously (paragraph 4.2) numbers of roe deer within the property have not been formally assessed, but it is assumed that roe were probably present in comparatively low numbers until recently, when they have responded to improved habitat quality and forage availability resulting from the decrease in impacts of red deer. Roe numbers have indubitably increased, especially within the Quoich and the Derry, and substantial culls of roe as well as red deer have been taken within the Regeneration Zone.

*Analysis*:
4.11 Culls of red deer have clearly been above maintenance levels (i.e. have exceeded rates of recruitment within the population) for some considerable time. This is not unexpected – and indeed, if any reduction in deer populations is to be delivered, culls are, by definition, required to be in excess of recruitment. However, it is apparent that, now that populations have reached target levels, continued culling at these levels is unsustainable and if continued, will reduce populations below levels at which they are capable of sustaining the declared sporting ambition of 80-100 stags.

4.12 Indeed, even if culls were to continue at levels applied recently simply within the Regeneration Zone - with no sporting cull taken at all - it is clear that populations will continue to decline rapidly. It is not complicated to conclude that a population calculated as sufficient to sustain an annual harvest of between 80-100 stags cannot for long sustain an actual offtake in excess of 200 stags. Hind culls too would remain higher than those required for maintenance of steady-state; hind populations would thus also continue to decline and, as a consequence, so would levels of calf production required to sustain adequate levels of recruitment.

4.13 To calculate this more formally:

- If we accept the January 2011 count of 760 stags, 645 hinds and their 283 calves and apply a conservative average recruitment rate of 30 surviving calves at the end of winter per 100 counted hinds.
- If we also assume that culling continues at an average rate of 224 stags and 270 hinds per year (paragraph 4.9), and that the bulk of this cull falls on animals drawn from Mar Lodge Estate (a reasonable assumption, certainly in the case of hinds), then we may project post-winter numbers of animals on the ground in future years as

| Year | start 2011 | predict 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Stags | 760 | 678 | 532 | 357 | 149 |
| Hinds | 645 | 517 | 325 | 104 | -150 |
| Calves | 283 | 155 | 98 | 31 | - 45 |
| Total | 1688 | 1350 | 955 | 492 | - |

4.14 It is apparent that even if the winter cull in 2011/12 is of the same magnitude as that carried out in previous years, numbers in 2012 are sufficient only to sustain a total future harvest of 70-75 stags (and 75 hinds) (and then, only if populations then remained stable at THAT level)
[One can in theory expect to cull approximately 1/7$^{th}$ of estimated summer stag numbers, but ***sustainable*** harvest implies recruitment of sufficient juveniles to grow through to adulthood to replace those harvested: the harvest is in this case thus limited by the number of breeding hinds and subsequent recruitment: with an estimated 517 hinds capable of producing only some 155 calves (thus perhaps 75 stags surviving to maturity).

4.15 If culls continue at previous levels of paragraph 4.9, numbers by 2013 are expected to be appropriate for support of a *sustainable* annual harvest of 45 stags (if populations were subsequently maintained at those levels and not further reduced!), and numbers by 2014 only sufficient for sustained harvest of barely 10 adult stags. Thus unless the current annual cull rate can in some way be significantly reduced to restore maintenance of existing populations, actual sporting numbers can be expected to decline rapidly.

4.16 This not only has implications for maintenance of Mar Lodge's own commitments to maintaining a sporting cull of between 80-100 stags per annum, it also has significant potential impact on the sporting interests of neighbours.

4.17 The problem, in essence, relates to the movement patterns of red deer, within Mar Lodge Estate itself and in the wider landscape. If the deer were, by behaviour, relatively immobile then one might assume that culls within the Moorland Zone would only affect the population resident within that part of the Estate, while, by the same token, culls within the Regeneration Zone would be "appropriate" to the size of that resident population. But we have already recognised that there is in fact considerable movement between these two areas, with animals from the Moorland Zone (and adjacent properties) drawing into the sheltered glens of the Regeneration Zone over winter.[3] Continued culling in this area and especially Out of Season culling of stags, is thus in effect a cull on immigrants or transients and represents a continuing attrition of stocks elsewhere on the property and on adjacent neighbouring properties.

[3] This is immediately apparent from the scale of continuing culls within the Regeneration Zone, despite the fact that there are no longer any significant population of red deer truly resident in that area.

4.18 This has indeed given rise to considerable concern as expressed by owners and managers of neighbouring properties and has been one of the main drivers for complaints expressed about past policies. [This issue does not apply to the same degree to roe deer, which are indeed more sedentary within a comparatively small home range; the issue is thus largely related to red deer]. Recognition that culling in the Regeneration Zone in particular has been at levels far higher than could be supported by recruitment on Mar Lodge Estate, has led to neighbours' views that Mar Lodge's policies were actually or potentially having a negative impact on their own legitimate sporting interests and income (paragraph 1.8). While such complaints ignored to a degree that fact that other properties within the area were also actively engaged in reduction culls[4], objective analysis of counts and cull figures supplied by these various Estates does lend some formal support to claims in relation to at least some of these properties [see Appendix J: **Mar Lodge and Neighbours - Catchment Population Changes** ]

4.19 From all this we may conclude that:

a) current populations of red deer on Mar Lodge are at or around the target figure of 1650 proposed by Brian Staines and as agreed by NTS managers;
b) past culls, especially those conducted out of season have had a real impact on stag populations in particular within a wider catchment;
c) continuation of culls at the same level as those required by policies of zero tolerance over the past few years, would result in cull levels continuing at levels substantially higher than maintenance, which would thus result in further reduction of deer populations within Mar Lodge Estate itself and potentially further reductions also on neighbouring properties;
d) further reduction of red deer populations on Mar Lodge Estate would cause populations to fall below levels required to sustain the agreed sporting quota of 80-100 red stags per year.

**Vegetation:**

Moorlands:

4.20 A great deal of the area of Mar Lodge Estate is designated in one form or another and designated features include open moorland habitats as well as woodlands (and other key species). Monitoring of the upland habitats is carried out by SNH as part of regular Site Condition Monitoring. We are not aware that NTS staff themselves undertake any additional monitoring within these areas. In general, however, recent monitoring by SNH has assessed open (upland) habitats within the Moorland Zone as in favourable condition. This implies that current levels of grazing and trampling are acceptable. It is significant to note that this is the case even though the agreed population of red deer (at 1650) is now largely restricted to the Moorland Zone, rather than spread, as was initially imagined, across the entire estate – and thus the Moorland Zone in practice carries slightly higher densities of deer than originally anticipated.

4.21 It is our belief that assessments of condition of upland habitats (i.e. habitats other than woodland) were not carried out however in the Regeneration Zone and that the condition of, for example, areas of dry heathland, was not assessed within this zone. The Panel's own assessment is that such areas of heathland within the Regeneration Zone may indeed be declining as a result of the continuing effort to reduce impacts of deer within the Regeneration Zone as a whole.

[4] Glenfeshie, Abernethy, Rotheimurchus, Invercauld Home Beat, as well as those Estates involved in the reduction culls around Caenlochan

4.22 Within the Moorland Zone, active management of heather (through appropriate burning) was carried out within the Dalvorar and Geldie beats until comparatively recently, both in support of sporting interests (red grouse) and for wider biodiversity (a more heterogeneous age-structure is also beneficial in support of a wider diversity of small rodents, moorland birds and associated raptor populations, as well as for invertebrates). Less muirburn has been carried out in immediate past years, due to lack of resources (keeper time has been taken up implementing the zero-tolerance policy for deer impacts within the Regeneration Zone).

4.23 By contrast, as a specific policy, no muirburn was carried out in any part of the Regeneration Zone, even in those areas designated as heathland. This has implications for the condition of these heathland areas and their associated biodiversity (in terms of SNH's criteria for favourable condition). In addition, a separate assessment of fire risk [Servant, 2006] considered that parts of this area now carried high and potentially dangerous fuel loads and constituted a potential risk in case of wild fire which might damage not only the heathland component but also woodland regeneration.

4.24 We would note also that the density of the ground vegetation and lack of disturbance make it difficult for tree seeds to penetrate to the soil layer and may deprive any germinating seedling of adequate light, reducing the probability of further regeneration over much of the area in the absence of some intervention, until (and if) the heather collapses in the classic climax cycle reported by Watt (1947), Gimingham (1972). See also below at paragraph 4.36.

4.25 We may conclude that:

a) stocking levels of deer at c 1650 head, and with such populations focused largely within the Moorland Zone, have not to this point been in conflict with favourable condition of the designated habitats within the Moorland Zone. We believe that further reductions in densities might result in browsing impacts becoming too low to maintain such condition especially in the absence of active management through burning or cutting of overmature heather to maintain a mosaic of heather of different ages and physical structure;
b) Within the Moorland Zone, active management of heather (through appropriate burning) was carried out within the Dalvorar and Geldie beats until comparatively recently, both in support of sporting interests (red grouse) and for wider biodiversity. Less muirburn has been carried out in immediate past years, due to lack of resources (keeper time has been taken up implementing the zero-tolerance policy for deer impacts within the Regeneration Zone). This too, in the longer term, could result in loss of condition of the heathland component;
c) lack of active management, as a matter of policy of moorland areas within the Regeneration Zone which are destined to remain moorland and would never be expected to support tree cover, may also result in these becoming unfavourable in condition Already, lack of management in this area has led to the development of high fuel loads which may constitute a potential risk in case of wild fire.

<u>Woodlands</u>:

4.26 Much more attention has been focused on the regeneration of trees – notably of pine, but also of broad-leaved species. In this case regular monitoring of regeneration is carried out by the Trust's own staff as summarised in (Rao and Lawrence, 2011: Regeneration of Semi - Natural Woodland; Regeneration Transects Monitoring Report 2011) along established transects within areas of potential woodland establishment.

4.27 As background and as a thorough evaluation of the status of the existing woodland cover, establishing a baseline against which to assess future woodland recruitment, it is instructive to consider the reports of Edwards and Davies (2008a,b) which detail both the extent and age-structure of existing woodland cover (emphasising that in many parts of the site the woodland is overmature and indeed virtually moribund) and highlights the lack of younger age-classes within the overall age-profile. These reports also provide an analysis of seedling success, albeit these were completed somewhat earlier (2007/08) and thus before the bulk of the regeneration success claimed in the last two years.

4.28 Regular monitoring of regeneration is carried out by NTS staff along eleven one-kilometre transects established in 1996 within the areas of potential woodland establishment. These transects were monitored annually between 1997 and 2001 in April or May of each year. During this period all of the seedlings along the whole of each transect were recorded, as well as the presence of deer and hare dung.

4.29 Because of some concerns about the quality and resolution of the results of these surveys, especially in relation to seedlings recorded below, or emergent above the level of surrounding vegetation, the methodology was altered in 2003 to focus on seedlings reaching above vegetation height. Thus since 2003, each 1km transect has been split into ten 100m sections and for each section the number of seedlings above vegetation height occurring within 1m either side of the transect line has been recorded. Seedlings were deemed to be above vegetation height if the longest shoot was above that of the surrounding vegetation sward. For each seedling the following information has been recorded; species, seedling height, the height of the adjacent vegetation, whether the leader or other shoots was browsed this year or in previous years, and whether the seedling was multi-stemmed. Reduction in grazing pressure may result in an increase in the height of the ground vegetation. To quantify these changes, measurements of the vegetation height were taken at 0m, 20m, 40m, 60m and 80m along each 100m section of the transect.

4.30 To complement these data recorded directly along the transect itself, a quadrat was laid out (2m x 10m) along the line of the transect at every 200m. Within these quadrats, the following data were recorded: number and species of seedlings both above and below vegetation height, seedling height and the height of the adjacent vegetation, percentage coverage of the principal plant species, and counts of deer pellet-groups (>6 pellets) and hare dung (individual pellets). Once again, for each seedling the incidence of browsing damage to the leader or other shoots, either this year or in previous years was recorded, in addition to whether the seedling was multi-stemmed.

4.31 Monitoring along established transects showed disappointing result in terms of establishment of saplings until the commencement of the zero-tolerance policy in 2008. Thereafter an increase is noted in recruitment and establishment in certain local areas. For the most recent results, refer to Rao and Lawrence, 2011 (Regeneration of Semi - Natural Woodland; Regeneration Transects Monitoring Report 2011) at Appendix K.

4.32 In support of transect data and to offer a wider overview of regeneration success more widely across the Zone, a fuller survey was undertaken in 2011 by Gordon Brown, mapping all established seedlings. Regrettably, while we were advised that these maps would not only show areas of regeneration but would also code them for approximate age (height-class), this important information is missing and all that is offered is a map of ALL seedlings/saplings which inevitably overestimates actual future recruitment [5].

[5] This height-class data is actually pretty fundamentally important, since it helps reveal not only the approximate age of the regeneration, but also its continued vulnerability to browsing.

Even considering this total headline figure (and accepting it is the absolute maximum possible, because some of those trees recorded are very small and may not persist), the overall extent of regeneration extends to a total area claimed at 133.33 ha (although it is acknowledged that this does not include the regeneration at Luibeg).

4.33 Of that total, 66.50 hectares have fewer than 500 trees per hectare; and a further 40.07 ha is recorded with <1100. This means that the actual regeneration area at this stage with >1100 stems (the standard threshold expected by FCS for example) is only 26.5 hectares in total.

4.34 The bulk of this regeneration is mapped along tracksides and edges of rivers – thus is largely restricted to disturbed ground. There are however one or two areas of more extensive regeneration apparent at, for example, Creag Bad an t-Seabhaig (centre NO 037943) or behind existing woodland areas at the foot of the Quoich (NO 110917). This analysis should not be construed as being negative but rather as an objective evaluation of what has so far been achieved. We are aware from our own direct observations that considerable regeneration has been achieved in recent years in some areas, although there are equally considerable parts of the Regeneration Zone where little establishment is recorded.

4.35 Targets, however, have also changed over the years. Original aspirations (documented within a succession of Woodland Grant Schemes entered into with Forestry Commission Scotland from 1996) were for a total of some 816.18 ha[6]. However, whilst perhaps a target still to be aimed for over the 200 years of a full woodland management plan, recognition that this might not be achievable in the short- to medium-term, led to redefinition of shorter term goals (Edwards 2009), and ultimately to commitment under paragraph 17 of the current Section 7 Agreement with SNH, to secure existing regeneration, ensuring "positive incremental growth in average height of existing tree seedlings above the height of the dominant ground vegetation, with 75% of seedlings in each year showing positive growth in the regeneration zone of the SPA/SAC".

*Analysis*:

4.36 Our own surveys and the official reports cited (Edwards and Davies 2008a, b) make it clear that in many areas the density of the ground vegetation and lack of disturbance make it difficult for tree seeds to penetrate to the soil layer. This is likely to deprive any germinating seedling of adequate light, reducing the probability of further regeneration over much of the site in the absence of some intervention, until (and if) the heather collapses in the classic climax cycle reported by Watt (1947), Gimingham (1972).

4.37 The reality would appear to be that had managers succeeded in getting deer numbers to a lower level within the Regeneration Zone more quickly, management might have been rewarded with a greater amount of regeneration in the initial window of opportunity before the ground vegetation became too thick. This is not intended as criticism of past policy, which, it is recognised, evolved and changed in response to early lack of regeneration success, thus only gradually shifting targets for deer numbers to be tolerated within the Regeneration Zone, from the initial target proposed of 350 to lower targets (190) and finally to zero-tolerance.

4.38 Rather, this comment is noted in recognition that this lack of an early deer reduction (for whatever reason) now leads to a decreasing rate of regeneration and seedling establishment. [Similar results were noted at Creag Meagaidh such that there has been over time an actual decline in rates of seedling establishment due to a reduction in herbivore pressure and thus a lack of disturbance of the sward by animal activity, providing fewer "gaps" in the vegetation mat in which tree seedlings

[6] The combined total submitted for grant-aid in contracts G1+G13+G14, covering Glen Derry, Glen Quoich and Glen Lui

might become established (Stewart, 1996; Lamont, 1998). Examination of more recent data collected by Smyth (2002) confirmed that there is some continuing germination and that there is a continuing potential for recruitment, but rates of establishment were indeed much lower than those observed initially before the ground vegetation became too dense (Putman *et al*., 2006).]

4.39 We may conclude that:

a) since the adoption of a zero-tolerance policy for deer within the Regeneration Zone, there has been some significant establishment of seedlings/saplings of both pine and native broadleaves. This tends to be concentrated in disturbed areas along tracksides and alluvial gravels and one or two more extensive areas of regeneration in open moorland.

However,

b) it is clear that in many other areas, the density of the ground vegetation is now such as to make it difficult for tree seeds to penetrate to the soil layer and may deprive any germinating seedling of adequate light, reducing the probability of further regeneration over much of the site in the short- or medium- term future in the absence of some intervention.
c) While further establishment may be expected in the long-term if (and when) the existing heather structure collapses at the end of its climax cycle, rates of regeneration could be significantly accelerated by mechanical interventions (burning or cutting of heather, as is carried out successfully on the RSPB's Caledonian Forest Reserve at Abernethy; mechanical scarification, etc)
d) the density of mature **heather within parts of the Regeneration Zone currently presents an extremely high fuel load and carries with it implicit risk of wild fire which could not only damage the heathland component of the site, but also damage the woodland**.

**5. Review of Delivery to date**

*Conservation Objectives*:
5.1 In Section 5 we noted that SNH's Site Condition Monitoring has assessed open (upland) habitats within the Moorland Zone as in favourable condition. It is our belief that assessments of condition of upland habitats (i.e. habitats other than woodland) were not carried out in the Regeneration Zone and that therefore the condition of areas of dry heathland, for example, has not been assessed within this zone. The Panel's own assessment is that such areas of heathland within the Regeneration Zone may indeed be declining as a result of the continuing effort to reduce impacts of deer within the Regeneration Zone as a whole.

5.2 *Within the woodland component* it is clear that early efforts to achieve regeneration in the absence of fences but in the presence of reduced densities of deer were not especially successful and SNH and NTS became increasingly unhappy about the results achieved. We are however aware that, after the instigation of the zero-tolerance policy within the Regeneration Zone – and a recognition of a need to impose heavy culls also on resident roe deer - considerable advance regeneration has been achieved in some areas, mostly within the past 3-4 years, although there are equally considerable parts of the Regeneration Zone where little establishment is recorded.

5.3 Recent mapping by Gordon Brown (paragraphs 4.32- 4.34) showed that, currently, regenerating seedlings/saplings are establishing over some 133.33 ha (although it is acknowledged that this does not include the regeneration at Luibeg). It is noted that the bulk of this regeneration is mapped along tracksides and edges of rivers – thus is largely restricted to disturbed ground. There are however one or two areas of more extensive regeneration apparent at Creag Bad an t-Seabhaig (centre NO 037943) or behind existing woodland areas at the foot of the Quoich (NO 110917) (see above, paragraph 4.34).

5.4 The Trust has obligations under the Section 7 Agreement with SNH to secure the regeneration already achieved and it is clear that the Trust itself wishes, where possible, to expand the area and extent of tree cover.

*Sporting activity*
5.5 Apart from the agreement with Agrihold Limited (2005; Appendix L) permitting the shooting of grouse over Dalvorar and South Geldie, sporting activity within Mar Lodge Estate has primarily been focused on deer stalking and specifically stalking of red deer stags in season.

5.6 It has proved difficult to elicit exactly the level of activity (in terms of gun-days let), since it would appear that appropriate records were not kept to permit this. However we can make some estimate in terms of division of overall culls taken, between the sporting beats [Dalvorar, North Geldie, South Geldie] and the beats of the Regeneration Zone [Quoich and Derry]. Such division is not definitive however because it is believed that some stags shot within the Regeneration Zone *were* let to clients, while some beasts shot on the Moorland beats may have been taken by the estate stalkers as part of a management cull.

5.7 Some salmon fishing has also been carried out on the Dee with, it is understood, up to 30-40 salmon being taken in season up to 2009/10.

5.8 In brief summary the Panel notes that while some sporting interests have continued in low levels of walked up shooting of grouse and salmon fishing, there has been no real investment in infra-structure or targeted management to these interests. It is noted that while a Muirburn Plan was agreed with SNH [Mar Lodge Muirburn Plan 2006-2011 in May 2008, this Plan applies only to Dalvorar and South Geldie and no similar plan is available for other areas within the estate. It is further noted (above 4.22) that due to shortage of manpower limited burning has been undertaken in more recent years.

5.9 Numbers of let stags have been somewhat variable over the years (Table 2) and especially more recently; it would appear that this is in part due to changes in personnel and changes in responsibility for coordinating lets. We note that deer numbers are now at the lower level of that required to continue to sustain the agreed sporting cull of 80-100 stags.

5.10 Initial efforts at reducing deer populations to target population levels of 1650, and more specifically to reduce impacts within the areas scheduled for regeneration of woodland were not successful and the management team successively adjusted their approach in response to this early lack of success, gradually shifting targets for deer numbers to be tolerated within the Regeneration Zone, from the initial target proposed of 350 to lower targets (190) and finally to zero-tolerance (paragraph 4.37). Over this period the deer stalking activity and management culls have been supported financially by part of the SNH annual grant in recognition of the necessity of requiring variable additional resources to bring about the required ‘reduction cull’. However, it is clear that it is only in the last 3-4 years that management efforts have been rewarded with significant regeneration success and that due to increasing density of the ground layer, future rates of tree establishment may be compromised.

**Table 2. Mar Lodge Estate - Stalking and Deer Management Statistics**

| | Total Stags Culled MEL | Stags Culled Regen Zone | Stags Culled Moorland Zone | Total Sporting Stags Taken on Let | Combined Gun Days Let (From Invoices) | Combined Gun Days Let (From Game Books) | Total Income from Lets etc (£) | Total Income from All Deer Sales (£) | Total Costs Re Deer Manage-ment and Stalking (£) | Expenditure *less* Income (£) | SNH Contribution to Costs (£) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1995 | 341 | *220* | *121* | 328? | | ? | | | | | |
| 1996 | 338 | 203 | 139 | 275 (12)* | | 119 | | | | | |
| 1997 | 265 | 131 | 134 | 161 (18) | | 108 | | | | | |
| 1998 | 239 | 117 | 122 | 145 | | 97 | | | | | |
| 1999 | 204 | 111 | 93 | 163 | | 53 | | | | | |
| 2000 | 193 | 109 | 84 | 117 | | 75 | | | | | |
| 2001 | 232 | 120 | 112? | 139 | | 106 | 55556 | 10431 | 129921 | -63935 | 38361 |
| 2002 | 332 | 206 | 126 | 143 | | 88 | 59093 | 34262 | 136227 | -42883 | 25730 |
| 2003 | 322 | 222 | 100 | 125 | | 80 | 45830 | 32471 | 176540 | -98239 | 58943 |
| 2004 | 253 | 126 | 127 | 92 | | 71 | 43961 | 24836 | 171262 | -102465 | 61479 |
| 2005 | 266 | 203 | 63 | 93 | | 78 | 51358 | 36291 | 193959 | -106309 | 63786 |
| 2006 | 237 | 142 | 95 | 109 | 136 | 86 | 58291 | 19895 | 167778 | -89592 | 53755 |
| 2007 | 421 | 234 | 187 | 175 | 89 | 101 | 56030 | 48561 | 166963 | -57474 | 34484 |
| 2008 | 330 | 278 | 52 | 57 | 96 | 48 | 42153 | 35247 | 191180 | -113781 | 68269 |
| 2009 | *240* | *166* | *74* | 72 (2) | 81 | 58 | 35928 | 30798 | 147016 | -78645 | 47187 |
| 2010 | *416* | *236* | *180* | 74 (9) | 84 | 56 | 51360 | 28445 | 147523 | -67718 | 40631 |
| | | | | | | | | | | | |

* Bucks

Notes (as provided by NTS):

The operating statements for MLE prior to 2001 did not differentiate between activities under “countryside.” Therefore it is not possible to split stalking from ecology, rangers, estate maintenance etc. To do so would require a detailed transaction analysis.

Regen/Moorland split on sporting stags only is not possible with our current data (although from this year it is being recorded.) The main problem with calculating this figure is a result of what were termed “management stags.” These were stags shot by guests and therefore technically sporting, but for which nothing was charged. This was seen as assisting in the management objectives and in doing so giving the guest a little bit “extra.” This appears to have been common practice up until 2 years ago and could significantly affect the figures. There is no way now to tell what was truly a sporting stag and what was a “management” stag.

## 6. Future Management Options: Deer, Moorland and Woodland

*Management Requirements:*

6.1 The management of Mar Lodge Estate seeks to deliver multiple objectives. Leaving aside any statutory, legal or moral obligations to funders and sponsors, part of the initial aspiration for the Estate was to demonstrate that conservation and sporting objectives are not necessarily mutually exclusive, but that with sensitive management, both can be accommodated.

6.2 In considering available options for the future it is essential to recognise the need to continue to develop the sporting use of the Estate while at the same time delivering the Trust's own (and statutory) commitments to conservation - in particular the satisfactory regeneration of native woodlands, and maintenance of the open moorland habitats and other designated features in favourable condition.

6.3 We do not consider that these objectives are in any sense irreconcilable, and our evaluation of future options keeps this fundamental requirement clearly in focus.

6.4 We have considered a number of alternative possible management options for delivery of the National Trust's objectives and obligations in relation to Moorland Management, Woodland Management, Deer Management (and other sporting interests), evaluating for each the advantages and disadvantages in terms of delivery of the Trust's statutory and other obligations and within the context of the Trust's more general Guiding Principles. These options are explored briefly below, but more detail is provided in Table 3

6.5 Finally, we would emphasise the necessarily holistic nature of management at Mar Lodge. While recommendations might be considered for future management measures in relation to deer populations (and other sporting interests), restoration of woodlands and maintenance of moorland habitats in favourable condition as separate clear objectives, it is equally apparent that management of each of these separate elements is itself interconnected. Thus, for example, securing continued regeneration of woodlands relies on appropriate deer management; active management of heathlands is, by the same token, of relevance to condition of the heathland feature itself, but also of sporting interest (grouse, deer)- and potentially beneficial for future woodland expansion (by opening areas of bare ground for seedling establishment and suppression of competition)

Deer Management/Sporting Management:

6.6 Fundamental to the future management of deer is the estate's current commitment to deliver 80-100 sporting stags each year. While it is theoretically possible to sustain such a harvest from a population of some 1650 red deer overall (as approximately 700 stags, 700 hinds and their 250 calves), such calculations for a sustainable sporting offtake assume that at that (minimum) point all stags will in effect be sold as sporting stags. If the estate is committed to a sporting offtake at that level, there is no surplus to take account of the additional stags that will be culled in the interests of protection of the Regeneration Zone.

6.8 These calculations also do not take account of age-structure. Following a long period of population reduction, where culls have inevitably been especially heavy on mature stags, current populations are biased towards younger animals, implying that while it is possible for such a population to support an annual harvest of between 80-100 stags, it cannot be restricted simply to mature stags but must be taken from all age-classes.

6.9 Current populations are estimated at around this minimum threshold number of 1650. The analysis above leads to the conclusion that if the Estate is indeed to maintain a sporting cull of 80-100 stags then no further reduction in standing stocks can be accommodated without compromising that objective; and the bulk of all stags shot in future must be shot as sporting stags.

6.10 Recent offtake in the Regeneration Zone alone (above, paragraph 4.9) have been of the order of 217 stags a year with total offtake averaging 224 stags (average 2006-2010; range 231-421) and 270 hinds (average 2006-2010; range 84 (?) – 517). This is clearly unsustainable and incompatible with maintaining a sporting cull of 80-100 red deer stags (paragraphs 4.12 – 4.15). At the same time there is no evidence to suggest that future culls required to maintain a zero-tolerance policy within the Regeneration Zone will be significantly lower than those of recent years.

6.11 If sporting is to be safeguarded at the level of 80-100 stags per year, there is thus an immediate need to reduce the numbers entering the Regeneration Zone which would be shot for management purposes. Maintenance of the *status quo* is simply not an option if the estate is to honour its own sporting commitment to deliver 80+ sporting stags. Continuation of current policy without change would also inevitably result in continued attrition of deer stocks from neighbouring properties, drawn to winter in the Quoich and the Derry.

6.12 Options for change include:

i) abandoning current sporting aspirations and accept a reduced sporting cull;
ii) abandoning the zero-tolerance policy within the Regeneration Zone; reducing deer culls to those calculated for maintenance (approximately 100 stags and 120 hinds, and thus accepting increased impacts within the Regeneration Zone;
iii) abandoning the zero-tolerance policy within the Regeneration Zone; reducing deer culls to those calculated for maintenance but protecting existing regeneration by the use of enclosure fencing;
iv) undertaking some active measures to try to reduce migration of deer from the Moorland Zone and from adjacent properties into the Regeneration Zone (especially over winter).

*Analysis* [and see Table 3]

*Option i)*
6.13 It appears to us that Option 1 is unsustainable. In the first instance, the Estate is committed to maintaining a sporting cull of 80-100 stags, a commitment that has been recently reinforced within the Section 7 agreement with SNH. Further, while the Trust could seek discussion with the representatives of the Easter Trust to redefine this proximate level of sporting activity,[7] such agreement would in any case buy only temporary reprieve. Continuing culls at current levels would result in such reduction of stable populations and an ever-decreasing sporting cull - reaching a predicted sustainable harvest of only 10 stags a year by 2014, if the bulk of culls fall on Mar Lodge's own resident animals (paragraphs 4.13 – 4.15). Even if culls continue at a lower level as predicted by the Head Stalker in his paper "Maintaining the Sport on the Estate" – which anticipates (red deer) culls for 2011/12 as 230 stags and 120 hinds, while we may predict a somewhat slower rate of decline, there is no question but that there will be a continuing decrease in sustainable quota.

[7] Ultimately the commitment is merely to maintain Mar Lodge as a sporting estate, with no targets specified in the original deed of gift.

| DEGREE OF INTERVENTION | | Status Quo - MLE Deer Management Plan 2011-2016 | Status Quo Modification 1 | Minimum Intervention | Medium Intervention |
|---|---|---|---|---|---|
| **MANAGEMENT OPTIONS AND PRACTICAL IMPLICATIONs** | | | | | |
| **Practical Implications**<br>Assumes<br>- In the relatively shorter term (at least ? years) zonation of estate into **Regeneration Zone** (priority to native pinewood regeneration) and **Moorland Zone** (priority to sport in harmony with conservation interest and maintenance of habitat in a satisfactory state) with a **buffer zone** where deer management is essentially same as Regeneration Zone<br>- a 200 year perspective when it might be anticipated at some point before then the whole estate can be regarded as a sporting estate, with a sustainable deer population in harmony with an established sustainable native pine wood over at least the Regeneration Zone. | | Elimination of Deer in **Regeneration Zone**<br>- zero tolerance of deer<br>- out-of-season shooting<br>- night monitoring and shooting<br>- use of helicopters to take out staff and recover carcasses and to count<br><br>**Buffer Zone**<br>- as above<br><br>**Moorland Zone** for Sport<br>- Population of 1650<br>- In-season shooting only except for buffer zone | Elimination of Deer in **Regeneration Zone**<br>- zero tolerance of deer<br>- stags out-of-season shooting<br>- **otherwise shoot during day only**<br>- **chase off zone on a daily basis**<br>- **use of helicopters to count** (and only if absolutely essential to take out staff and recover carcasses)<br><br>**Buffer Zone**<br>- **chase deer out of this area**<br><br>**Moorland Zone** for Sport<br>- Population of 1650<br>- In-season shooting only except for buffer zone | Elimination of Deer **in adjusted Regeneration Zone**<br>- zero tolerance of deer<br>- stags out-of-season shooting<br>- **otherwise shoot during day only**<br>- **chase off zone on a daily basis**<br>- **use of helicopters to count** (and only if absolutely essential to take out staff and recover carcasses)<br>**Buffer Zone**<br>- **change boundary of buffer zone to allow access to shelter in Linn of Dee**<br>- **chase deer out of rest of area**<br><br>**Moorland Zone** for Sport<br>- Population of 1650<br>- In-season shooting only except for buffer zone | Elimination of Deer in adjusted **Regeneration Zone**<br>- zero tolerance of deer<br>- stags out-of-season shooting<br>- **otherwise shoot during day only**<br>- **chase off zone on a daily basis**<br>- **use of helicopters to count** (and only if absolutely essential to take out staff and recover carcasses)<br>**Buffer Zone**<br>- **change boundary of buffer zone to allow access to shelter in Linn of Dee**<br>- **Erect Strategic diverting fence at Linn of Dee: open up existing plantations where possible in area**<br>- **chase deer out of rest of area**<br><br>**Moorland Zone** for Sport<br>- Population of 1650<br>- In-season shooting only except for buffer zone |
| **CONSEQUENTIAL OUTCOMES RE AGREEMENTS, CONTRACTS, POLICIES AND LEGITIMATE INTERESTS** | | Resources as they are. | **Additional resources to have more people on the ground to 'chase'** | **Possibly further additional resources to have more people on the ground to monitor and 'chase'** | **Less need for additional people on ground; capital investment in fencingwhich may well be grant-aided. Secure a greater area for deer shelter in winter, which delivers welfare advantages and addresses some of the concerns voiced by for example SGA.** |
| **SNH Contract (1995)**<br>Conservation Objective with Sport<br>Targets for Section 7 Agreement (2010)<br>1. Successful growth and establishment of regenerating woodland in the Regeneration Zone<br>2. Continued favourable status of the various habitats (other than woodland) as detailed in the quinquennial habitat condition assessment.<br>3. Achieving the taking of up to 100 sporting stags with clients | | Meets primacy of conservation objective but puts sporting interest at risk. Continued incursion of deer (stags) into the buffer zone will result in them being shot and compromise the sustainability of a resident population on the deer zone and provision of 80-100 stags for sport. | Conservation objective may be compromised if restricted shooting is applied and replaced with 'chasing' option that may not be successful as deer adapt! Sporting objective would be more likely to be met. | Conservation objective may be compromised if restricted shooting is applied and replaced with 'chasing' option. Some sacrifice of reestablishment of native woodland around Linn of Dee.<br>But – positive: will allow some disturbance of ground and older heather cover to create regeneration niches to facilitate future continued regeneration in this zone as and when deer are subsequently excluded at some later point<br>Sporting objective more likely to be met | Greater certainty of preventing deer encroaching from buffer zone. Conservation objective may be compromised if restricted shooting is applied and replaced with 'chasing' option. Some sacrifice of reestablishment of native woodland around Linn of Dee.<br>But – positive: will allow some disturbance of ground and older heather cover to create regeneration niches to facilitate future continued regeneration in this zone as and when der are subsequently excluded at some later point<br>Sporting objective more likely to be met |
| **Easter Trust Declaration (1995)**<br>**Principal aim** is to manage the Estate in a sustainable manner for the benefit of the nation, ensuring the continued conservation and restoration of its internationally important geology, flora, fauna, wild land value and archaeological value subject other important conditions regarding access; the operation of the Estate as a 'Highland Sporting Estate' including the enhancing of the social, cultural and economic well-being of the local community; regeneration of native Caledonian pine forest; with 'moorland' zone south and west of the Dee subject to proper conservation in terms of grouse habitat; promotion of the 'long walk in' – no use of mechanical or wheeled vehicles (excepting NTS management requirements and field sports);use of existing buildings ;interpretation and education; managed recognising that it forms part of the wider Cairngorm area | | Meets conservation objective but puts sporting interest at risk (see above) and compromises relationships with local community (including neighbours' and wider interests) - Paras (ii) and (viii) Declaration. | Meets conservation objective and increases the likelihood of sporting objective being met. May reduce negative community reaction and secure improved relationships with neighbours. | Meets condition of managing estate as a highland sporting estate in harmony with conservation objective | Meets condition of managing estate as a highland sporting estate in harmony with conservation objective |
| **Agrihold Limited Agreement (2005)**<br>Acknowledges that Agrihold will be 'prime consumer of sport over Delvorar and South Geldie, to liaise with and permit in terms of the development of Delvorar and South Geldie for sport, management input to Agrihold'. | | Puts sporting interest at risk and may compromise the agreement to provide sport to the client | More likely to meet requirements for this agreement | More likely to meet requirements for this agreement | Meets condition of managing estate as a highland sporting estate in harmony with conservation objective |
| **NTS Wild Land Policy**<br>"Wild land in Scotland is relatively remote and inaccessible, not noticeably affected by contemporary human activity, and offers high-quality opportunities to escape from the pressures of everyday living and to find physical and spiritual refreshment." | | Adheres broadly to NTS wild land policy – but eg human activity is inevitable re deer management and culling | Adheres broadly to NTS wild land policy – but eg human activity is inevitable re deer management and culling | Adheres broadly to NTS wild land policy – but eg human activity is inevitable re deer management and culling | Some compromise involved re fencing though if done sensitively within woodland where possible would be able to reduce impact on landscape, as well as negative impact on access and any potential impact on woodland grouse. |
| **NTS Access Policy**<br>1. Access to the natural and cultural heritage is for the benefit of present and future generations.<br>2. Scotland's heritage should be accessible and relevant to the widest possible range of people.<br>3. Enjoyment of the natural and cultural heritage should be encouraged in a variety of different ways | | Adheres broadly to NTS policy except in discouraging access 'by mechanical or wheeled vehicles and all mechanical recreational activities'[1] but takes account of the the SOAS[2] | Adheres broadly to NTS policy except in discouraging access 'by mechanical or wheeled vehicles and all mechanical recreational activities'[3] but takes account of the the SOAS[4] | Adheres broadly to NTS policy except in discouraging access 'by mechanical or wheeled vehicles and all mechanical recreational activities'[5] but takes account of the the SOAS[6] | Some possible minor impacts access depending on the fence line. |
| **Local Community Interest**<br>Social, cultural and economic<br>- Benefits to tourism –wildlife, walking, mountaineering<br>- Accommodation for sporting clients<br>- Wild life and particularly deer welfare<br>- | | With other estates practising a reduction cull has contributed to a significant reduction of deer in the area – said to have affected tourist interest in Braemar and reduced the number of clients visiting for sport. General objections to methods of cull, particularly night and out of season shooting and use of helicopters. | Potential to reduce negative reaction from local community – less intensive culling regime.<br>Increases employment potential on estate | Further potential to reduce negative reaction from local community – less intensive culling regime.<br>Increases employment potential on estate. | Further potential to reduce negative reaction from local community – less intensive culling regime.<br>Increases employment potential on estate.<br>Attempts to safeguard welfare of deer. |
| **Eleven Neighbouring Estates with Mixed Objectives** | **Sporting** – sustainable deer populations | There is evidence that estates undertaking reduction culls including MLE have some impact on neighbouring sporting estate objectives. | Potential to reduce impact on neighbouring estates' sporting interests. | Potential to further reduce impact on neighbouring estates' sporting interests. | Potential to further reduce impact on neighbouring estates' sporting interests. |
| | **Habitat Restoration** – reduction culls | Meets common objectives of minimising the population of deer on these estates. | Meets common objectives of minimising the population of deer on these estates. | Meets common objectives of minimising the population of deer on these estates. | Meets common objectives of minimising the population of deer on these estates. |

[1] East Trust Declaration para (v)
[2] Scottish Outdoor AccessCode
[3] East Trust Declaration para (v)
[4] Scottish Outdoor AccessCode
[5] East Trust Declaration para (v)
[6] Scottish Outdoor AccessCode

*Option ii)*

6.14 Likewise it is clear that regeneration currently achieved within the Regeneration Zone is fragile and will remain vulnerable for a considerable number of years. Abandoning the zero-tolerance policy at this point would almost certainly result in loss of all that has been gained (and already at such cost) in the past 15 years.

*Option iii)*

6.15 Use of extensive enclosure fencing would have a significant visual and environmental impact and would also conflict with the Trust's Wild Land policy. Further, while we may identify one or two areas where there is extensive regeneration within a defined area (see paragraph 4.34), the bulk of regeneration apparent is more diffuse and is spread, as noted, along alluvial gravels and tracksides. It would be extremely difficult if not wholly impractical to protect such diffuse areas, unless (as has been recommended by Colin Edwards in his 2009 report), the Trust were to identify particular areas for protection in the first instance (sacrificing other gains in the meantime with a view to protection/ enclosure of these at some later date).

*Option iv)*

6.16 The Head Stalker (following recommendations of his predecessor and previous stalking staff) has suggested the erection of a strategic fence from the Linn of Dee to try and reduce winter migration into the Regeneration Zone from the South and West. The fence proposed would not prevent all incursion (animals could still enter the Regeneration Zone from the North West (entering into Glen Lui from North Geldie) or from the east (entering the upper part of the Quoich from Invercauld). Nevertheless, such a fence would have the potential to reduce influx from South Geldie and Dalvorar (and the neighbouring sporting properties to the southwest), thus reducing the number of animals requiring to be killed within the Regeneration Zone.

6.17 Such a fence is not without cost or consequences in terms of visual impact, effect on access, and potential impact on red and black grouse. These negative impacts, once identified by appropriate risk assessment will require to be mitigated by the use of fencelines which follow contours and are well below skylines, with gates and/or stiles using fencing styles that incorporate 'grouse warning' measures.

6.18 While this fence may be effective in reducing the movements of hinds, is unlikely, on its own, to have a significant effect on the movements of stags. In searching for suitable shelter/cover in the winter they are likely to follow the fence and track around the end, unless appropriate alternative cover is provided for them elsewhere. Such fencing thus would need to be accompanied by provision of alternative wintering ground (providing both cover and suitable foraging areas) elsewhere within the property (or on adjacent land). But in principle we believe that such strategic fencing coupled with the provision of alternative wintering ground would provide benefits both in safeguarding Mar Lodge's sporting interest and in helping ensure continued protection of regeneration. We note that the strategic fence erected close to the march with Mar Estate has proved wholly effective in preventing movements of deer from Mar Estate to the South, into the Quoich.

6.19 Such fencing will involve some relaxation of the Trust's more general presumption against fences (within its Wild Land policy) but it seems to us that this is an option that enhances the possibility of meeting two objectives, *viz* its sporting obligations and its commitment to the regeneration of pine woodland, while sacrificing to only a limited extent the wild land experience to be had at Mar Lodge Estate.

While we accept that the effectiveness of such a fence cannot be guaranteed, we would suggest that erection of such fencing obeys an appropriate precautionary principle in attempting to reduce the numbers of deer having to be shot within the Regeneration Zone.

6.20 Applying the same precautionary principle (thus adopting the strategy with the greatest chance of success/least risk of failure), we would strongly recommend using traditional deer fencing (hard fencing) rather than experimenting with electric fences which may be more prone to failure in this location.

6.21 To put this proposed fencing into context, it should be noted that since NTS acquired Mar Lodge Estate the total length of fences removed is 37km, with proposals to remove a further 13.5 km next year, essentially removing all enclosure fencing within the regeneration zone. Even with the erection of the proposed new fence, the amount of fencing on the property overall will have been reduced significantly.

Woodland Management:

6.22 In relation to woodland management, the Trust's current primary obligation (as for example under the recent Section 7 Agreement) is the protection of the pine woodland regeneration already achieved within Glen Lui, the Derry and the Quoich. The Trust also aspires to extending the area of existing woodland. This requires a view to be taken about the natural ecological dynamics of the woodland, on the one hand, and the possibility of applying measures that could increase the potential area of extension and perhaps more rapidly.

*A. Protection of existing regeneration*:

6.23 Options available include:

i) Maintenance of the *status quo*, with zero-tolerance of deer within the entire Regeneration Zone, but with no other measure undertaken to reduce incursions by red deer;
ii) Total enclosure of the entire Regeneration Zone by extensive fencing;
iii) Erection of smaller enclosures within the Regeneration Zone to protect all, or selected areas of current regeneration;
iv) Erection, as above, of strategic fencing, along the Linn of Dee in the first instance, with possible additional fencing along the march with Invercauld, east of Glen Quoich.

*Analysis* [and see also Table 3]

*Option i)*

6.24 As above (paragraph 6.13) it appears to us that continuation of the *status quo* is not viable. While it has proved successful in recent years in permitting the development of significant regeneration, established trees are far from secure at present (and will remain vulnerable to leader browsing until reaching a height of at least 1.8 – 2 metres). Further, if culling requirement continues to be at the same level as in recent years to maintain minimum deer impact, this will seriously compromise Mar Lodge estate's ability to sustain its own sporting quotas, as well as continuing to impact upon the interests of at least some sporting neighbours. Lack of any change would also offer no resolution to the current conflict between the National Trust, its neighbours and the wider community who would continue their campaign of objection.

*Option ii)*

6.25 Total enclosure of the entire Regeneration Zone by fencing would not only be extremely difficult (the area is large and the terrain difficult) but expensive. Further, maintenance of the integrity of such fences, especially in heavy snow over winter, is arduous. Finally, it seems to us that such fencing would have serious visual, landscape and environmental impacts (irrespective of appropriate mitigation) and would significantly increase the overall extent of fencing on Mar Lodge Estate (paragraph 6.21): it would strongly conflict with the Trust's Wild Land policy.

*Option iii)*

6.26 The option remains to erect a number of smaller enclosures within the Regeneration Zone to protect all, or selected areas of current regeneration, as advocated originally by Colin Edwards. However, the Trust has a presumption against the proliferation of numerous such enclosures; in addition, as above, it seems to us difficult to conceive of enclosures which could adequately protect all existing regeneration since to a large extent this is diffuse and scattered throughout the entire Regeneration Zone. While it would be impractical to protect all areas of existing regeneration in this way (yet such protection of ALL existing regeneration is required under the Section 7 Agreement) enclosure of some of the more extensive, discrete areas of successful regeneration may be of value in providing additional protection to these areas, over and above that afforded by the zero-tolerance policy applied within the Regeneration Zone.

*Option iv)*

6.27 Despite the possible disadvantages of strategic fencing (above paragraphs 6.17, 6.19) it would appear that (if coupled to the provision of alternative wintering areas elsewhere) it has the potential to reduce influx into the Regeneration Zone over winter. While it would be necessary to maintain a policy of zero-tolerance within the Regeneration Zone itself, such strategic fencing could help to reduce the number of red deer which needed to be shot and thus reduce impacts on the sporting interests of Mar Lodge and neighbouring estates.

6.28 We would recommend therefore that the Board give serious consideration to the erection of the strategic fence proposed along the Linn of Dee, and also offer consideration to a second such fence along the march with Invercauld. Such fencing inevitably implies in addition an adjustment of the current area of zero-tolerance and exclusion of areas now devoted as alternative overwintering grounds.

6.29 While the current proposed fenceline from the Linn of Dee runs along the top edge of the woodland block west of the Linn of Dee (Centre NO 050896)] and then angles down to Creag Phadruig before striking northwest towards Creag Dubh [Map 1], we suggest that this leaves too narrow an entrance to the area designated as new wintering ground, and propose that for visual/landscape reasons and in terms of effective "funnelling" of deer to lower ground outside the Regeneration Zone, the fenceline should actually run as shown in Map 2.

6.30 We would also recommend that (in order that the fence does not simply deflect animals encountering the barrier northwards, to increase impacts within Glen Lui), that a dogleg be added at the northwestern end to deflect animals travelling along the fence back down into Glen Dee and the main strath east of White Bridge. Given the importance of this fenceline, hard fencing is to be preferred to electric fencing.

6.31 To provide additional wintering cover for deer in association with the proposed fence at the Linn of Dee, we propose the opening of the Car Park Wood to deer; we understand that recent proposals suggest in addition the opening of the western end of the Creag Bhalg block from the current cattle grid back towards Forest Cottage, with realignment of the western fence to the east of Forest Cottage. We suggest consideration should also be given to opening the Yelt Plantation (that block centred at NO 053892), as well as perhaps the lower part of the Linn of Dee

Plantation (that block centred NO 066894), below the centre track. This additional cover, together with the sheltered grazings along the alluvial grasslands of the river will provide an attractive wintering area for stags (and hinds).

6.32 "Sacrifice" of some part of the Regeneration Zone within such a policy is actually not as significant as it might appear. The heather in this part of the Estate is already long and dense so that regeneration of trees in these areas currently is rather unlikely (without some significant intervention). Suspension of the zero-tolerance policy in this area, in our view does not represent any significant loss to regeneration. Indeed, allowing the area to be used by deer in the short term, with the associated disturbance provided by browsing and trampling, will increase the likelihood of future establishment of seedlings in due course.

6.33 Considerable assistance in provision of alternative wintering cover could also be offered by neighbouring Estates. We note that on the Forest Lodge beat of Atholl Estates, marginal commercial woods have been opened to deer on Rock of Blair – due north of the castle. Efforts have also been made to move hinds from the bottom end of Glen Tilt and Glen Fender, the limestone area, and trying to get stags to winter in there at the bottom of Glen Fender. We urge other neighbours (eg. Mar Estate) to consider carefully what woodlands could be opened on *their* properties to contribute to increasing overall the available area of new wintering ground.

6.34 Finally we note that, by definition, no strategic fence can be 100% effective; while we recognise that much of the current regeneration is diffuse and scattered along river banks and tracksides, one or two patches in particular are more discrete(for example those at Creag Bad an t-Seabhaig (centre NO 037943) or behind existing woodland areas at the foot of the Quoich (NO 110917); paragraph 4.34), and consideration should be given to the enclosure of these or similar areas, reducing further the number of deer which may need to be shot within the Regeneration Zone as a whole and doubly securing the future development of the trees which have established in these two areas.

6.35 It is anticipated that the foregoing measures will together reduce the number of deer utilising the main parts of the Regeneration Zone. However, some incursion is inevitable, and we recognise that a policy of zero-tolerance must be maintained within the areas secured by the strategic fence(s). Because use of the area does increase over the winter period – especially by stags, and because deer do not necessarily vacate an area when under pressure but simply become more nocturnal (van de Veen, 1979; Putman and Mann, 1990), out-of-season and night-shooting will still be required.

*B. Expansion of woodland cover*

6.37 While the Section 7 Agreement merely obliges the Trust to secure existing regeneration, its own objectives are for further expansion of tree cover.

6.38 As noted above (paragraph 6.32) further expansion is currently impeded in many parts of the Regeneration Zone by thickness of ground cover. Options available include:

i) Exercise patience: it is arguable that given time, as it reaches the end of its cycle, the heather will collapse and provide new niches for regeneration within the collapsed structure.
ii) Undertake some measure of intervention to reduce the ground cover or open within it, potential sites for seedling establishment through cutting, burning or localised ground scarification,
planting of trees grown in a nursery from local seed stock.

*Analysis* [and see also Table 3]

*Option i)*

6.39 The first of these options (continued non-intervention) is favoured by those who would prefer a natural ecological development of the woodland but we believe in considering the present condition of the woodland[8] it leaves a great deal to chance. In particular, there are areas where few granny pines remain and these are already degenerating. There is also likely to be a continuing significant loss of existing mature trees and consequently a lack of adequate seed rain (or rain of viable seed) for re-colonisation. Even where there is seed rain the density of heather in much of the area is such that establishment will only occur when the heather reaches climax and opens up at its base. Some existing stands of pine will be lost in perpetuity unless there is some form of intervention. In addition, the current density of old growth heather provides a high fuel load and constitutes a high potential fire risk in the short to medium-term which potentially compromises existing regeneration and established trees

6.40 We observed that regeneration of the Caledonian Pine forest at Abernethy is assisted by a routine of heather management to encourage regeneration in the vicinity of solitary mature pines, or along the margins of more extensive blocks and that this has been highly effective in promoting successful regeneration. In this case, heather management is largely by controlled burning, with some cutting. Burning might not be widely applicable within the Regeneration Zone of Mar Lodge Estate because of the current high fuel loads, but there are areas within the Regeneration Zone where heather could be managed actively through cutting (by tractor-mounted swipe, or by a small Logic flail designed to be mounted on the back of a quad bike or Argocat[9])

6.41 An alternative to cutting or burning of heather is the creation of smaller, more localised regeneration niches by mechanical scarification. This tends to be more costly and may often imply use of heavy machinery on the ground

*Option ii)*

6.42 In areas where there is little opportunity for natural regeneration, or its enhancement by burning, cutting or scarification, consideration might be given *in extremis* to active planting of trees of local provenance. This might, for example, be considered in areas where existing scattered or solitary pines are clearly senescent and likely to fall within a short time, and are not producing viable seed. Nursery grown plants are however more susceptible to browsing damage than naturally-regenerated saplings: being faster-grown, they are more palatable and any such planting would need to be protected by enclosure fencing.

6.43 We suggest that all these various options be explored very carefully with the Trust's Woodland advisers for Mar Lodge. We would see much merit in a degree of experimentation: trying different things in different places to see which works best. Not only does this give an opportunity for objective appraisal of appropriate strategies that could be applied more widely, but in addition, from a Public Relations point of view, it demonstrates, that the Trust is committed to testing a variety of techniques that allow future management decisions to be better informed.

---

[8] Edwards (2009)

[9] Small flails of this nature are also of tremendous potential in initial creation of firebreaks, creating the option of future management by actual muirburn, since remaining heather areas can be back-burnt to these mechanical 'breaks'

***Riparian Woodlands***

6.44 We are advised that the Trust has signed up to the Deeside Riparian Woodland Initiative, aimed at enhancing the riparian woodland resource throughout the wider catchment. To date, we understand no action has been taken. Many of the riparian areas fall outside the formal Regeneration Zone and are thus located in areas where deer are actively encouraged. Clearly establishment of woodlands in these areas will require the use of enclosure fences. It would be a pity if the Trust did not fully engage in this wider Deeside initiative and lack of willingness to fence in this case would risk extending ideology into dogma.

Moorland Management

*Moorland Zone*:
6.45 In the past, active management of heather occurred within the Moorland Zone, with regular muirburn across Dalvorar, and North and South Geldie. Less muirburn has been carried out in immediate past years, due to lack of resources because keeper time has been taken up implementing the zero-tolerance policy for deer within the Regeneration Zone.

6.46 We propose strongly that a policy of regular muirburn is reinitiated and suggest the Trust develops, in collaboration with SNH a formal Muirburn Plan for the area.

6.47 There are a number of advantages from regular burning. In areas where deer densities are comparatively low and browsing impacts are light, controlled burning helps to maintain a heterogeneity of heather age and structure. Controlled burning reduces fuel load and the risk of wild fire, but at the same time, the resultant heterogeneity in age and physical structure is advantageous from a conservation point of view. It enhances biodiversity above the levels within an even-aged stand. Both diversity and abundance of invertebrates is increased as also are moorland birds and small mammals, together with a greater abundance of their associated predators.

6.48 A planned regime of regular muirburn also improves the quality of the moorland for red grouse, enhancing Mar Lodge's sporting potential. Such management is seen very much 'win-win' situation. Burning can only be undertaken between 1st October and 15th April and will need to be carried out in accordance with the Muirburn Code.

6.49 Appropriate burning is demanding of manpower to ensure that areas burnt remain small and that fires do not get out of control. Given the ongoing commitment of manpower to ensuring vigilance within the Regeneration Zone in terms of the zero-tolerance policy, restoration of appropriate amounts of muirburn may require that the Trust consider employment of additional seasonal staff.

*Within the Regeneration Zone*:
6.50 We have discussed already the need for more active management of heather within open areas of the Regeneration Zone, from the point of view of reducing fire risk, and as an appropriate intervention to ensure that designated open moorland habitats within this zone remain (or are returned to) favourable condition and also as a potential measure for enhancing rates and extent of regeneration (paragraphs 6.32, 6.36, 6.38).

6.51 Options are rehearsed in paragraphs 6.39 –6.43 and the Trust is encouraged to explore these various options with their Woodland Adviser for Mar Lodge, Colin Edwards.

Other considerations:

6.52 We suggest that in pursuit of a better balance of sporting objectives and conservation, sporting objectives should be reviewed and diversified. It would appear that interpretation of the sporting activities has been largely dominated by deer-stalking although some walked up grouse-shooting is leased as part of the Agrihold Agreement (paragraph 5.5). We believe that there is greater sporting potential within the Estate than is currently being delivered and that attention should be given to increasing the sporting value offered by increased populations of grouse, and by salmon fishing. In this latter context, we would reinforce our view that the Trust should play a more active role within the Deeside Riparian Woodland Initiative (paragraph 6.44).

6.53 Monitoring: We recognise that significant efforts are made in relation to monitoring of woodland regeneration and browsing damage along established transects and quadrats (paragraphs 4.28-4.30) and we consider the evolving methods applied fully appropriate. However, we would recommend that such monitoring of woodland regeneration is somewhat extended. The recent mapping exercise carried out by Gordon Brown on behalf of the Trust (paragraph 4.32) could, to advantage, be repeated more regularly to establish the true extent of regeneration across the site as a whole. Crucially: future mapping exercises should take care to ensure accurate assessment of age of trees recorded to continue to explore developing age-structure of this wider regeneration. **This should be in addition to any monitoring undertaken by SNH as part of the current Section 7 Agreement**.

6.54 We would also advocate that the Trust initiate their own more regular assessment of open hill habitats areas within the Estate to complement those carried out during SNH's less frequent Site Condition Monitoring exercises and to provide an independent assessment of condition of moorland and heathland habitats.

6.55 While such monitoring is of the utmost importance in informing any necessary future changes to or adjustment of ongoing management, it is also of considerable importance that results of such enhanced monitoring are widely disseminated, together with reports of sporting and other activities on the Estate, in order to demonstrate clearly to outside observers, the success or otherwise of ongoing management.

## 7. Management Structures

7.1 The options set out in the preceding section (6) present the Panel's view of the various practical measures available for the NTS to pursue in its future management of the deer and moorland and woodland habitats at MLE. The following Section (8) details the Panel's specific recommendations from these options.

7.2 Whilst undertaking this review however it became very clear to the Panel that if NTS wishes to implement these recommendations and successfully reach both its conservation and sporting objectives at MLE then it would be necessary to introduce changes to the structure and competency of management within MLE and NTS. Whilst the Panel's remit does not explicitly include management as an issue it felt that without addressing aspects of management it would not have properly fulfilled its task. This Section sets out the Panel's recommendations in this area.

7.3 As yet the staff at MLE do not function as a cohesive team whereby once a particular and perhaps contentious issue has been fully discussed and a decision can be made all the departmental management staff then support it. It is essential that this cohesive team culture is established at MLE if its management is to tackle successfully the major challenges ahead of it. The recently appointed Property Manager has already recognised this.

7.4 To aid this process we suggest that full delegated authority is given to the Property Manager to deliver the annual business plan and 5 year management plan for MLE. The achievement of the objectives set out in these plans are then shared by the Property Manager and his management team such that they all have a joint responsibility for the key objectives for MLE as a whole as well as those for their particular department. Performance appraisal against both MLE and departmental objectives must be rigorous.

7.5 There is experience both within and outside NTS that decision making at MLE can be slow, bureaucratic and too hierarchical. We believe that it is important that decision making becomes more focussed, direct, accountable and more rapid so that immediate progress can be made in improving the delivery of objectives at MLE. Coupled with the greater delegation of authority to the Property Manager we believe this would be better achieved by a structure whereby the Property Manager should, at least in the short term, report directly to the Director of Properties and Visitor Services for say 2 to 3 years.

7.6 Discussion with the management team both at Mar Lodge and at senior level also indicated that NTS does not have the necessary depth and spread of expertise of land management to deliver a fully integrated attainment of sporting and conservation objectives required at MLE. A focus on one without due attention and integration of the other has failed to adhere fully to the Management Aims and Principles set out in successive Management Plans for MLE. We believe that the current Property Manager is quite capable of managing this successfully at MLE but that at the present time he needs additional support, especially in the area of fully integrated land and sporting management.

7.7 The Panel found clear evidence that the range of sporting activities that might be expected to be found on a 'Highland Sporting Estate' such as MLE have not been managed or developed in as professional and proactive a way as they could have been. This has implications for both commercial revenue and in terms of meeting the aims of the successive Management Plans. We therefore recommend that specific commercial sporting advice is made available to the Property Manager as required.

7.8 As a Highland Estate set in the heart of the Cairngorms National Park, Mar Lodge is a 'jewel in the crown' both for NTS, the Park and Scotland as a country. The property itself and the constraints under which it has to be managed present a unique set of challenges. It has been recognised by the senior management that NTS does not have all the requisite skills to meet these challenges.

7.9 We would therefore strongly recommend that NTS co-opts to its Board an individual with the experience of running a large highland estate, committed to integrating a range of activities to meet both commercial and conservation objectives. This Board member should be given the specific role of non-executive oversight of MLE. The person would in addition contribute to discussions on other NTS properties where sporting and commercial interests require to be managed in the context of the Trust's wider conservation interests.

7.10 These three recommendations – greater delegation of authority to the Property Manager, his reporting directly to the Director of Properties and Visitor Services and the appointment of a Board member with experience of managing a highland estate - are designed primarily to improve the management of MLE and will contribute directly to achieving NTS strategic objectives at MLE. This is not the only benefit however. We believe that these changes would send a clear and important message to the significant number of stakeholders who are watching very closely how NTS resolves the problems it has at MLE, that NTS is serious in tackling them.

7.11 We accept that these recommendations may not easily 'fit in' with the current NTS management structure and culture. We believe however that the high profile nature of MLE and the reputational risk that is currently associated with its management warrants a different and decisive approach. It is indeed a signature project.

7.12 The Panel noted references to a Communication Plan in various documents (eg Board paper June 2010) but saw no evidence of a final document. We referred earlier to poor communication (Section 3) both within the NTS and to outside stakeholders regarding MLE, its future plans and developments. The Panel believes that NTS has compounded the difficulties it has faced by not communicating openly and genuinely about the challenges and opportunities it faces at MLE.

7.13 It is for NTS to develop its approach to communicating about MLE but we strongly recommend that it is based on the principle that it should be prepared to communicate in a formal and controlled manner any information except where there is a clear commercial benefit/vested interest to NTS or on personal data. We recognise that communicating can be time-consuming, sometimes difficult and needs considerable resources. It is important to do so however if NTS wishes to improve its relations with an important element of its MLE stakeholders and NTS members.

## 8. Summary of Recommendations

### VISION, AIMS AND OBJECTIVES

**Recommendation 1**

**The Panel recommends that closer attention is paid to ensuring integrated delivery of sporting and conservation commitments and obligations (together with commitments in relation to access, education and socio-economic delivery) and ensuring that the methods adopted do not continue to lead to conflict in the future.**

8.1 It is the Panel's unanimous view that in its past management of Mar Lodge Estate, the Trust has not always had due regard to the needs of all elements of its multiple objectives for the property [sporting, conservation, access, education etc] and has at times been overly focussed on one to the detriment of the others. While attempting to fulfil its future vision for the estate NTS has perhaps underestimated the challenges it faces in the context of a 200 year paradigm and has not fully understood or explained convincingly what this implies in relation to the dynamics of management and the choices that may be necessary 'where landscapes and habitats will be restored'. This has implications as to how the whole estate is viewed. The Review Panel have taken the view that the ultimate goal is to bring the whole estate to the point at which habitats are restored and are able to be managed sustainably in the context of a highland sporting estate. Our recommendations require to be interpreted and understood in that context.

8.2 Furthermore, while it is acknowledged that there is an agreed presumption that where, in particular, sporting and conservation objectives might appear to be in conflict, priority should be given to safeguarding the interests of conservation[10], it appears to us that these two objectives are not irreconcilable in any way; rather it is a question of the timescale over which the objectives are to be achieved for the whole estate, and the ecological and land management context in which these are pursued.

8.3 It is views on the latter that have given rise to conflict and in particular the way in which the NTS/Easter Trust Principles, on the one hand, and the terms and conditions of the NTS/SNH Management Agreement, on the other, have been interpreted and applied. This we believe, from the evidence provided, has led over the years to a failure to embrace a fully integrated system of management to achieve the range of objectives to which the NTS is committed. Too often there has been a focus on delivering on one objective without due regard for the others and a lack of understanding of the consequences of acting in this way. It has led to missed opportunities and a need to constantly revise management objectives and apply more extreme approaches to achieve them. This has led to a significant degree of mistrust of NTS by some of its stakeholders and in particular by the local community.

[10] NTS Conservation Principles (July 2003) Principle 7 – 'Conservation processes should seek to resolve conflicts, but where irreconcilable differences between conservation aims and other aims arise, conservation will prevail'.

**DEER MANAGEMENT – MEETING BOTH WOODLAND RESTORATION AND SPORTING OBJECTIVES**

**<u>Recommendation 2</u> The Panel recommends that the Trust erect strategic fencing, with associated provision of adequate (alternative) winter cover and foraging, to reduce incursions of deer over-wintering in the Regeneration Zone (especially within the Derry and the Quoich).**

8.4 The fence more recently erected between MLE and Mar Estate has, in our view, proved highly successful and ***we propose therefore that the Trust commits to the erection of the strategic fence proposed by its stalking team from the Linn of Dee (paragraphs 6.28 – 6.30).***

To discharge Recommendation 2 we propose the following:

8.5 While the fence line originally proposed runs along the top edge of the woodland block west of the Linn of Dee (Centre NO 050896)] and then angles down to Creag Phadruig before striking northwest towards Creag Dubh, we suggest that this leaves too narrow an entrance to the area designated as new wintering ground, and propose therefore that for visual/landscape reasons and in terms of effective "funnelling" of deer to lower ground outside the Regeneration Zone, the fence line should actually run as shown in Map 2.

8.6 We propose that (in order that the fence does not simply deflect animals encountering the barrier northwards, to increase impacts within Glen Lui), that a dogleg be added at the northwestern end to deflect animals travelling along the fence back down into Glen Dee and the main strath east of White Bridge (6.30). Given the importance of this fenceline, hard fencing is to be preferred to electric fencing.

8.7 We believe that such strategic fencing will be successful in intercepting the main route of movement from open hill ground into the Regeneration Zone (from Dalvorar). While we appreciate that there are other traditional routes of winter movement, stalking staff past and present give us confidence that this is the most significant of traditional routes. ***Consideration however should also be given to similar strategic fences to deflect incursions into the Quoich from Invercauld.***

8.8 Strategic fencing on its own will not be effective in deflecting winter movements. Such fencing must be accompanied by the provision of alternative winter cover and foraging opportunity (paragraph 6.31). In association with the proposed fence at the Linn of Dee, ***we propose opening of the Car Park Wood to deer (strictly, this is already open and we recommend suspension of the zero-tolerance policy); we understand that recent proposals suggest in addition opening of western end of the Creag Bhalg block from the current cattle grid back towards Forest Cottage, with realignment of the western fence to the east of Forest Cottage.*** We suggest consideration also be given to opening the Yelt Plantation (centred at NO 053892), as well as perhaps the lower part of the Linn of Dee plantation (centred NO 066894), below the centre track (6.31).

8.9 This additional cover, together with the sheltered grazings along the alluvial grasslands of the river will provide an attractive wintering area for stags (and hinds).

8.10 It is suggested however that the provision of wintering areas for deer should not be the sole responsibility of Mar Lodge Estate. Considerable assistance in provision of alternative wintering cover could also be offered by neighbouring Estates (paragraph 6.33).

We note that on the Forest Lodge beat of Atholl Estates, marginal commercial woods have been opened to deer on Rock of Blair – due north of the castle. Efforts have also been made to move hinds from the bottom end of Glen Tilt and Glen Fender, the limestone area, to try to get stags to winter in these woods at the bottom of Glen Fender. ***We propose that other neighbours consider whether woodlands could also be opened up on their properties to contribute to an increase in the overall area of new wintering ground.***

8.11 In our view this suite of management actions gives multiple gains,

- in reducing the number of deer gaining over-winter access to the regeneration zone (and thus assisting protection of regeneration so far achieved),
- in reducing the number of deer needing to be shot for management purposes and enabling managers to maintain the desired steady population of 1650 required to sustain agreed sporting harvests of 80-100 stags [paragraphs 4.11], without further attrition,
- in honouring commitments to the sporting interests of neighbours, and also
- by allowing animals access to the Linn of Dee and the Car Park Wood over winter, increasing the probability of visitors encountering deer when visiting the Estate.

8.12 Such actions however require at the same time, ***that there will remain a need to maintain vigilance within the Regeneration Zone and continue with a policy of zero-tolerance to protect unfenced regeneration thus far achieved.*** The Panel recognises that there will be a continued need for Out of Season shooting and, where appropriate, night-shooting, to ensure that impacts on established seedlings are kept to a minimum (paragraph 6.35)

**WOODLAND MANAGEMENT IN THE REGENERATION ZONE**

**<u>Recommendation 3</u> The Panel recommend that the Trust should consider a greater level of intervention in woodland management within the Regeneration Zone, following a period of experimentation.**

To discharge Recommendation 3 we propose the following:

8.13 The Trust should ***consider the possibility of erecting a limited number of enclosures, especially within the Quoich, in further protection of regeneration already established, where this is concentrated in specific, discrete areas (paragraph 6.34).***

8.14 Current woodland regeneration is notably restricted in area/distribution (paragraphs 4.32 - 4.34) and through lack of disturbance, the surrounding vegetation in many areas is in a condition where rates of regeneration are declining and there is an accompanying decline in the area available for future regeneration and establishment (paragraphs 4.37, 4.38).

8.15 In the interests of enhancing rates of regeneration and extending this over a wider area ***we propose that the Trust considers cutting or burning of heather, mechanical scarification of the ground and/or localised planting in areas where there is likely to be little or no viable seed fall.***

8.16 The Panel ***proposes that the Trust gives appropriate consideration to all such measures (paragraph 6.43) in consultation with the Trust's Woodland advisers for Mar Lodge and SNH***.

8.17 We would see much merit in a degree of experimentation: trying different things in different places to see which works best. We believe this has a number of advantages in

- offering an opportunity for objective appraisal of appropriate strategies to be rolled out more widely, but in addition,
- in making it clear to outside commentators, that the Trust is testing a variety of new approaches and approaching future management decisions based on formal experimentation rather than idealism or dogma.

**RIPARIAN MANAGEMENT WITHIN THE MOORLAND ZONE**

**Recommendation 4 The Panel recommends that the NTS commits to the use of enclosures to support the establishment (by natural regeneration or planting) of areas of riparian woodland within the Moorland Zone.**

8.18 In committing to this recommendation the Trust would honour its commitments as a partner organisation within the wider Deeside Riparian Woodland Plan. As a member of this wider initiative, the Trust appears thus far to have done little in practical terms. The establishment of some riparian enclosures would

- enhance conservation values of the Estate through wider establishment of native, and specifically riparian, woodland;
- give clear demonstration of the Trust's commitment, at Mar Lodge and elsewhere, to enter into collaboration with other individuals and organisations and become involved in wider collaborative initiatives of this type;
- make a start towards improving sporting interests by improving the rivers for game fish and increasing fishing opportunities.

8.19 Within the context of the Upper Deeside Fisheries Board, the Trust might also consider other initiatives for enhancing fish stocks, in management of redds, release of smolts and maintenance of riverbanks.

**HEATHER MANAGEMENT WITHIN THE REGENERATION AND MOORLAND ZONES**

**<u>Recommendation 5</u> The Panel recommends the development of a formal plan and a commitment for the active management of the heather within the Regeneration Zone.**

8.20 We believe commitment to this recommendation is imperative and urgent. Reinstatement of active management in this area offers an enormous number of benefits.

- It addresses concerns already expressed about increasing fuel loads and the risk of wild fire (paragraph 4.23).
- Through the effects of disturbance and reducing density of ground cover/litter, it increases the availability of regeneration niches and greatly increases the rate of seedling establishment enhancing both rates and areas available for regeneration of woodland (paragraph 6.40).
- Active management of the dry heathland area will also help to ensure that, in areas outwith the range of colonisation by tree seedlings, the heathland itself (also a designated feature of the site) is maintained in good condition and not allowed to degenerate towards unfavourable status.
- Provision of a better mosaic structure of heather cover and sward height will enhance diversity and abundance of invertebrates, small rodent, moorland birds and their predators.
- Has the potential to increase populations of grouse within the area, allowing this part of the estate also to contribute to Mar Lodge Estate's overall sporting interest.

**Recommendation 6 The Panel recommend that active management of heather areas within the Moorland Zone be resumed following the formal Muirburn Plan agreed with SNH.**

8.21 This is proposed for the same primary gains, in maintaining favourable condition of the dry heathland feature, in increasing overall biodiversity values and in maintaining the potential of this Moorland Zone to offer grouse-shooting (avoiding the risk of decline in grouse numbers due to declining quality of the habitat).

8.22 Given the commitment of time required to maintain high vigilance within the Regeneration Zone, restoration of active heather management in both the Sporting Zone and the Regeneration Zone will have implications for manpower, which may need to be addressed.

## MONITORING

**Recommendation 7: The Panel recommends that NTS continues and formalises its programmes of monitoring of both ecological condition and sporting activities, to ensure appropriate information is collected and communicated.**

To discharge this recommendation we propose that:

8.23 Current routine monitoring of woodland condition and regeneration along established transects and quadrats is continued using existing methods. However we propose that such monitoring of woodland regeneration should be extended to include in addition, regular mapping of the extent of regeneration more widely across the property, as recently carried out on behalf of the Trust by Gordon Brown (paragraph 4.32). Crucially: future mapping exercises should take care to ensure accurate assessment of age of trees recorded to continue to explore developing age-structure of this wider regeneration. **This should be in addition to any monitoring undertaken by SNH as part of the current Section 7 Agreement**.

8.24 We would also advocate that the Trust initiate their own more regular assessment of open hill habitats areas within the Estate to complement those carried out during SNH's less frequent Site Condition Monitoring exercises and to provide an independent assessment of condition of moorland and heathland habitats.

8.25 While such monitoring is of the utmost importance in informing any necessary future changes to or adjustment of ongoing management, it is also of considerable importance that results of such enhanced monitoring are widely disseminated, ***together with reports of sporting and other activities on the Estate***, in order to demonstrate clearly to outside observers, the success or otherwise of ongoing management.

**STAFF MANAGEMENT, STRUCTURE, SKILLS AND COMMUNICATION**

**<u>Recommendation 8</u> The Panel recommend that NTS reviews its management structures and levels of accountability with respect to the MLE and ensures that it has the appropriate range of skills and expertise to manage the complexity of this high profile property [paragraphs 7.1 –7.12] and to communicate effectively and genuinely to the outside world.**

8.23 This final recommendation is designed to ensure delivery of all the foregoing recommendations and proposals and to ensure a continuing commitment to an integrated delivery of multiple-objective management on the Mar Lodge Estate. ***We propose that full delegated authority is given to the Property Manager to deliver the annual business plan and 5 year management plan for MLE (paragraph 7.4).***

8.24 Coupled with this greater delegation of authority to the Property Manager we believe there should be some streamlining of reporting structure to avoid problems where decision making within NTS can be slow, bureaucratic and too hierarchical. ***We propose therefore that the Property Manager report directly to the Director of Properties and Visitor Services.***

8.25 Discussion with the management team both at Mar Lodge and at senior level also indicated that NTS does not have the necessary depth and spread of expertise of land management to deliver a fully integrated attainment of sporting and conservation objectives as is required at MLE.

8.26 ***We would therefore propose strongly that NTS co-opts to its Board an individual with the experience of running a large highland estate committed to integrating a range of activities to meet both commercial and conservation objectives (paragraph 7.9). This Board member should be given the specific role of non-executive oversight of MLE.*** The person would in addition contribute to discussions on other NTS properties where the sporting and commercial interests require to be managed in the context of the Trust's wider conservation interests.

8.27 These three proposals – greater delegation of authority to the Property Manager, his reporting directly to the Director of Properties and Visitor Services, and the appointment of a Board member with experience of managing a highland estate - are designed primarily to facilitate and improve the management of MLE. This is not the only benefit however. There is a significant number of stakeholders who are watching very closely how NTS resolves the problems it has at MLE. We believe that these changes would send a clear and important message to them that NTS is serious in tackling them and will contribute directly to achieving NTS Strategic Objectives at MLE.

8.28 The Panel noted references to a Communication Plan in various documents (eg Board paper June 2010) but saw no evidence of a final document. The Panel believes that NTS has compounded the difficulties it has faced by not communicating openly and genuinely about the challenges and opportunities it faces at MLE. It is for NTS to develop its approach to communicating about MLE but ***we strongly propose that it is based on the principle that it should be prepared to communicate any information except where there is a clear commercial benefit/vested interest to NTS or that information relates to personal data.***

**Acknowledgements**

The Panel would like to thank all those individuals and organisations who participated in this review and gave their time so generously and positively. Their contributions enabled the Panel to gain a more complete understanding of the complex issues involved. We are particularly grateful to the staff at Mar Lodge Estate and NTS Head Office who organised the support for the Panel but enabled us to maintain the independence required of this review.

## References


Edwards, C (2009) **Developing a Regeneration Management Plan for Mar Lodge Estate Native Woodlands: 2010-2030** (initial draft December 2009). Report from Forest Research to the National Trust for Scotland.

Edwards, C. and Davies, O. (2008a) **Monitoring in the Native Pinewoods at Mar Lodge: Baseline Stand Structure Survey.** Report from Forest Research to the National Trust for Scotland.

Edwards, C. and Davies, O. (2008b) **Monitoring in the Native Pinewoods at Mar Lodge: Baseline Tree Seedling Survey**. Report from Forest Research to the National Trust for Scotland.

Gimingham, C.H. (1972) ***The Ecology of Heatherlands.*** Chapman and Hall

Lamont, L. (1998) **Birch Regeneration and Deer Grazing in the Scottish Highlands.** MSc thesis, University of Edinburgh.

Putman, R.J. Duncan, P. and Scott R. (2006) Tree regeneration without fences? An analysis of vegetational trends within the Creag Meagaidh National Nature Reserve, 1988-2001 in response to significant and sustained reductions in grazing pressure. *Practical Ecology and Conservation* **6** (1), 52-65

Putman, R.J. and Mann J.C.E. (1990) Social organisation and behaviour of British sika deer in contrasting environments. *Deer,* **8**, 90-94.

Rao, S. and Lawrence (2011) **Regeneration of Semi - Natural Woodland; Regeneration Transects Monitoring Report 2011.** Internal documentation, National Trust for Scotland.

Servant G. (2006) **Assessment of Surface Fuel Loads in relation to Wild fire and Prescribed Burning: East Glen Derry and Glen Quoich, Mar Lodge Estate.** Report to the National Trust for Scotland.

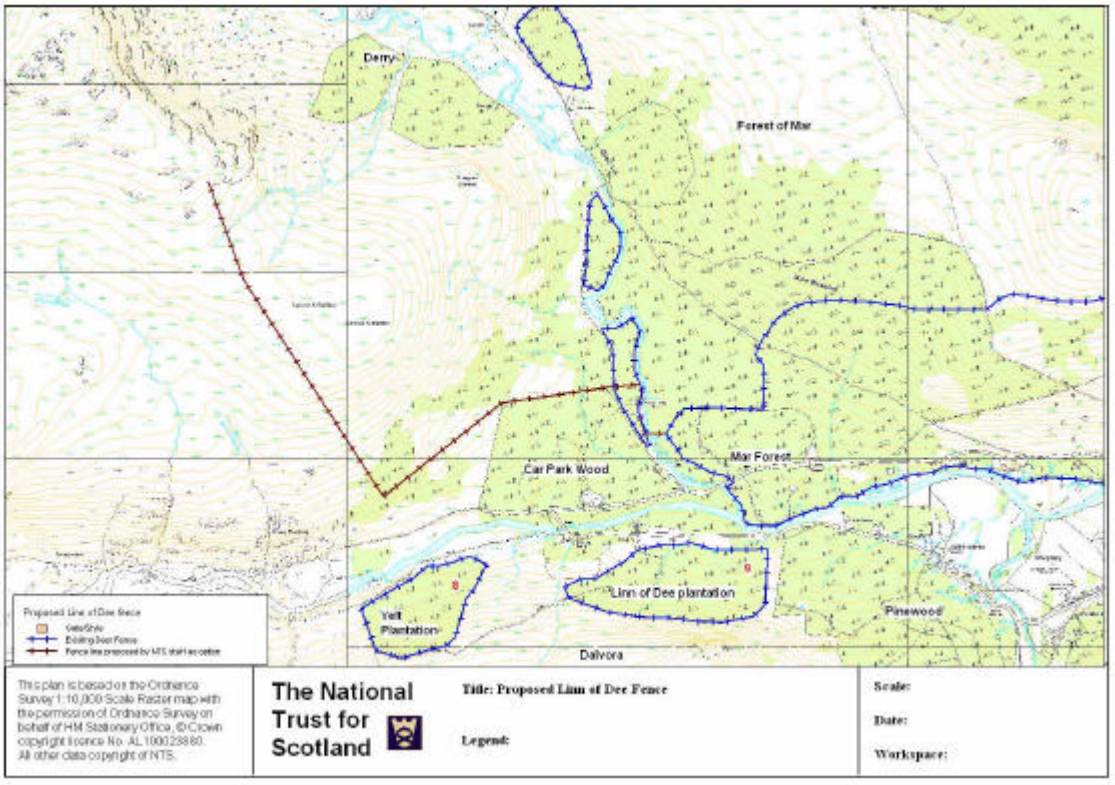
Smyth, S. (2002) **Tree Regeneration and the Use of Transects at Creag Meagaidh NNR.** Honours thesis, Environmental Sciences, University of Stirling.

Stewart, F. (1996) **The Effects of Red Deer (*Cervus elaphus*) on the Regeneration of Birch (*Betula pubescens*) Woodland in the Scottish Highlands.** PhD thesis, University of Aberdeen.

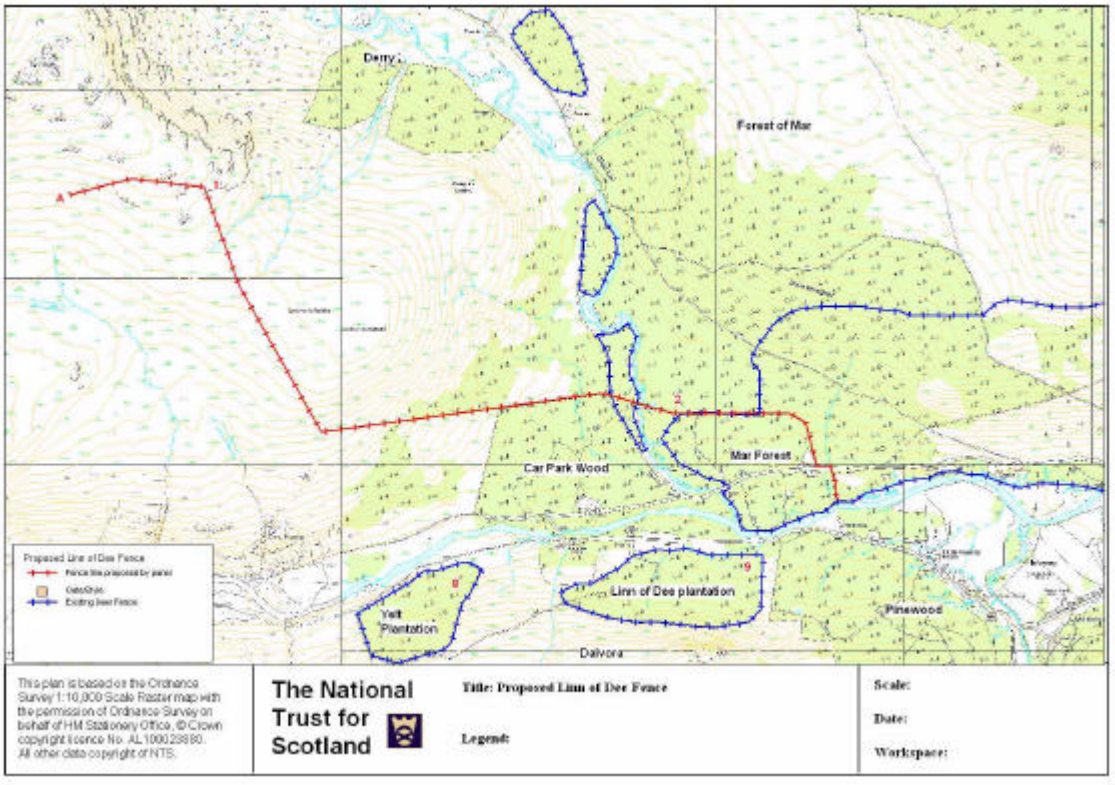
van de Veen, H.E. (1979). **Food selection and habitat use in the red deer (*Cervus elaphus* L.)**. PhD thesis Rijksuniversiteit te Groningen, The Netherlands.

Watt, A.S. (1947) Pattern and process in the plant community. *Journal of Ecology* 35, 1-22.

Map 1 Strategic fence originally proposed by NTS staff at Linn of Dee




Map 2 Panel's revised proposals for Strategic fencing at Linn of Dee



**APPENDICES**

**A – Contract between the Trustees of the National Heritage Memorial Fund and the National Trust for Scotland – 30 May 1995**.

**B – Declaration by the National Trust for Scotland to the Eastrust Company Limited in connection with Mar Lodge Estate – 1995**

**C – Agreement between the National Trust for Scotland and Scottish Natural Heritage – 1995**.

**D – National Trust for Scotland Mar Lodge Estate Management Plans;**

**1997 – 2000**
**2002 – 2006**
**2006 - 2011**
**2011 – 2016 (consultation draft)**

**E – Mar Lodge Estate Deer Control Agreement between the National Trust for Scotland and Scottish Natural Heritage – 17 November 2010**

**F – Conservation Principles 2003; Wild Land Policy 2002; Moorland Management Guidelines 2010**

**G – Deer Management Policy 2003; Developing a Regeneration Management Plan for Mar Lodge Estate Native Woodlands 2010 – 2030 – Colin Edwards**

**H – Summary of written submissions received by the Panel**

**J – Mar Lodge Estate and Neighbours – Catchment Population Changes**

**K – Regeneration of semi-Natural Woodland, Regeneration Transects Monitoring Report 2011 – Shaila Rao and Tom Lawrence**

**L - Agreement between Agrihold Limited and the National Trust for Scotland 2005 – subjects at Claybokie, Braemar, Aberdeenshire**