Glen Finglas Woodland Restoration

Environmental Statement
Prepared by RTS Ltd

For Woodland Trust Scotland

August 2012

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Summary

This environmental statement has assessed the impact of 218 ha of native woodland restoration on Woodland Trust Scotland's (WTS) Glen Finglas estate. This woodland restoration would be predominantly by natural regeneration (176 ha) with some new planting (42 ha) over three sites and would be protected by circa 20 km of deer fence. This proposal is part of the wider Great Trossachs Forest Project. The main vegetation types found over the sites are wet heath (Sedges, cross leaved heath and grasses), dry heath (heather, bell heather and blaeberry) and acid grasslands with some areas of bracken.

This proposal has the potential to displace red deer which could damage neighbouring SSSI's and other designated sites and affect deer welfare through loss of grazing due to the creation of deer fenced exclosures. Computer modelling of impact from proposed fences on deer movement predicated no displacement on to the designated sites. In addition, habitat condition monitoring will be undertaken to ensure the modelling was correct and enable deer management to be undertaken if damage is recorded. WTS propose to reduce their resident hind population to compensate for the loss of grazing due to the exclosures.

The visual impact of the enclosures has been assessed because they are located within the Loch Lomond and Trossachs National Park. The assessment showed that the proposed fence lines followed the land forms such that they would have minimal impact.

There is a significant geological site (Ben Vane Geological Classification Review site) present in one of the proposed sites, Gleann nam Meann. In order to minimise the impact of woodland restoration on the geological site, no tree planting will be undertaken on this site. It is accepted that natural regeneration will occur on the geological site, this will be managed to preserve significant features of the site.

An otter survey was undertaken and found no holts within the vicinity of the proposed fencing and planting works. There are otters present on the wider estate therefore the work would follow guidance to minimise the risk to the otter population.

The impact of the proposal on the breeding bird species using the sites was assessed. The species currently present were an impoverished selection of upland and moorland breeding birds, with the exception of a breeding pair of Red throated divers. The permanent change in the habitat resulting from the proposal would lead to a woodland breeding bird population which is of higher conservation value. There is an active black grouse lek within circa 400 m of the proposed Gleann Casaig exclosure. Due to the location of this lek, the fence of this exclosure would be marked to reduce the potential risk of black grouse collisions and mortality.

A survey to assess the sites for rare open ground habitats was undertaken; this found no national rare habitats.

In summary, the proposal was assessed to have a minor short term negative impact but significant long term positive impact through the restoration of native broadleaf woodland, a national priority habitat.

1. Introduction

The work outlined below is to reforest circa 218 ha with native woodland on The Woodland Trust Scotland Glen Finglas estate. It builds on a long established management objective to restore woodland in Glen Finglas and a previous Woodland Grant Scheme (Application No 033001332) which excluded domestic grazing from small areas of the estate and reduced deer numbers through culling.

The proposal would achieve this restoration of native woodland through providing suitable conditions for natural regeneration over 176 ha through seeding from 67 ha of existing woodland and new planting over 42 ha. To achieve this, circa 20km of temporary deer fence would be required to exclude deer from 678 ha. Circa fifty percent of the deer fence would result from the upgrading of existing stock fences. To minimise the requirement for additional fencing and impact on deer movement, it is proposed to enclose circa 350 ha of high moorland which woodland expansion is not predicted. It is envisioned that future woodland expansion on Glen Finglas estate will be achieved without the need for deer fencing.

The key aspect of this proposal is the cooperative approach that is being taken through the Great Trossach Forest project with regard to both fencing and deer management. This can be manifested by the utilisation of existing deer fences on Forest Enterprise (FE) ground and the construction of new deer fences on FE ground. This approach not only minimises the additional deer fencing but minimises the potential negative impact on deer movement from additional fencing. In addition, the three landowning partners in the Great Trossach Forest project, FE, Royal Society for the Protection of Birds (RSPB) and The Woodland Trust Scotland (WTS) have be producing a strategic deer management plan to take into account landscape level deer management over their respective properties.

A screening meeting was undertaken at Lendrick Steading, Brig O'Turk on 6th December 2011.

As a result of this meeting it was determined by Forestry Commission Scotland that the work outlined above would require consent under the Environmental Impact Assessment (Forestry) Regulations 1999.

A scoping report setting out the significant issues as identified in the screening meeting and laid out in letter dated 14th February 2012 from Nick Mainprize, Perth and Argyll Conservancy, Forestry Commission Scotland was issued on the 31th May 2012 and was accepted by all consultees. See appendix 1 for scoping report.

2. Legislation and Policy Context

This assessment is being undertaken under the Environmental Impact Assessment (Forestry) Regulations 1999. The proposal is also being assessed with regard to guidance and legislative requirements given in the following:

- Environmental Impact Assessment of Forestry Projects, Forestry Commission 2009;
- Undertaking an Environmental Impact Assessment in Forestry and preparing an Environmental Statement, Forestry Commission 2009;
- EC Council Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive);
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention);
- Nature Conservation (Scotland) Act 2000 (NCSA);
- Wildlife and Countryside Act 1981 (WCA);
- Scottish Planning Policy (SPP) – Landscape and Natural Heritage;
- The UK Biodiversity Action Plan 2007 (UK BAP);
- Local Biodiversity Action Plan (LBAPs);
- Institute of Ecology and Environmental Management; Guidelines for Ecological Impact Assessment, 2006; and
- A Handbook on Environmental Impact Assessment, SNH 2005.

2.1 National Legislation and Policy

The proposed woodland expansion will address three priorities as present in Scottish Government's Rational for Woodland Expansion (2009); Helping to tackle greenhouse gas emissions, through carbon sequestration; Restoring lost habitats and adapting to climate change; Supporting rural development through farm diversification.

2.2 Regional Policy

The Loch Lomond and Trossachs National Park Local Woodland and Forestry Framework lays out four aims for woodland management; conserve and enhance the natural and cultural heritage of the area; promote sustainable use of the natural resources of the area; promote understanding and enjoyment (including enjoyment in the form of recreation) of the special qualities of the area by the public and promote sustainable economic and social development of the area's communities.

The proposal, along with existing Woodland Trust's management, would deliver all four of these aims.

2.3 Local Policy

The proposed woodland expansion is part of a larger project under the Great Trossachs Forest project which is expanding woodland over 16,650 ha over three landownership in the centre of Loch Lomond and Trossachs National Park; Forest Commission Scotland, RSBP and Woodland Trust Scotland.

3. Site Description

3.1 Location

The Glen Finglas estate is situated with the Loch Lomond and Trossachs National park to the north of Loch Katrine. The Estate is managed by Woodland Trust Scotland. The WTS are one of three land owning partners in the Great Trossachs Forest project.

3.2 Land use

The aim of WTS management is to provide a dynamic ecosystem of woodland and open ground managed as a wood pasture system. The long term aim is to achieve this through managed grazing by sheep and cattle, as well as red deer. In the short term, the need for deer fencing in specific areas, to enable woodland restoration and new planting, is proposed. The Glen Finglas five year management plan was reviewed in 2012; as part of this review the Trossachs community council were consulted on the proposed management detailed above.

3.3 Geology

The geology is typical for the area comprising mica schist or metamorphic schistose grit. The main soils types are peaty and humus iron podzols and some peatly gleys. While in the proposed woodland expansion areas there are some minor areas of deep peat (>50 cm), these area have been excluded from the proposed woodland expansion as per FCS guidance.

In Gleann nan Meann there is Geological Classification Review site, Ben Vane (Appendix 2 for SNH report with detailed description). The site is recorded for its rock slope failures features.

3.4 Hydrology

The Glen Finglas estate drains into Glen Finglas reservoir which is managed by Scottish Water to provide drinking water.

3.5 Flora

There are remnant woodland groups and scattered trees on the sites proposed for woodland restoration with suppressed natural regeneration (Appendix 3 Regeneration Survey). The main species present are predominately birch and alder with occasional rowan forming W7 and W11 communities. The woodland remnants shown signs of being managed as woodland pasture in the past with features such as veteran pollard trees being present. The combination of historical maps and field signs has lead to the conclusions that this woodland pasture has been managed since medieval times. The woodland is restoration proposal is designed to restore and perpetuate this woodland type. The main vegetation types found over the sites are wet heath (Sedges, cross leaved heath and grasses), dry heath (heather, bell heather and blueberry) and acid grasslands with some areas of bracken. The sites proposed for woodland expansion are generally M15, U4 and U20, which are suitable sites for woodland expansion. There are small areas of basic flushes M11 and calcareous grassland CG10 which are uncommon on the sites.

3.6 Fauna

3.6.1 Birds

There is a typical assemblage of upland passerines and other species found on the sites. The main species of note present is black grouse; there is an active lek present on the south east flank of Glen Casaig, which is approximately 380m from the proposed Glen Casaig exclosure. The breeding bird survey undertaken for this ES recorded a breeding pair of red throated divers on Lochan Nid (above the expected tree line in the Groddach). The sites are not within known raptor ranges (Yvonne Boles, Scoping report).

3.6.2 Otters (*Lutra lutra*)

Otters are known to use the estate from sighting by WTS staff and from survey undertaken as part of this EIA.

3.6.3 Red Deer (*Cervus elaphus*)

On Glen Finglas estate, the most recent red deer count (March 2012) recorded a total of 143 deer. The cull for the 2011-2012 season totalled 85. Appendix 4 shows whole estate deer counts since 1997 and cull figures over the last six seasons.

The deer management of Glen Finglas estate is undertaken in the wider context of Great Trossachs Forest Project Deer management plan which brings the three land owning partners together to undertake collaborative deer management over the project area. In addition, the WTS are also members of the Balquhidder Deer Management Group which encompasses the GTFP partners along with the estates to the north.

4. Description of proposal

The proposed woodland restoration would occur over three glens on the Glen Finglas Estate. Figure 1 provides an overview of the proposal:

In Gleann Casaig, an existing stock fence would be upgraded to a deer fence (4,800 m) to enclose 48.72 ha enabling 14.52 ha of natural regeneration from 20.02 ha of existing woodland. An additional 12.30 ha of new planting would also be established. (Figure 2).

In Gleann nan Meann, three existing stock exclosures would be linked by a combination of upgrading stock fences and new deer fences (5,925 m) to enclose 119.88 ha. This would enclose 5.14 ha of scattered existing woodland enabling 45.33 ha of natural regeneration and a further 29.91 ha of new planting to establish. It is intended to remove 2,800 m of redundant internal stock fencing. (Figure 3)

In the Groddach, an existing stock exclosure will be enlarged through a combination of upgrading stock fence and new deer fence (8,425 m) to meet with the Forestry Commission deer fence running around the northern slopes over looking Loch Katrine. This would enclose 510.11 ha enabling 116.33 ha of natural regeneration to establish from 41.86 ha of existing woodland. As well as woodland restoration, this exclosure will enable improvements in montane dwarf shrub communities on FE ground due to removal of grazing. (Figure 4).

In order to restore woodland by new planting, it is intended to undertake machine hinge mounding to create suitable microsites for tree establishment. The planting of native provenance trees would be undertaken by hand. A combination of hand and chemical weeding will be undertaken to ensure the trees establish. In the Groddach, there is circa 15 ha of bracken which will be controlled using Asulox, applied by hand, to improve conditions for natural regeneration. As a trial, 12 steers were grazed in current Groddach exclosure for 12 weeks to reduce the *Molina* swath and improve conditions for tree regeneration. This duration of grazing was shown not to affect the established tree regeneration. It is intended to extend this grazing into Gleann nam Meann to improve conditions for regeneration prior to fence being erected

4.1 Figures 1 to 4

29 August 2012

Glen Finglas Woodland Restoration - Overview

Figure 1

- New Deer fence
- Upgrade Stock fence to Deer fence and mark for Black grouse
- Upgrade Stock fence to Deer fence
- Redundant stock fence to remove
- Existing Deer Fence
- Existing Trees
- Native Woodland Nature Regeneration
- Native Woodland planted

STIRLING DISTRICT

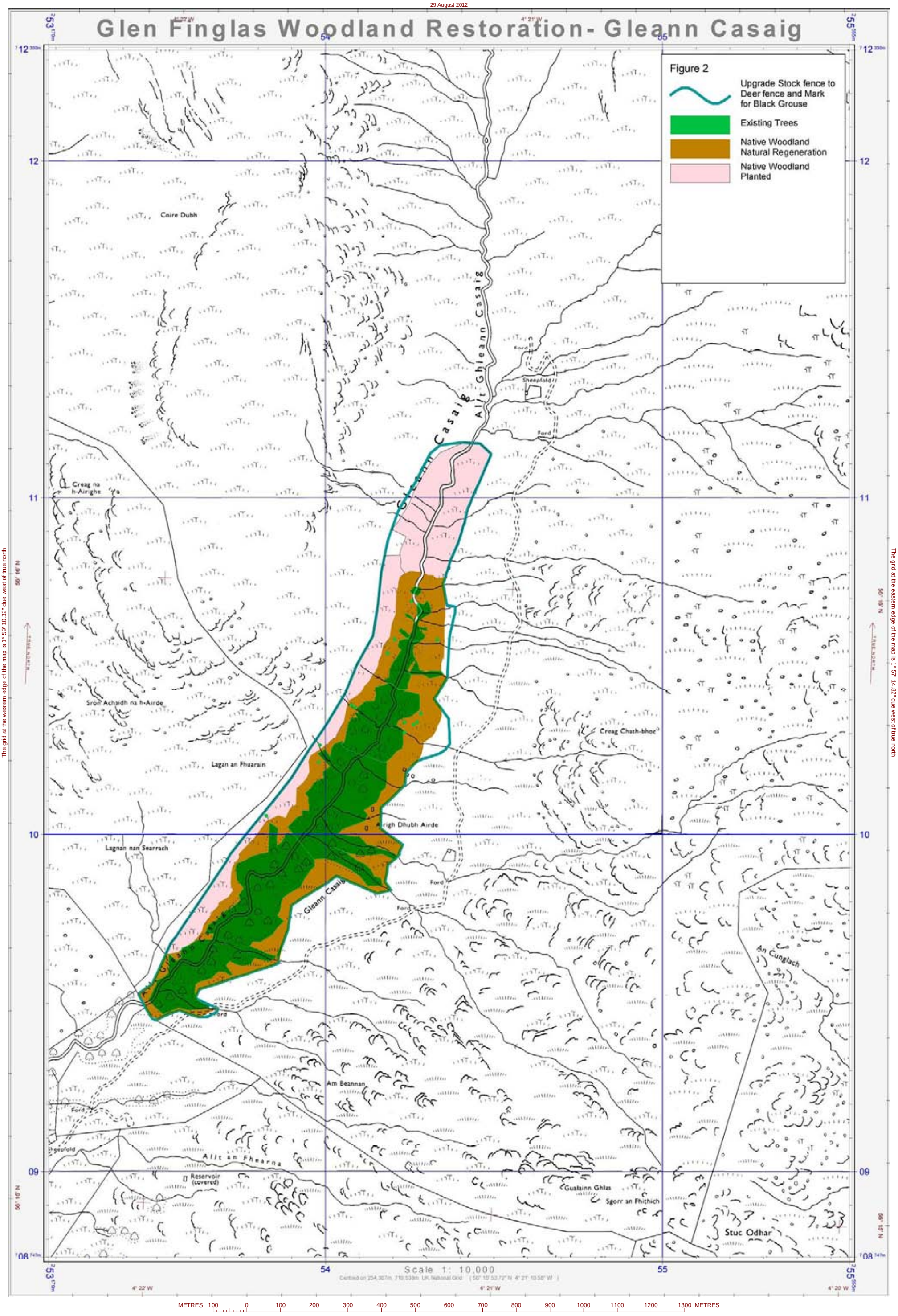
Scale 1 : 40,000

The grid at the western edge of the map is 2° 06' 05.29" due west of true north

The grid at the eastern edge of the map is 1° 54' 23.44" due west of true north

29 August 2012

Glen Finglas Woodland Restoration- Gleann Casaig



The grid at the western edge of the map is 1° 59' 10.32" due west of true north

The grid at the eastern edge of the map is 1° 57' 14.82" due west of true north

31 August 2012

Glen Finglas Woodland Restoration - Gleann nam Meann

Figure 3

- New Deer fence
- Upgrade Stock fence to Deer fence
- Redundant stock fence to remove
- Native Woodland Natural Regeneration
- Native Woodland planted
- Exisiting Trees

Benvane (Beinn Bhàn)
Coire a' Ghamhainn
Meall a' Choire Dhuibh
Gleann nam Meann
Allt Gleann nam Meann
Creag na h-Easaig
Sheepfold
Ford
Coire Dubh
Creag na h-Airighe
Gleann
Tom a' Phearsain
Sron Achaidh na h-Airde
Cladh nan Casan
Waterfall
Linne a' Chluig

Scale 1: 10,000

The grid at the western edge of the map is 2° 00' 14.18" due west of true north

The grid at the eastern edge of the map is 1° 58' 18.63" due west of true north

31 August 2012

Glen Finglas Woodland Restoration - The Groddach

Figure 4

- New Deer Fence
- Upgrade stock fence to deer fence
- Existing Deer fence
- Natural Regeneration
- Existing Trees

Glen Finglas Reservoir

Loch Katrine (Reservoir)

Scale 1: 20,000

The grid at the western edge of the map is 2° 04' 33.87" due west of true north

The grid at the eastern edge of the map is 1° 58' 43.31" due west of true north

4.2 Table 1 – Summary of Proposal

Site	Total enclosed area (ha)	Existing woodland (ha)	Predicted Regeneration (ha)	Gross new Planting (ha)	Total woodland expansion	New Deer fence (m)	Upgrade Stock fence to Deer fence (m)	Existing Deer fence (m)
Gleann Casaig	48.72	20.02	14.52	12.30	26.82	N/A	4,800	
Gleann nan Meann	119.88	5.14	45.33	29.91	75.24	5,205	775	
The Groddach	510.11	41.86	116.33	N/A	116.33	3,835	4,595	4,630
Total	678.71	67.02	176.18	42.21	218.39	9,040	10,170	4,630

5. Issues Identified from Scoping process

Three primary issues and three secondary issues were identified and their significances will be assessed in this document.

5.1 Primary Issues

5.1.1 Deer

The proposal may displace deer from woodland expansion areas on to neighbouring designated sites, Ben A'an and Brenachoille Woods SSSI and Trossachs Wood SAC. This additional grazing has the potential to negatively affect the condition of the designated sites. The proposal would reduce the area available for grazing by red deer which could lead to a negative effect on their welfare.

5.1.2 Landscape assessment

Due to the location being entirely within the Loch Lomond and Trossachs National Park and partially within Trossachs National Scenic area and that there would be a visual impact of the proposed reforestation including fencing, the significance of these impacts will be assessed.

5.1.3 Ben Vane Geological Conservation Review (GCR) Site

The impact of woodland restoration on this GCR site will be assessed. This site is located within the proposed Gleann nam Meann restoration area.

5.2 Secondary Issues

5.2.1 Natural Heritage

The proposed reforestation has the potential to affect European Protected Species (otters) and Priority Habitats (Blanket bog).

5.2.2 Bird Interest

The proposed work will change the habitat type and this change may affect bird species present. The planned fencing may also pose a threat to Black Grouse population through fence strike.

5.2.3 Public Water supply

The proposed woodland restoration has the potential to affect the quality and quantity of water associated with the catchment of Glen Finglas reservoir.

6. Predications of Primary Impacts

6.1 Deer

The deer population has been assessed by a combination of helicopter and ground counts over the last 15 year. The population was last assessed in March 2012 and return a count of 143. There has been a reduction in population size from 524 in 1997 to the present level. (see appendix 1 of Scoping report for full details of over the last 15 years)

The proposal has the potential to affect deer through loss of grazing and population displacement on to designated sites causing negative effects.

In order to assess the impact of the proposal and other proposed fencing as part of the wider Great Trossach Forest Project modelling of deer movement was undertake by James Hutton Institute using DeerMap. The results from this model show negligible impact from the proposal on deer movement. This includes a negligible displacement on to the neighbouring designated sites of Ben A'an and Brenachoille Woods SSSI and Trossach Wood SAC. See appendix 4 for maps depicting results (slide 21 and 23). As a result of this modelling exercise, it is determined that proposed fencing would cause negligible displacement on to the designated sites.

In order to ensure that the modelling correctly predicted lack of displacement on to the designated sites, the FCS will be undertaking monitoring using the Grazing Toolbox Plus developed by Richard Thomson (FCS) and Kate Holl (R. Lamont, Per. Comm. and P. Gordon, Per Comm.). Should this monitoring show negative impact on the designated sites, e.g. increased browsing, deer control would be undertaken as detailed in GTFP DMP.

The results from the modelling exercise determined that the main issue which needs to be addressed is the local management of deer population by WTS, this will be addressed by compensatory culls to account for the loss of grazing in particular on the Groddach. This loss of grazing would be a temporary change as the applicant would propose to enable access to the deer fenced areas once trees are established. It is proposed to undertake a compensative cull to reduce the resident deer population to prevent any negative impact on deer welfare resulting from the loss of grazing due to deer fencing. The cull would target the Groddach and would aim to remove 15 hinds between 2012 and 2014 and would be undertaken by the WTS in-house stalker. This mitigation is detailed in The Woodland Trust's grazing management plan and Great Trossachs Forest Project deer management plan (see appendix 5 and 6 for full deer management plans).

As a result of this mitigation the impact on deer welfare is considered to be Negligible.

6.1.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Displacement of deer				
	Designated sites	National and International	Negligible	Minor
Negative Welfare due to lack of grazing				
	Deer	Local	Medium Negative	Minor

6.1.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Displacement of deer				
	Designated sites	National and International	Negligible	Minor
Negative Welfare due to lack of grazing				
	Deer	Local	Negligible	Negligible

6.2 Landscape assessment – Groddach

The landscape appraisal determined that the proposed fence line would have minor impact on the Loch Lomond and Trossachs National Park. The new fence line partially follows an existing stock fence and then crosses the skyline at an Blealach so minimizing the visible impact from upper Glen Finglas, while from the lower glen the new deer fence is not visible and the woodland regeneration will blend with the native woodland restocking on the FE ground to the east so partially hiding the new deer fence.

See Appendix 7 for Landscape Appraisal.

6.2.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Visual impact from fence				
	Landscape	National	Negligible	Minor

6.2.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Visual impact from fence				
	Landscape	National	Negligible	Minor

6.3 Ben Vane Geological Classification Review Site

The original proposal for Gleann nam Mean woodland restoration site was designed prior to the significance of the geological feature being known.

The presence of Ben Vane Geological Conservation Review site on the proposed Gleann nam Mean site has led to modification of the proposal for this site in order to protect the significant features of the review site and the objective of the applicant to enable woodland expansion in this glen will be fulfilled.

The significant modification requested by SNH was to remove proposed tree planting from GCR due to the concerns that the impact of ground preparation and tree planting would damage the integrity of the site.

As a result of this, the applicant removed the proposal to the plant trees over the GCR to remove this impact and only propose woodland expansion via natural regeneration which has been predicated to occur on the lower slopes of the GCR. It is expected that this regeneration will achieve 75% tree cover with an average density of 1,100 stems per ha over the mapped area.

There is potential for the naturally-established trees to obscure localised features of interest on these lower slopes. The applicant proposes to review the tree cover and its impact on the GCR at year 5 post-fencing and undertake any management agreed to be necessary with SNH to preserve the features of interest.

The proposed alignment of the fence may impact on features such as anti-scarp slopes and spring line in particular to north of the GCR site. The applicant would ensure that the fence is micro sited on such a route such that these features are not significantly affected. This would be a site meeting with SNH and applicant or their contractor to agree a fence line.

As a result of these mitigations, the impact on the Ben Vane GCR site is considered to be minor.

See Appendix 7 for Landscape Appraisal.

6.3.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Tree establishment on GCR				
	Damage to integrity of site and significant features of GCR	National	Medium Negative	Major
Fence construction damaging GCR features				
	Localised geomorphological features, such as anti scarp slopes and spring line	National	Low	Moderate

6.3.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Tree establishment on GCR				
	Damage to integrity of site and significant features of GCR	National	Negligible	Minor
Fence construction damaging GCR features				
	Localised geomorphological features, such as anti scarp slopes and spring line	National	Negligible	Minor

7. Predications of Secondary Impacts

7.1 Natural Heritage

7.1.1 European Protected Species – Otter

Due to the potential for otter to use the sites proposed for fencing or new planting, a survey was commissioned to determine if there were any signs of otter activity and any potential for the proposed activities to significantly negatively affect the any otter present. The survey was undertaken in June and July 2012. The survey found no active resting sites for otters within the survey area although there were potential rest sites with Gleann Casaig and Groddach survey areas. Given the lack of activity in the woodland expansion areas there would be minor negative impact from the proposal on the otters. Any potential impact would be of a temporary nature as it only relates to the implementation of the proposal.

There are signs of otter activity in the wider area the following work plan is proposed to reduce the significance of the impact on otters;

No works should take place between one hour before sunset and one hour after sunrise;

Any fencing across watercourses should include measures to allow passage to otter even when watercourses are in spate. Otters can pass through deer fencing where the mesh size is greater than 100mm x 100mm. Use of smaller mesh at the base of the fence within 30m of the watercourse should be avoided;

Workers should be made aware of the presence of otter at the site, and if a resting site is found, workers should leave the area and an ecologist brought to site to assess the situation and liaise with SNH as appropriate;

Any loose wire or fencing should be removed from site upon completion of the works;

Appropriate measures to prevent accidental pollution of watercourses should be implemented according to SEPA guidance, namely:

a. Re-fuelling will take place in designated areas at least 20m away from watercourses or water bodies;
b. Chemicals will be stored in suitably bunded areas at least 20m away from watercourses or water bodies;
c. Any trenches or pits dug over 1m in depth will have an escape ramp placed inside in the unlikely event that an otter becomes trapped;
Due the mitigation described above the significance of the impact from the proposals on the otter population is minor.

See Appendix 8 for full survey report.

7.1.1.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Disturbance of EPS (otter)				
	Otter	International	Low	Moderate

7.1.1.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Disturbance of EPS (otter)				
	Otter	National	Negligible	Minor

7.1.2 Priority Open Ground Habitats

Due to the permanent change in habitat type which would result from the proposal, a revalidation of the NVC survey from 1997 was undertaken to ensure that the proposal would not affect any priority habitats. The survey did not locate any national or regionally important habitats. Therefore the proposal will not reduce the extent of these habitats so no mitigation is required.

The revalidation did record the presence of two habitats (**Basic flushes (M11b) and stands of calcareous grassland (CG10b)**) which are not common over the survey sites but are not rare in the wider Trossachs. These habitats are predominately located in the proposed Gleann nam Meann enclosure. It is proposed that where these habitats are within areas proposed for planting they will not be planted.

The impact of the proposal on these uncommon habitats is negligible due the mitigation described above.

See appendix 9 for full report.

7.1.2.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Reduction in extent of priority habitats				
	Blanket Bog	International	None	None
Reduction in extent of uncommon habitats				
	M11b and CG10b	Local	Minor	Minor

7.1.2.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Reduction in extent of priority habitats				
	Blanket Bog	National/ Regional	None	None
Reduction in extent of uncommon habitats				
	M11b and CG10b	Local	Negligible	Negligible

7.1.3 Bird Interest

The proposal would lead to a permanent change in habitat present, open upland to woodland. This change in habitat would have an effect on the resident bird population. In order assess the significance of this effect a breeding bird survey and associated Ecological Impact Assessment was commissioned to assess the current population and the potential impact from the proposal.

The baseline ornithological interest of the study site is associated predominantly with the remnant woodland and scrub associated with the three glens, with the remaining open ground habitats supporting a generally impoverished upland and moorland breeding bird assemblage. The breeding bird assemblage is comprised of species of mainly *Local Value*. However, included within this upland assemblage is red-throated diver *Gavia stellata* - a breeding species of high nature conservation in the context of the southern Highlands and of *Regional Value*.

The woodland restoration proposals will result in the loss of c. 256 ha. of open ground habitats which will result in the mid to long-term loss of their existing associated birdlife. The replacement breeding bird assemblage of woodland and woodland edge birds is predicted to be of higher nature conservation importance than the current baseline, and therefore result in a positive impact. Increases in the populations of both common woodland species and those characteristic of upland woodlands are predicted. This would include potential mid- to long-term increases in populations of species such as: tree pipit *Anthus trivalis*, redstart *Phoenicurus phoenicurus*, wood warbler *Phylloscopus sibilatix*, pied flycatcher *Ficedula hypoleuca* and spotted flycatcher *Muscicapa striata*. The relatively minor loss of open ground at a landscape level is unlikely to adversely affect the current populations of predatory birds (e.g. peregrine falcon *Falco peregrinus* or scavenging species (e.g. raven *Corvus corax*). Restoration of native woodland and dwarf-shrub heath vegetation may potentially improve habitat suitability for black grouse *Tetrao tetrix,* known to be present within the Glen Finglas Estate and surrounding area.

Mitigation recommendations are provided in this report to ensure that impacts on birds during the works associated with the Project (e.g. fencing, mounding, planting, etc.) are not significant, and to ensure legal compliance with the Wildlife and Countryside Act 1981 and The Nature Conservation (Scotland) Act 2004. There is an active black grouse lek within circa 400 m of the proposed Gleann Casaig exclosure. Due to the location of this lek, the fence of this exclosure would be marked to reduce the potential risk of black grouse collisions and mortality. Following mitigation recommendations, it is assessed that any potentially significant impacts on birds will be reduced to non-significant levels. Overall the Project is considered to be associated with beneficial impacts in relation to birds.

See Appendix 10 for full survey.

7.1.3.1 Pre Mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Disturbance and/or killing/injury of birds				
	Red-throated diver	Regional	Medium Negative	Moderate Negative
	All other species	Local	Negligible	Negligible
Direct and indirect habitat loss				
	Red-throated diver	Regional	None	Negligible
	All other species	Local	Medium Positive	Moderate Positive
Bird collision with new fences				
	Black grouse	Regional	Medium Negative	Moderate Negative
	All other species	Local-Regional	Negligible	Negligible

7.1.3.2. Post Mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Disturbance and/or killing/injury of birds				
	Red-throated diver	Regional	None	None
	All other species	Local	Negligible Negative	Negligible Negative
Direct and indirect habitat loss				
	Red-throated diver	Negligible	None	Negligible Negative
	All other species	Local	Medium Positive	Moderate Positive
Bird collision with new fences				
	Black grouse	Regional	Low Negative	Minor Negative
	All other species	Local-Regional	Negligible Negative	Negligible Negative

7.2 Public Water Supply

The proposal would require machine ground preparation over circa 39 ha to enable the establishment of native broadleaves trees. This work along with maintenance such as chemical weeding could have a minor impact through risk of sedimentation and chemical run off on the water quality of Glen Finglas reservoir. This impact would be of a temporary nature during the implementation of the proposal.

Scottish Water was consulted regarding the significance of any impact on the quality and quantity of water associated with the catchment of Glen Finglas reservoir.
See appendix 3 of Scoping report for letter sent by RTS to Scottish Water (SW) along with SW responses in appendix 11.

Responses were received from Donald MacDougall (AIM West Water – Asset Planner) and Amanda Hutcheson (Strategic Planner). These responses stated providing standard forestry best practice, i.e. UK Forestry Guidance (UKFG) is followed, Scottish Water would have no concerns that the proposal would negatively affect the quality of water with the catchment area. The applicant intends to follow the UKFG in all aspects of the proposal in particular standards relating to Forests and soil and Forest and water.

No comment from Scottish Water was made regarding the impact of the proposal on quantity of water.

The proposal would have a negligible impact on the quality of water due to the mitigation described above.

7.2.1 Pre mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Negative impact to quality of water				
	Glen Finglas reservoir	Regional	Minor	Minor
Negative impact to quantity of water				
	Glen Finglas reservoir	Regional	Negligible	Negligible

7.2.2 Post mitigation

Impact	Receptor	Value	Impact Magnitude	Impact Significance
Negative impact to quality of water				
	Glen Finglas reservoir	Regional	Negligible	Negligible
Negative impact to quantity of water				
	Glen Finglas reservoir	Regional	Negligible	Negligible

8. Summary of significant impact and proposed mitigation

Table 2: Summary of Potential Impacts of the proposed woodland restoration, Mitigation and Residual Impacts			
Likely Significant Impact	**Mitigation Proposed**	**Means of Implementation**	**Outcome/Residual Impact**
Implementation			
Welfare of Red deer	Reduce population	In house Stalker	Negligible Significance
Fence construction damaging GCR features	Micrositing to avoid these features	Site meeting with SNH	Minor Significance
European Protected Species - Otter	Works to be planned to reduce risk to otter	Work Instructions to contractors	Minor Significance
Disturbance and/or killing/injury of birds from fencing or ground preparation- All other species	Survey to ensure no breeding activity on route of fence	Survey to be undertaken prior to works starting	Negligible Significance
Bird collision with new fences - Black grouse	Marking of fence were it is within 1 km of an active lek	Fence specification	Minor Negative
Negative impact to quality of water	All works to follow UK Forestry Standard	Work specification	Negligible Significance
Long Term			
Tree establishment damaging the integrity of site and significant features of GCR	Proposal designed to remove planting from GCR area and monitoring of regeneration on site	Proposal design	Minor Significance
Direct and indirect habitat loss Red-throated diver	Woodland expansion not expected to affect breeding area		Negligible Negative
Reduction in extent of uncommon habitats (M11b and CG10b)	These areas to be included in open ground of planting model	Proposal design	Negligible Significance

Appendix 1 – Scoping Report

Glen Finglas Woodland Restoration Scoping Report

RTS Ltd

22nd[h] May 2012

On Behalf of Woodland Trust Scotland

Introduction

The work outlined below is to reforest circa 256 ha with native woodland on The Woodland Trust Scotland Glen Finglas estate. It builds on a long established management objective to restore woodland in Glen Finglas and a previous Woodland Grant Scheme (Application No 033001332) which excluded domestic grazing from small areas of the estate and reduced deer numbers through culling. Appendix 1 shows whole estate deer counts since 1997 and cull figures over the last six seasons.

The proposal would achieve this restoration of native woodland through providing suitable conditions for natural regeneration over 182 ha from 67 ha of existing woodland and establishing new planting over 74 ha. To achieve this, circa 20km of temporary deer fence would be required to exclude deer from 678 ha. Fifty percent of the deer fence would result from the upgrading of existing stock fences. To minimise the requirement for additional fencing and impact on deer movement, it is proposed to enclose circa 350 ha over which woodland expansion is not predicted. It is envisioned that future woodland expansion on Glen Finglas estate will be achieved without the need for deer fencing.

The key aspect of this proposal is the cooperative approach that is being taken through the Great Trossach Forest project with regard to both fencing and deer management. This can be manifested by the utilisation of existing deer fences on Forest Enterprise (FE) ground and the construction of new deer fences on FE ground. This approach not only minimises the additional deer fencing but minimises the potential negative impact on deer movement from additional fencing. In addition, the three landowning partners in the Great Trossach Forest project, FE, Royal Society for the Protection of Birds (RSPB) and The Woodland Trust Scotland (WTS) will be producing a strategic deer management plan to take into account landscape level deer management over their respective properties.

The proposed woodland restoration would occur over three glens:

In Gleann Casaig, an existing stock fence would be upgraded to a deer fence (4,800 m) to enclose 48.72 ha enabling 14.52 ha of natural regeneration from 20.02 ha of existing woodland. An additional 12.30 ha of new planting would also be established.

In Gleann nan Meann, three existing stock exclosures would be linked by a combination of upgrading stock fences and new deer fences (5,925 m) to enclose 119.88 ha. This would enclose 5.14 ha of scattered existing woodland enabling 51.11 ha of natural regeneration and a further 70.72 ha of new planting to establish. It is intended to remove 2,800 m of redundant internal stock fencing.

In the Groddoch, an existing stock exclosure will be enlarged through a combination of upgrading stock fence and new deer fence (8,425 m) to meet with the Forestry Commission deer fence running around the northern slopes over looking Loch Katrine. This would enclose 510.11 ha enabling 116.33 ha of natural regeneration to establish from 41.86 ha of existing woodland. As well as woodland restoration, this exclosure will enable improvements in montane dwarf shrub communities on FE ground due to removal of grazing.

In order to restore woodland by new planting, it is intended to undertake machine hinge mounding to create suitable microsites for tree establishment. The planting of native provenance trees would be undertaken by hand. A combination of hand and chemical weeding will be undertaken to ensure the trees establish. In the Groddach, there is circa 15 ha of bracken which will be controlled using Asulox, applied by hand, to improve conditions for natural regeneration. As a trial, 12 stears were grazed in current Groddach exclosure for 12 weeks to reduce the *Molina* swath and improve conditions for tree regeneration. This duration of grazing was shown not to affect the established tree regeneration. Should insufficient seedlings establish in natural regeneration areas, chemical screefing would be undertaken to improve conditions for seedling establishment.

A screening meeting was undertaken at Lendrick Steading, Brig O'Turk on 6th December 2011. See appendix 2 for minutes from this meeting and full list of attendees.

As a result of this meeting it was determined by Forestry Commission Scotland that the work outlined above would require consent under the Environmental Impact Assessment (Forestry) Regulations 1999.

This scoping report will set out the significant issues as identified in the screening meeting and laid out in letter dated 14th February 2012 from Nick Mainprize, Perth and Argyll Conservancy, Forestry Commission Scotland.

Primary Issues

Deer

The proposal may displace deer from woodland expansion areas on to neighbouring designated sites, Ben A'an and Brenachoille Woods SSSI and Trossachs Wood SAC.

In order to assess the significance of any impact from deer as a result of the proposal, the applicant intends to seek advice from recognised authorities, such as Scottish Natural Heritage (SNH), James Hutton Institute, local deer managers such as GTFP partners, and Balquidder Deer Management group. This advice will subsequently be used to develop two deer management plans and to identify any mitigation necessary. This advice would be based in the current and historic records of deer populations, locations and movement.

In order to address any significant impacts, there will be three levels of deer population management:

Balquidder Deer Management Group
Great Trossachs Forest Project (GTFP) covering FE, RSPB and WTS estates
The Woodland Trust Scotland – Glen Finglas Estate.

Deer population planning will be undertaken at both the GTFP and Glen Finglas Estate level in the Environmental Statement. The GTFP Strategic deer management plan (DMP) which will assess the impacts of the proposed reforestation with the associated temporary deer fences on the partners' estates. As the designated sites of concern are within the Forest Enterprise ownership, the monitoring of these sites will be included in the GTFP DMP. The proposed methodology for the monitoring will be in line with best practice and will be agreed with SNH. The Glen Finglas DMP will assess the potential for adverse deer impact on the Estate as the result of the proposal.

Should mitigation be required, description of the necessary measures will be provided in the GTFP plan, in addition any required mitigation will also be addressed in WTS Glen Finglas Estate deer management plan. Mitigation measures which may be considered include the undertaking of a compensation cull in the GTFP area and modification of the locations of proposed new deer fencing.

It is proposed that the detail within the GTFP and Glen Finglas DMPs will form the deer chapter of the Environmental Statement.

Landscape assessment

Due to the location being entirely within the Loch Lomond and Trossachs National Park and partially within Trossachs National Scenic area, and that there would be a visual impact of the proposed reforestation including fencing and ground preparation, the significance of these impacts will be assessed.

Two of the proposed woodland expansion areas, the Groddoch and Gleann Casaig , were included in the previous EIA. Landscape assessment has been undertaken of the Groddoch for the earlier EIA. The current Groddoch exclosure is similar to the proposals presented in the earlier EIA but without the additional planting. At the screening meeting no concerns were expressed regarding the landscape impact of the Glen Caisiag so it is not intended to undertake a landscape assessment of this exclosure.

It is intended to employ a landscape architect to review the previous landscape assessment of Groddoch as undertaken as part of the previous EIA and undertake new assessment of Glean nan Meann.

Ben Vane Geological Conservation Review (GCR) Site

The applicant intends to seek advice from Scottish Natural Heritage (SNH) and other experts as to whether there would be significant impacts on the GCR site from fencing and any associated change in vegetation from exclusion of grazing. Also advice will be sought as to whether reforestation either by new planting or through natural regeneration would have any significant physical detrimental impacts on the site.

In addition, advice will be sought as to the significance of any impacts on interpretation of features should natural tree cover establish over the site. It is intended that this impact will also be addressed in the landscape assessment of this exclosure.

Secondary Issues

Natural Heritage

There is potential for the proposed reforestation to negatively affect European Protected Species and Priority Habitats. It is therefore proposed to commission surveys to determine the presence and extent of these features to enable them to be protected from any potential negative impacts resulting from woodland restoration.

European Protected Species –Otter

A survey will be commissioned to locate any holts or resting places within 30m of any fencing or planting operations. This survey will incorporate any known holts. Should any holts or other resting places be located, advice will be sought from SNH as to required mitigation measures which may include an exclusion buffer of 30 m being put in place during any operations; while should any breeding holts be located then a exclusion buffer of 100 to 200 m depending on local topography will be enforced.

Priority Open ground Habitats

A National Vegetation Classification (NVC) survey undertaken in 1996 will be reviewed and used to identify priority habitats (as identified in Article 1 of the Habitats Directive such as blanket bog). These habitats will then be incorporated in designed open ground within the proposed planting areas. In addition, the design on the woodland planting with incorporate features, such as variable planting densities and feathered edges, will lead to habitat improvement to benefit priority species such as Black Grouse. Given that the predominate method of woodland expansion would be through natural regeneration these features will also occur in the regeneration areas.

The proposed species mix of planted woodland would be based on the predicated woodland type from the current NVC.

Bird Interest

The proposed work will change the habitat type and this change may affect bird species present. The planned fencing may also pose a threat to Black Grouse population through fence strike.

A breeding bird survey will be commissioned to cover the area proposed for woodland expansion. This will follow a standard methodology, (Common Bird Census (CBC)), to identify breeding bird species currently using the proposed woodland areas. This survey will include analysis of any effects of the woodland expansion on the recorded bird population. The data present will include any known Black Grouse lek sites within a 1km of the proposed enclosures and a risk assessment as to any possible impact on the Black Grouse population.

There will be opportunities, which will be investigated, for micrositing of proposed fences to minimise the risk of bird strike. Where this is not possible, the fences will be marked with wooden batons in accordance with current best practice to reduce the risk of bird strike.

Public Water supply

The applicant intends to consult Scottish Water with regard to the significance of any impact on the quality and quantity of water associated with the catchment of Glen Finglas reservoir.

Copy of letter and map in appendix 3

Archaeology

There is potential, due the restoration of tree cover, that archaeological features may be damaged due to tree establishment. West of Scotland Archaeological Service was consulted at the EIA determination stage and expressed the view that no additional surveys are required. They felt the level of existing data (an extensive walk over survey in December 1996) along with the applicant's method statement to maintain a 20 m tree free buffer around any recorded sites would provide suitable protection.

See appendix 4 for their full response.

Social and Economic Impact

The proposal will lead to a change of land use over a small area of the Glen Finglas estate which has the potential to affect the current animal husbandry and associated employment. The WTS currently have no plans to further reduce the numbers of domestic stock currently grazing Glen Finglas as a result of the proposed woodland expansion, so the current level of employment relating to the farming enterprise will be maintained. The woodland expansion is in line with the Woodland Trust's long term aims of expanding woodland cover while maintaining domestic stock grazing. In the estate's long term management plan carefully managed cattle grazing is proposed as a tool of future woodland management. The proposal is consistent with the government's woodland expansion targets. This reforesting project will create employment through the establishment phase associated fencing, ground preparation, planting and subsequent aftercare. Once established the reforested areas will provide additional shelter which will improve the grazing provided by the Glen Finglas estate.

There will be no significant negative social and economic impacts so there is no intention to address this issue further.

Visitor and Public Access

As with any proposal, which involves erecting deer fencing, there is the potential to have a negative impact on the ability for people to undertake recreational access in an upland environment. This proposal has been designed to minimise this impact and, where required, measures will be put in place to mitigate any negative impacts on access.

The proposed fences have been designed to avoid crossing the major routes running along the floor of the three glens. No major desire lines were recorded away from the tracks but it is intended to maintain the stiles which currently exist on the south east side of the Groddoch exclosure. As well as gates for operational access, stiles will be provided to cross the Glean nam Meann fence and so provide access to the GCR site.

Scoping participants will be invited to comment on the proposed mitigation measures to ensure they are sufficient to enable people to undertake access without significant impact from the proposal.

Appendix 1

Whole Estate Deer Counts

Date		**Stags**	**Hinds**	**Calves**	**Totals**
March 1997		182	268	74	524
August 1998		26	210	88	324
May 1999		48	195	64	307
March 2000	Helicopter	20	188	64	272
May 2000		42	109		151
August 2000		53	194		247
August 2001		33	123		156
December 2001		34	138	47	219
April 2002	Helicopter	115	193	30	338
August 2002		32	172		204
January	Helicopter	7	74	28	109
March 2003	Helicopter	72	43	28	143
April 2005	Helicopter	116	43	22	181
Av Jan-Feb 06		77	67	24	168
March 2010	Helicopter	83	64	19	166
March 2012	Helicopter	107	27	9	143

Estate Deer Cull Figures

Year	Stags	Hinds	Calves	TOTAL RED DEER
2005-06	31	29	22	82
2006-07	23	30	15	68
2007-08	37	9	3	48
2008-09	6	47	19	72
2009-10	30	51	7	88
2010-11	22	93	18	133
2011-12	37	39	9	85

Appendix 2

Minutes from screening meeting on 6-12-11 with regard to EA determination for Glenfinglas Woodland Restoration Project with revisions.

Present:

Karen Mitchell-SNH

Russell Lamont – Forest Enterprise

Linda Winskill –LLTNP

Yvonne Boles – RSPB

David Beaumont, Reserve Manager- RSPB

Tim Barratt -FCS Conservancy

Gene Maxwell, Community Council

Philip Gordon - WTS

Harry Wilson –RTS

Simon Franks - RTS

Representative from Balquhidder Deer Management group was invited but was not present

The Project

HW introduced project of woodland restoration in the areas of Glen Finglas estate. This project builds on a previous WGS natural regeneration scheme to fence-out domestic livestock and to reduce deer numbers through culling. The new project builds on that WGS to exclude deer by fencing to enable woodland restoration by natural regeneration over circa 250 ha and new woodland planting over circa 76 ha.

An important aspect of the project is the cooperative approach through The Great Trossachs Forest which is manifest by utilising existing Forest Enterprise deer fences and building some new deer fences on FE ground – to minimise the total new fencing and optimise deer management issues.

The project includes three separate woodland areas:

Groddoch

This exclosure consists of circa 160 ha of natural regeneration, there is circa 15 ha of bracken on this site. There would new deer fencing on Woodland Trust ground which would link in with existing deer fencing on FE. This would enclose circa 150 ha of FE ground and would have the additional benefit to provide opportunity for upland habitat restoration.

Gleann nam Meann

This exclosure would be formed by enclosing 3 existing stock fence exclosures and additional higher ground (this will not affect recorded geological features). The woodland restoration would comprise of circa 56 ha of natural regeneration and 60 ha of new planting.

Gleann Casaig

The exclosure would comprise up-grading the current stock fence(erected circa 10 years ago with deer height strainers) to a deer fence. Woodland restoration would comprise of circa 34 ha of natural regeneration and 12 ha of new planting.

The fences would be removed after 20 to 25 years and then the areas would be returned to low density cattle and deer grazing.
Any redundant internal stock fences would be removed at during the early part of this project

Comments from representative bodies were then invited. Note it was decided that issues relating to deer would be dealt as a single topic after individual comments.

West of Scotland Archaeological Service

They provided a written response. (copy attached) Principally observe 20m protective radius.

RSPB, David Beaumont / Yvonne Boles.

RSPB experience elsewhere has led them to accept the requirement for fences in the short term (25 year) to enable woodland restoration. RSPB suggest that where fencing is required a larger scale approach is preferable to numerous shorter fences.

RSPB commented that for clarity all fences within the vicinity (including those on FE land adjacent) should be shown – to put the new fences into context.

They would wish to see leks marked on future maps. There is a lek to the SW of the Gleann Casiag so they would recommend that this fence is marked.
Yvonne commented that Glen Finglas did not include part of a golden eagle range.

Trossachs Community Council, Gene Maxwell.

Minor concern was expressed that the higher planting area in Gleann nam Meann risked obscuring the geological feature (land slip) in Corry dhu from the path and may restrict access to the hill at this point.

WT/RTS stated that the design will be reviewed to ensure this feature is not affected. Access gates will be incorporated bottom and top and a clear route retained through any planting.

DB observed that if the higher, planting option for G Meann was selected this may lift that section of fence above the zone where black grouse marking was recommended. It was commented that Black grouse are often discovered in greater numbers in afforestation areas (encouraged in by habitat recovery and ground disturbance = grit).

It was considered that there is not a significant demand for general "roaming" access through the three areas. WT/RTS confirmed that access would be preserved by incorporating gates at prominent desire lines. In the Groddach these would logically tie in to the bridges and the two significant archaeological clusters.

Loch Lomond and Trossachs National Park, Linda Winskill.

Access – No issues were raised with Groddach or Gleann Casiag, The track running through Gleann nam Meann is a core path. WT/RTS assured no closure or modification to this route would be required and LW was advised that track usage would be minimal – occasional tractors to lead out materials, tracked excavators and 4WD contractors vehicles.

Landscape – No issues were raised with either the general locations of fencing or different grazing pressure due to the low grazing pressure outside exclosures.

Viewpoints analysis was requested from Ben Ledi and Ben A'an. Philip Gordon advised that this work was undertaken during previous WGS application and it will be revisited.

LW queried the intention for the areas of open hill which would be enclosed but above the predicted regeneration zones. HW advised that while a very low degree of tree development was anticipated the intention (by both WTS and FE) was to re-introduce grazing by cattle at the end of the fences lifespan.

LW suggested that a mammal survey (particularly otters and badgers) would be appropriate. PG advised the WTS rangers should have good knowledge of the location and territories of these species and that prior to any work (fencing or mounding) the rangers would undertake a survey to ensure that no setts / holts / rests were damaged or obstructed.

LW offered guidance regarding fence marking to reduce risk of black grouse strike, having been involved with Callander Black Grouse Project. RSPB offered similar guidance.

LW requested that design of new planting would incorporate habitat improvements to benefit black grouse, such as species composition, particularly on edges to include those of benefit to grouse. feathered/graded external edges, reducing gradually from full stocking to very low densities and open ground. It was confirmed during the meeting that this flexibility of stocking densities could be incorporated into the SRDP proposal. In addition the design open ground would incorporate wet and heathy areas.

Clarification with regard to following points was requested:

Species proposed for new planting - WT/RTS stated that these would be chosen to match current NVC as provided in the previous EA survey.

The issue of redundant fence was raised, WT state that they would look to remove them as part of this current project.

Ground preparation in natural regeneration area - WT/RTS stated that initially no ground preparation was planned although chemical screefing may be undertaken if necessary.

Ground preparation in new planted area – WT/RTS stated that machine mounding would be undertaken when possible.

Queried management of regeneration on areas of deep peat. WT/RTS stated that no active management was proposed as it was felt that any tree grow would be very poor and so trees would be removed when grazing is reintroduced.

Forest Enterprise, Russell Lamont.

Supported the overall project and stated that in addition to the WTS focus on tree expansion there would also be further habitat restoration through the Groddach exclosure.

It was noted that there had been an increase in black grouse number on FE ground since their management of Loch Katrine.

SNH, Karen Mitchell.

Overall support for project, there are no obvious issues with designated areas being affected
It was also asked if any protected species surveys were planned, in particular otters. WT/RTS stated that no addition specific surveys were planned apart from a breeding bird survey, as it was felt that the WT staff have a good knowledge of the present of protected species to prevent disturbance. KM advised that given otters (European Protected Species) are generally found wherever there are watercourses and that otter holts and resting up places can be set back quite a distance from rivers it would be prudent to commission a survey. This is in case there is any possible disturbance issues from planting operations for example, areas of particular concern are Glen Meann and upper part of Gleann Casaig. TB supported this request.

KM was concerned that despite TGTF project there did not appear to be an overall vision and joined up approach (to deer fencing) within the Loch Katrine area (Inversnaid to Glen Finglas), all of which is within the LLTNP.

FCS, Tim Barratt.

They would wish to check any existing conditions from previous WGS grants which may affect eligibility for grant aid.

FCS has reservations with regard to the success of natural regeneration and has experience of failed schemes with only 20m buffer zones. The presence of rank vegetation appears to be the most prohibiting factor to regeneration. FCS would encourage new planting as it would increase species diversity in new woodland – in particular oak, if absent as seed trees, would not arrive through NR. HW noted that the historical landscape analysis of Glen Finglas suggests oak was not a component of the historic forest and may be "just outside" the range for viable seed. The historical species composition does appear to be quite narrow.

Discussion on Deer

PG - The last count on Glen Finglas was in March 2010 which was undertaken as part of the Deer Management Group, this showed an average of 5 deer per 100 ha. There is deer movement from north to south during the year.

PG - The Woodland Trust has a current cull target of 60 hinds and 30 Stags. This is lower than past targets – the cull is down from 100 hinds. In 2010 the actual cull was 59 and 30.

RL noted that FE had reduced their cull target due to a concern that the 2010 count (of 700) over-represented stags and consequently their neighbours are worried that FE would shoot too many stags (based on 700).
The ground above Gleann Casiag exclosure is Stag wintering ground and will be unaffected.

PG - There were 60 stags on the Groddach during the recent count. The ground opposite the Groddach (The Mell) is favoured stag ground in winter, the fencing of Groddach has been designed to encourage movement on to this area and avoid deer becoming corralled on the Groddach if alternative fence alignments were utilised.

LW – enquired if the proposed WTS cull accounted for deer passing through in addition to compensation for the loss of the Groddach grazing. PG advised that the current cull target of 60/30 would be increased to compensate for the loss of grazing inhabited by these 6o deer.

KM – raised concern of "joined up approach to deer". Observed that the status quo (in EA) terms would mean the partners in TGTF shooting deer more heavily in the absence of fencing exclosures. KM noted that deer numbers were too high for the designated sites in the area and this was a barrier to them attaining favourable condition. Concerned that fencing must be accompanied by culls.
KM was concerned that the Groddach fence could lead to funnelling of deer to Ben A'an and Brenachoille SSSI Woods SSSI

WT/RTS stated that a fence would be run right down to the reservoir edge to prevent this funnelling effect..

KM & DB queried deer population movements within the range. KM suggested that an EA was not necessary to consider how deer would be affected – but would welcome a strategic overview of the district, including existing and proposed fences plus deer movement lines and population numbers.

GM – a section of the community are concerned that excluding deer from accessing the Loch Katrine would reduce visitor experiences and adversely affect tourism businesses.

YB – is Lindsay Sievwright (SNH Deer Officer) responsible for approving deer related issues?
TB/KM - no, FCS approve planting proposals under the EIA regs. SNH are a consultee in the process.

Actions

It was felt that it would be beneficial to all projects in the Great Trossachs Woodland Project area for a single A2-sized map to be produced which showed all current deer fences, proposed deer fences and reasons behind them being erected, current deer number, current deer movements and future deer movements due to fencing. This would help explain to community as well as other stakeholders the aims and impacts of the project.
This was to be actioned by Great Trossachs Woodland Project officer who has been given access to FCS GIS system.

In order to progress a woodland creation SRDP grant, FCS felt that the following would be required:
A deer management plan which included Woodland Trust, FE and RSPB.
Landscape visualisation from key views, Ben Ledi and Ben Avon
Protected species survey – Otters
Breeding Bird Survey

RTS Ltd
23 Dec 2011.

Appendix 3 - Letter to Scottish Water

Richard Gregory by email
Environmental Advisor
Scottish Water Shared Service Delivery

Dear Richard Gregory

Woodland Trust Scotland – Glen Finglas reforestation

I am writing to you in order to obtain an opinion regarding the impact of this proposed reforestation on the quality and quantity of water draining into Glen Finglas reservoir.

This would be the final phase of the Glen Finglas restoration of native woodland and would lead to a further 188 ha of native woodland, 114 ha through progressive natural regeneration with 74 ha through planting. This reforestation would represent 4.56% of the Glen Finglas catchment area.

It is not intended to undertaken any physical ground disturbance with areas of natural regeneration, where planting is intended there would be widely spaced hinge mounding to create suitable microsites for tree establishment. This would comply with current UK Forestry Standard on Water and Soil to minimise risk of sediment run off by not undertaking any hinge mounding with 10 m of water courses depending on their size. No additional forestry tracks or forest drains are proposed.

In the Groddach, there is circa 15 ha of bracken which will be controlled using Asulox, applied by hand, to improve conditions for natural regeneration. In the area of new planting there may be limited use of glyphosate based herbicide to control weeds in order to allow successful tree establishment. The application of herbicide would be in line with The Control of Pesticides Regulations 1986 (as amended).

Should you require any further information to comment of this proposal do not hesitate to contact me.

Yours sincerely

Simon Franks
Woodland Manager

Appendix 4 – West of Scotland Archaeology Service - Response to Invitation to Screening Meeting

From: Robins, Paul [mailto:Paul.Robins@glasgow.gov.uk]
Sent: 25 November 2011 11:22
To: harry.wilson
Cc: Conservancy Office, Perth and Argyll
Subject: RE: Groddach EA Determination

Harry

There are sites recorded in the WOSAS sites and monuments record (SMR) (www.wosas.net) in all three of the proposal areas. Since the whole area has been subject to a professional archaeological walk over survey and as long as that was carried out at a suitable time of year when bracken cover did not mask visible remains, then there would be no need for an EA to be undertaken as far as archaeology is concerned. Rather it is simply a case of avoidance of those recorded sites within the standard 20 metre buffer zone for preserving archaeological sites within woodland. Since the bulk of the ground is rugged upland I am not overly concerned about the potential for buried archaeological remains and I would only really expect such remains in proximity to the recorded sites, hence the standard buffer zone. From the details you have sent it would appear that this is your methodology anyway and I would advise that you simply ensure that all the recorded sites known from the previous survey and the WOSAS SMR are preserved in this way. There would also be a requirement to maintain the open ground of the buffer zones over time. It may be that the biggest issue will be the finding and marking out of sites on the ground and for this you may need to employ the services of a professional archaeological contractor a list of which is available on our web site (www.wosas.net).

Regards

Paul Robins

WOSAS

Appendix 2- Ben Vane Geological Classification Review site report

Scottish Natural Heritage
All of nature for all of Scotland

Earth Science Site Documentation Project

(Contract Number 28758)

Benvane GCR site, Stirling [NN532 120]

Image 1

A 4 metre high antiscarp within the deformed south western slope of Benvane

Report prepared by:	Kate Harris
Date of field visit:	28 April 2010
Date of report issue:	1 June 2011

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An Introduction to the Geological Conservation Review (GCR)

Between 1977 and 1990 there was a major initiative to identify and describe the most important geological sites in Britain, this was the Geological Conservation Review (GCR). The GCR was designed to identify those sites of national and international importance needed to show all the key scientific elements of the Earth heritage of Britain. These sites have attributes that range from contemporary sequences of sediments to ancient rocks, together with fossils, minerals and features of the landscape that make a special contribution to our understanding and appreciation of Earth science and the geological history of Britain, which stretches back hundreds of millions of years. Scotland has an inventory of 905 GCR sites, selected for around 100 categories (the GCR 'Blocks') encompassing the range of geological and geomorphological features of Britain.

Conservation of geological and geomorphological sites has always been part of the responsibilities of the statutory nature conservation agencies (Scottish Natural Heritage, the Countryside Council for Wales and Natural England and their forebears the Nature Conservancy and the Nature Conservancy Council). The GCR was a major step forward in Earth heritage conservation.

The results of the Geological Conservation Review programme are being published in a series of 45 volumes, the Geological Conservation Review Series. The aim of the Geological Conservation Review Series is to provide a public record of the features of interest and importance at localities already notified or being considered for notification as 'Sites of Special Scientific Interest' (SSSIs). The sites selected – GCR sites – form the basis of statutory geological and geomorphological site conservation in Britain. More information regarding the selection of sites, and the publication and content of the GCR volumes, both published and in preparation is available in the 'Further Information' section of this report.

The GCR interest feature of the Benvane site: Mass Movement.

Purpose and Structure of the Report

This report provides information on the Benvane GCR site and is intended as an aid in the conservation and enhancement of the geological and geomorphological features of interest.

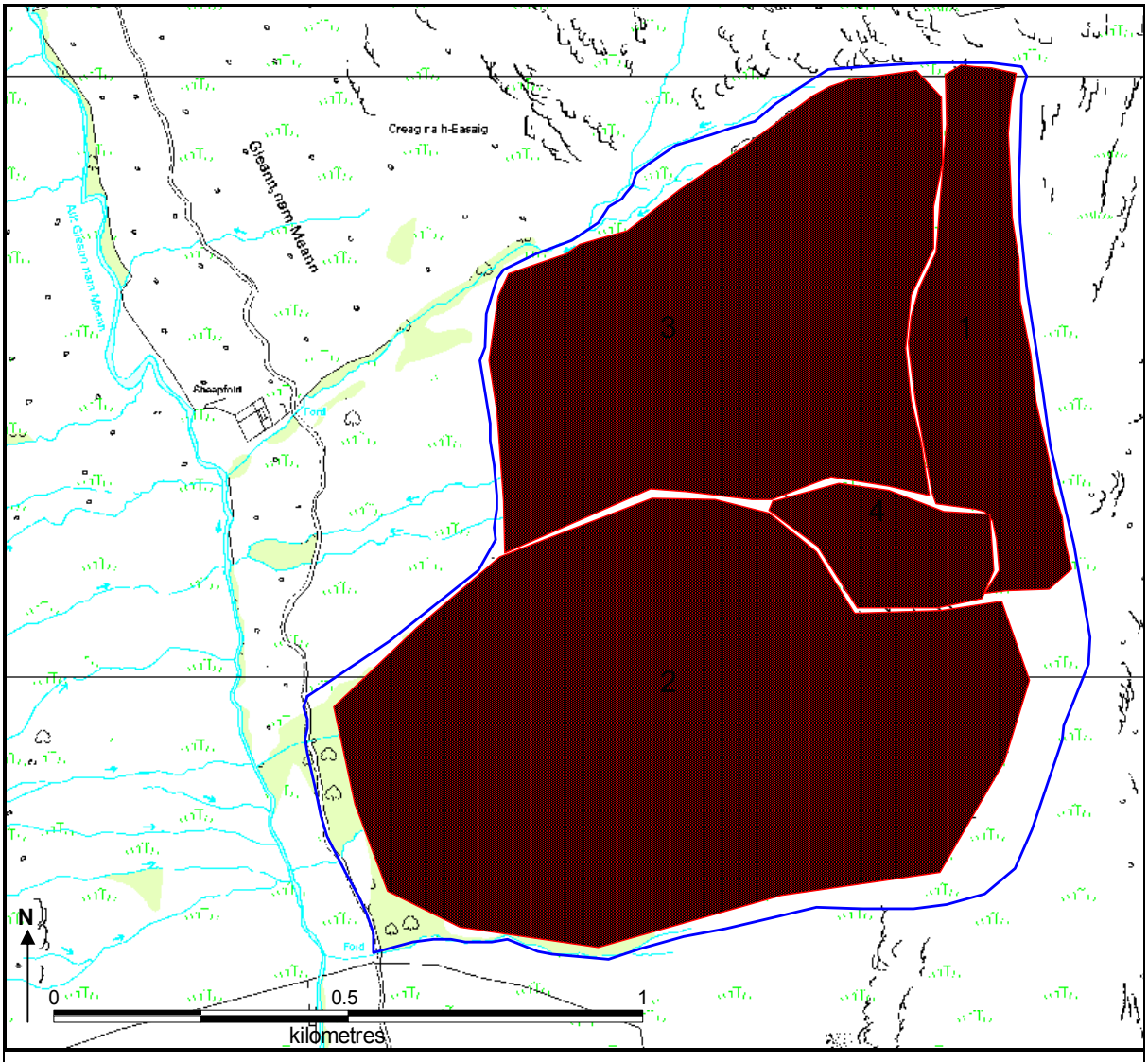
It provides the following:

- A site boundary map showing areas of key interest.
- A Site Management Statement consisting of:
  - a plain English account of the geological and geomorphological interest;
  - notes on past and present management;
  - an assessment of the condition of the site; and
  - objectives for continuing management.
- A photographic record of the site.
- A list of further information.

GCR Site Boundary and Areas of Crucial Interest

The map illustrates the boundary of the Benvane GCR site, indicated by the blue lines.

The areas in red define the crucial areas of interest within the GCR site. These correspond roughly to four main areas (see diagram below); a deformed ridge (1), an area of translational slide (2), an area of lattice slope deformation (3) and a transitional zone (4).



Scale: see map

Benvane GCR

The crucial areas are those in which important features of the site are best exposed. These areas are crucial to the understanding of the scientific interest for which the site was selected. Areas that are not marked as crucial, but occur within the site boundary, can be thought of as 'context areas'. These are important in setting the crucial areas in context with the surrounding geology and geomorphology, and should be regarded neither as of limited scientific value, nor dispensable.

Site Management Statement

Introduction

This statement, prepared by Border Geo-Science and Capita Symonds Ltd. on behalf of SNH, is aimed primarily at the owners, occupiers and land managers of the GCR site. It outlines the Geological Conservation Review interest of the site, the reasons it is of national importance, and provides guidance on how its special natural features should be conserved or enhanced.

Description of the interest feature

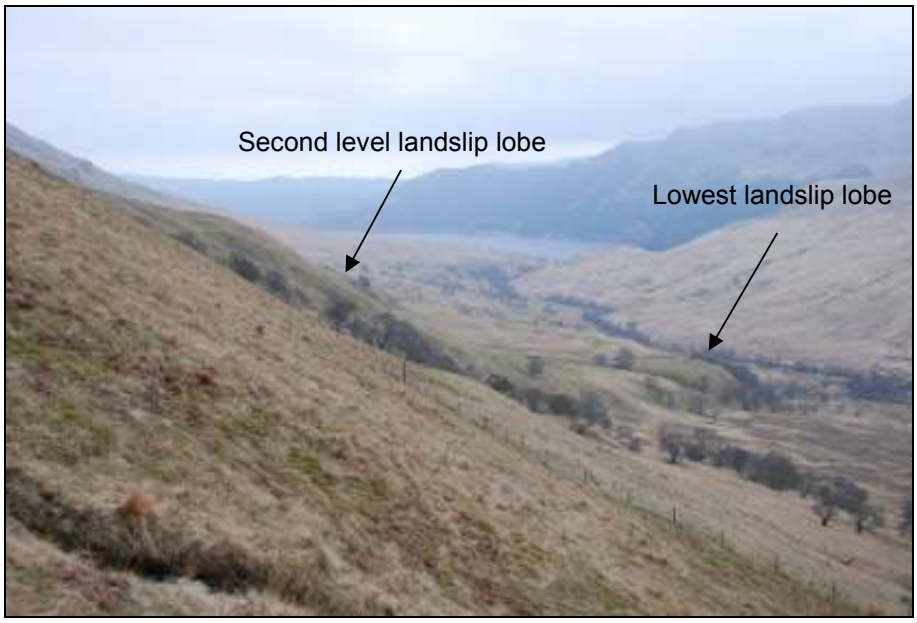
Rock slope failures are where areas on mountain sides lose stability causing slopes to deform or slip under gravity. The extensive areas of slope failure in and around the Trossachs occur on relatively low relief. The Benvane GCR site encompasses one of the ten largest rock slope failures in the Scottish Highlands, covering an area of some 1.5 km^2. The site is important due to the diversity of rock slope failure styles and features that occur. In addition, it is not obvious why such an extensive and deep-seated rock slope failure should occur here and elsewhere in this terrain (there are ten other failure complexes in the Benvane area) and for this reason the site provides an excellent basis for research into the mechanisms and triggers of rock slope failure in relatively low relief mountain terrain.

The bedrock at the site is Precambrian in age (between approximately 630 and 542 million years old). The rock slope failures have occurred within this material along a roughly north-south line of over 1 km. The failures extend beyond the brow of the broad ridge and therefore clearly demonstrates the effect that such failures can have on reducing mountain relief.

The site contains four component feature areas: a deformed ridge at the brow of the mountain (where the mass movement has altered the original mountain ridge); an area of lattice slope deformation in the northern part of the site (where extension of the rock has resulted in the development of open fractures); a translational slide (landslip) in the southern part of the site (where the land has slipped away from the upper sections of the slope); and a transitional zone in-between. Through these features, the site displays a progression from slope deformation to rock sliding.

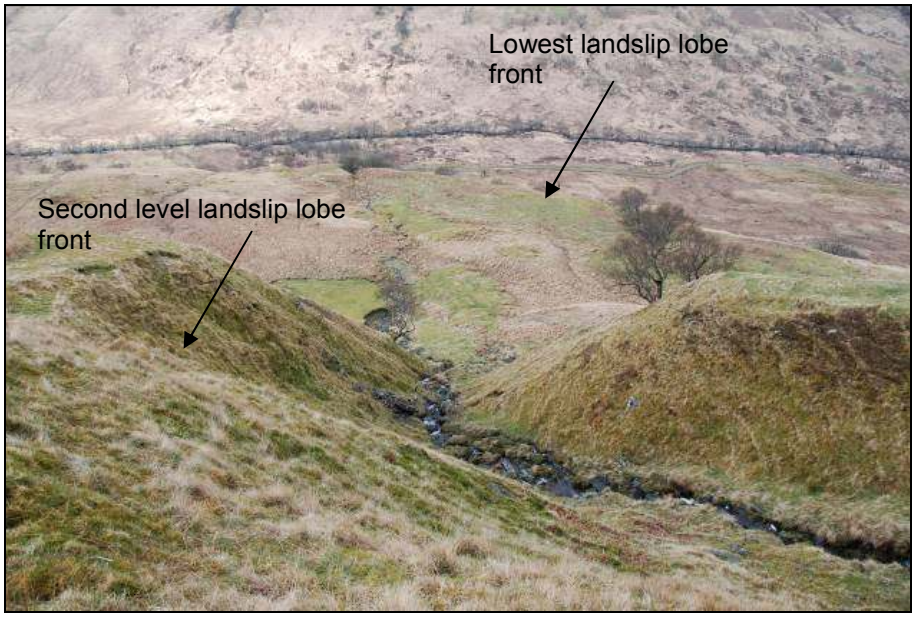
The ‘translational slide’ or landslip part of the site (in the south) appears to have involved the ‘rafting’ of large, relatively intact, slabs of bedrock. There are two well-defined, lobe-shaped slide fronts near the base of the slope; one above the other. Both are cut into (‘incised’) by streams, are characterised by localised sparse tree cover, and have rare antiscarps on their tops (antiscarps are slope facets which face in the opposite direction to the overall slope). Above these lobate fronts are two less pronounced risers. Above these, a ‘landslip bowl’ (a depression in the land surface at the top of the slipped land) can be seen and at the southern edge of this zone, the source scarp is seen, narrowing downslope.

Image 2



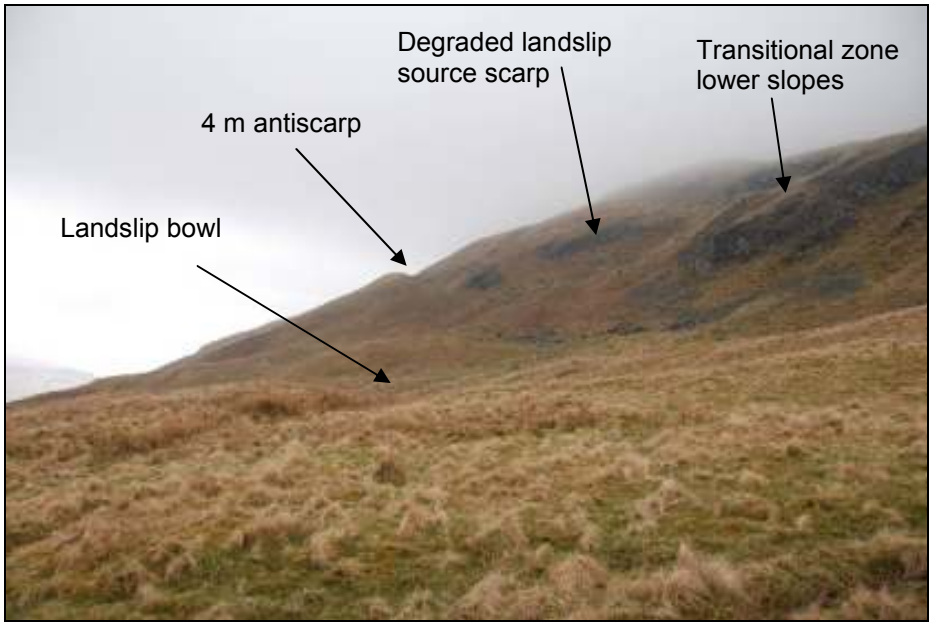
Pronounced translational slide (landslip) lobes in the southern section of the site

Image 3



An incised stream which has cut down through a translational slide (landslip) lobe in the southern section of the site

Image 4



View of the landslip bowl, a 4 m high contour-parallel antiscarp, a degraded landslip source scarp, and the lower slopes of the transitional zone.

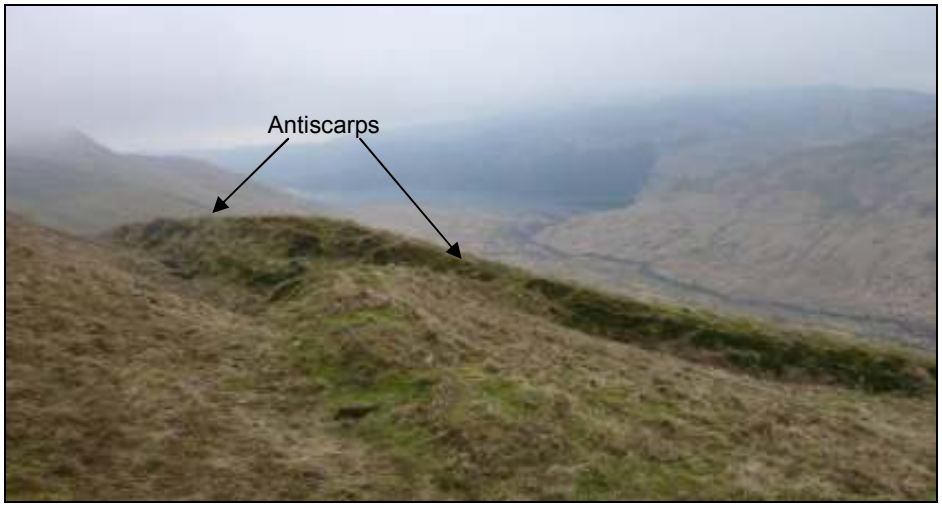
The deformed ridge contains a discontinuous zig-zag-shaped headwall of rock and a grass scarp, which is set back behind the crest of ridge by 80 to 120 m. Small fissures and antiscarp features within this area demonstrate the fracturing of the bedrock.

The ‘transitional zone’ refers to the indistinct area in between the other features of the site. This section of the site was not accessed in the April 2010 visit but the scree slope edge of the zone could be viewed from the landslip bowl.

Image 5

Lower section of the transitional zone (as indicated), viewed from the prominent 4 m antiscarp.

The lattice antiscarp array in the northern section of the site is one of the finest and most extensive in Britain with, unusually, three distinct orientations.

Image 6  	A 4 m high antiscarp (contour parallel) and intersection with cross-contour antiscarp in the area of lattice slope deformation

This area also contains several water springs, which are unusual in their position above the lowest antiscarp. An over-steepened slope is seen below the lowest antiscarp.

Image 7 	Spring in north western part of site (view upslope)

Past and present management

The site is managed by the Woodland Trust as part of the Glen Finglas Estate. Part of the lower deformation slope in the northern section of the site is fenced (seen in the foreground of Image 34) and may be part of an afforestation programme.

The area is currently open for grazing but no adverse effects have been noted as a result.

Condition of the interest feature

Although tree and shrub growth is apparent on the debris run-out this is sparse and does not obscure the form of the deposits. The site is visible from the valley footpath and the lower sections can be directly accessed with care.

Natural features of the GCR site (Geological Conservation Review Block)	**Site Condition**
Mass Movement	Favourable (July 2010)

Objectives for management

The aspiration is to safeguard and maintain the geological and geomorphological features of the site and, when the opportunities arise, to enhance the interpretive provision.

Under the Earth Science Conservation Classification system this site is considered to be an 'integrity' static (or fossil) geomorphological site. As such, the site would require holistic management, with the recognition that damage to one part of the site may have adverse effects on the whole site. In this case however, the large scale and deep-seated nature of the landslip features should mean that they are resilient to most forms of land use, land management and development that are likely to occur in this area.

1. To maintain accessibility and the visibility of the geomorphological features (for the purpose of education and research)

Tree planting or afforestation of the site has the potential to obscure the overall morphology and may aid the degeneration of smaller scale slope failure/deformation features.

Currently no removal of vegetation is required as the tree and shrub cover on the slopes is sparse. However, it may be appropriate to engage with others regarding the site and any future woodland planting and management.

The current level of accessibility of the site is appropriate.

2. To maintain the condition and extent of the geomorphological features

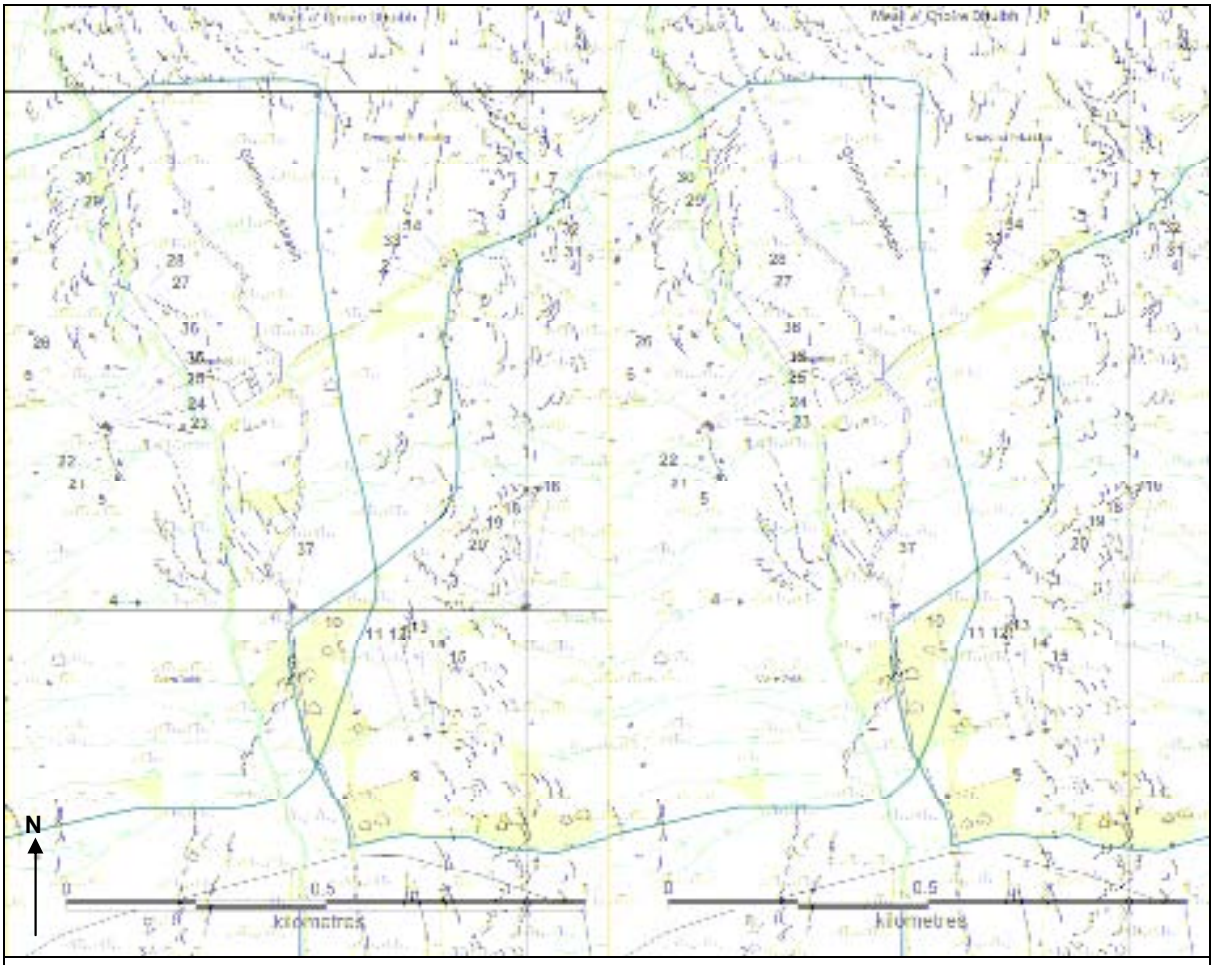
Activities that might impact on the site include future improvement of the road, or any form of development that involved excavation or reprofiling of existing slope features, and commercial forestry. Alterations to the road at the base of the slope may lead to undercutting of the slopes, and resultant instability. The creation of new pathways within the site may also be inappropriate, as these might obscure and degrade such features as the antiscarps, other lineaments, springs, and incised streams. Reprofiling through infilling of the hollows behind individual antiscarps might be detrimental to the site, as it would obscure important morphological clues relating to the processes responsible for its formation.

Any scientific investigations that include sampling or rock coring of the cliff exposures or landslipped debris must be undertaken in accordance with the Geological Code of Conduct.

3. To facilitate the use of the site as an educational and research resource

There are currently no information boards at the site, although the access track at the base of the valley might provide an appropriate location for one. This track provides a natural entrance to a number of walking routes around the site and an interpretation board here would help to promote this Mass Movement site and its conservation objectives.

Photographic record



Scale: see map

Benvane GCR

The map illustrates the locations where images used in this report were taken. The point in blue is the location where images were taken (NB photograph 8 was taken to the south of this map, from the valley road).

These images may be considered as base-line site coverage for future monitoring of the site.

Image 8 	View of the valley from the road to the south.

Image 9 	Steep front lobe of failure, with stream gully.

Image 10 	Steep front lobe of failure, with stream gully.

Image 11 	Top of lowest set of failure lobe, view to second lobe set.

Image 12 	Slope angle of ~42 deg. Front of second set of lobes.

Image 13 	Slope angle of ~42 deg. Front of second set of lobes.

Image 14 	Slope angle of ~42 deg. Front of second set of lobes.

Image 15 	Slope angle of ~42 deg. Front of second set of lobes.

Image 16 	Gully in 2nd set of failure lobes.

Image 17 	Gully in 2nd set of failure lobes.

Image 18 	Gully in 2nd set of failure lobes.

Image 19 	Gully in 2nd set of failure lobes.

Image 20 	View to transitional zone from slide area.

Image 21 	View north along major antiscarp.

Image 22 	View south to translational slide area.

Image 23 	View south to major antiscarp.

Image 24 	View south to antiscarp intersection.

Image 25 	View upslope along antiscarp that is perpendicular to contours.

Image 26 	View south to antiscarp intersection.

Image 27 	View north to gullies at northern edge of site.

Image 28 	Lower antiscarps in zone of lattice slope deformation.

Image 29 	Lower antiscarps in zone of lattice slope deformation.

Image 30 	Lower antiscarps in zone of lattice slope deformation.

Image 31 	Spring in north western part of site (down slope).

Image 32 	Spring in north western part of site (up slope).

Image 33 	View up slope to antiscarp.

Image 34 	View to front of landslip in southern part of site.

Image 35 	Antiscarp perpendicular to contours.

Image 36 	Antiscarp steeply cutting across contours.

Image 37 	Right: lowest slopes of translational slide, Left: spring area on deformation slope, above over-steepened area.

Further Information

Information on the Geological Conservation Review may be found on the GCR web pages of the Joint Nature Conservation Committee: www.jncc.gov.uk

The detailed Geological Conservation Review site report for the Benvane GCR site may be found in:

Jarman, D. (2007) In *Mass Movements in Great Britain* (R.G. Cooper), Geological Conservation Review Series, No. 33, Joint Nature Conservation Committee, Peterborough, pp. 348.

Appendix 3 - Tree Regeneration report

Regeneration in proposed deer fenced areas in Glen Fingas, Glen Meann and Glen Casaig.
(Surveyed Autumn 2010)

Method: (supplied by Ian Thomas)

The methodology is based on the FC Operational Guidance Booklet 4.

The areas marked for regeneration in Glen Finglas (WGS 03) were sampled during this survey. Only the three areas subsequently identified as requiring deer fencing to assist natural regeneration are dealt with in this paper (Groddach in Glen Finglas; 3 LEAP areas in Glen Meann East; West of Glen Casaig). This comprises a total area of 224ha. The number of plots and the relevant spacing of the plots followed FC guidance (see Appendix 1). Denser woodland was excluded from the survey.

Each plot had a radius of 5.64m. The radius was increased to compensate for slopes. The radius for a slope of 20-30deg was 5.9m, for 30-40deg it was 6.2m and for 40+deg it was 6.7m. If a plot location was inappropriate, e.g rock outcrop, road, water course, or fence, then either the plot was moved in at a right angle to the obstacle, or an extra 10m was walked in the direction of travel, as appropriate.

Inside each plot young trees under and over 50cm were noted. Obviously “mature” trees were excluded (i.e. more than a decade or two old) and trees on the plot boundary were included alternately. The density of regeneration (stems per hectare) was calculated by multiplying the number of trees in a plot by 100. Consequently, a plot with only one stem would be recorded with a density of 100 stems per hectare.

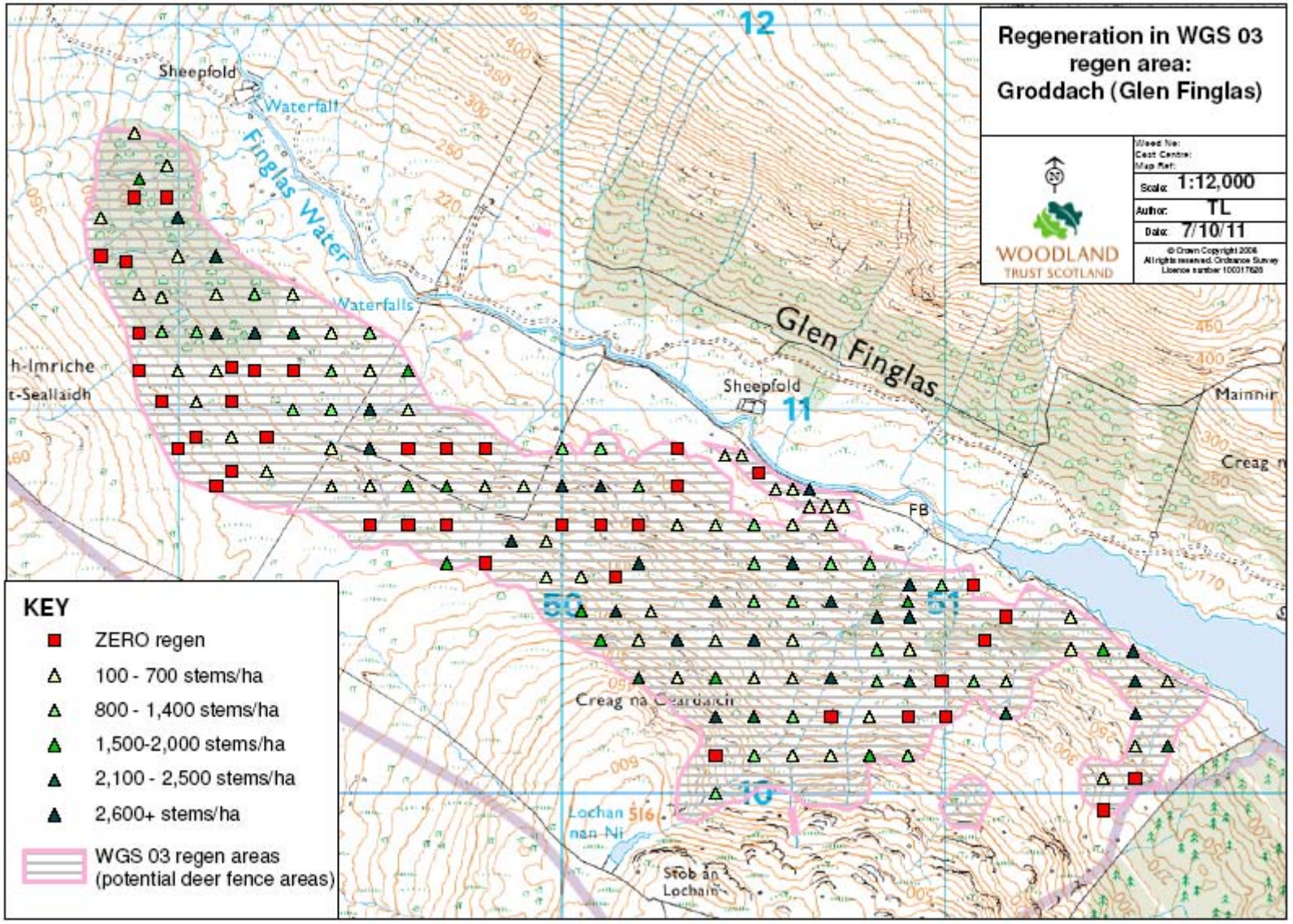
Surveyors: Ian Thomas (Contractor) & Tabatha Lamont (Assistant Estate Officer)

Results:

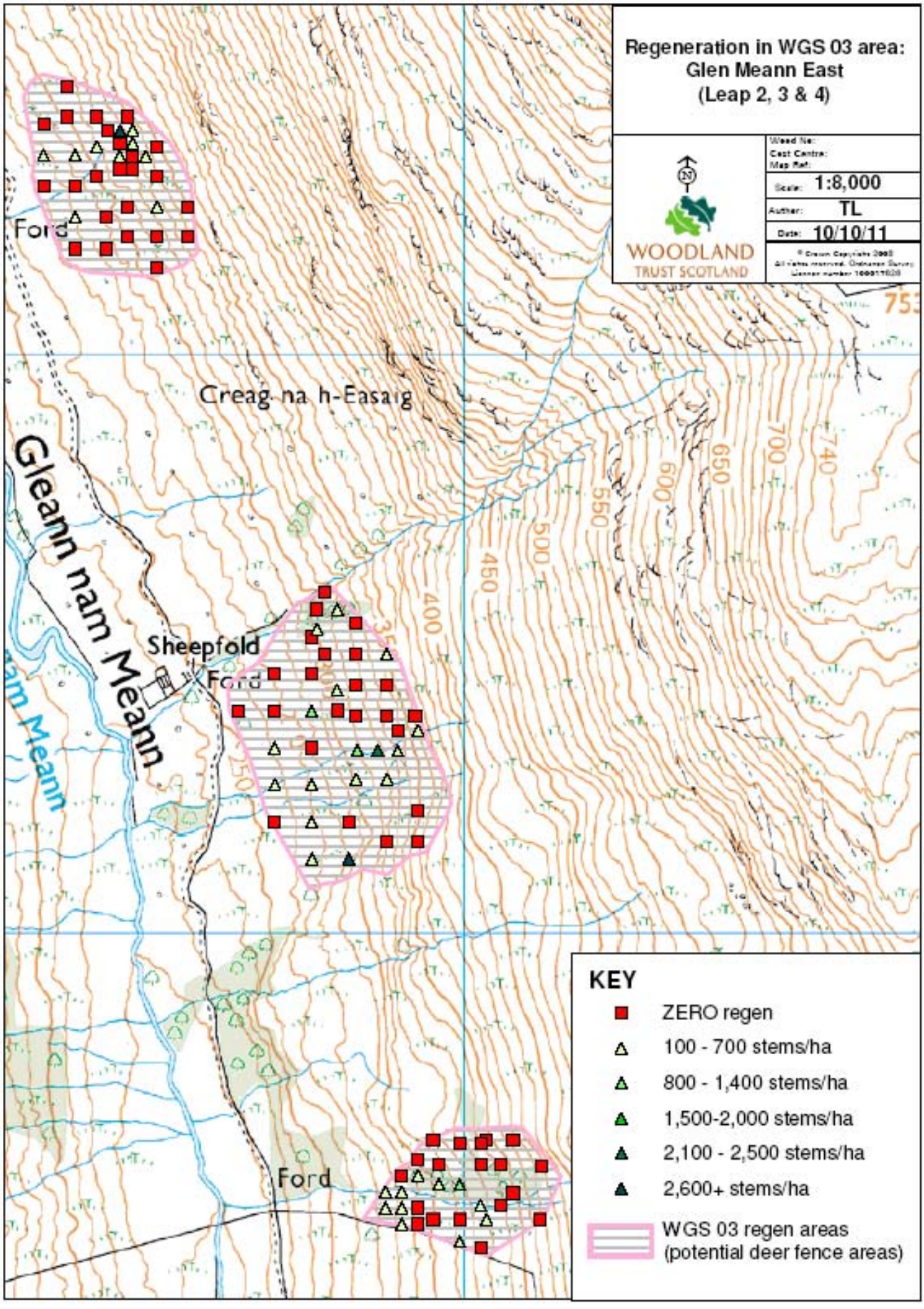
Table 1: Regeneration above and below 50cm in WGS 03 areas proposed to be deer fenced.

Comp. (total no. plots)	**Grazing**	% plots with zero regen	% plots with Regen under 50cm ONLY	% plots with Regen over 50cm
1 & 2 Groddach (158)	Stock Fence	**25%**	62%	13%
6 GM: LEAP2 (30)	Stock Fence	**63%**	37%	0%
7 GM: LEAP3 (40)	Stock Fence	**58%**	43%	0%
11 GM: LEAP4 (34)	Stock Fence	**71%**	29%	0%
16 Glen Casaig Mid (30)	Stock Fence	**33%**	63%	3%
17 Glen Casaig N (23)	Stock Fence	**48%**	48%	4%

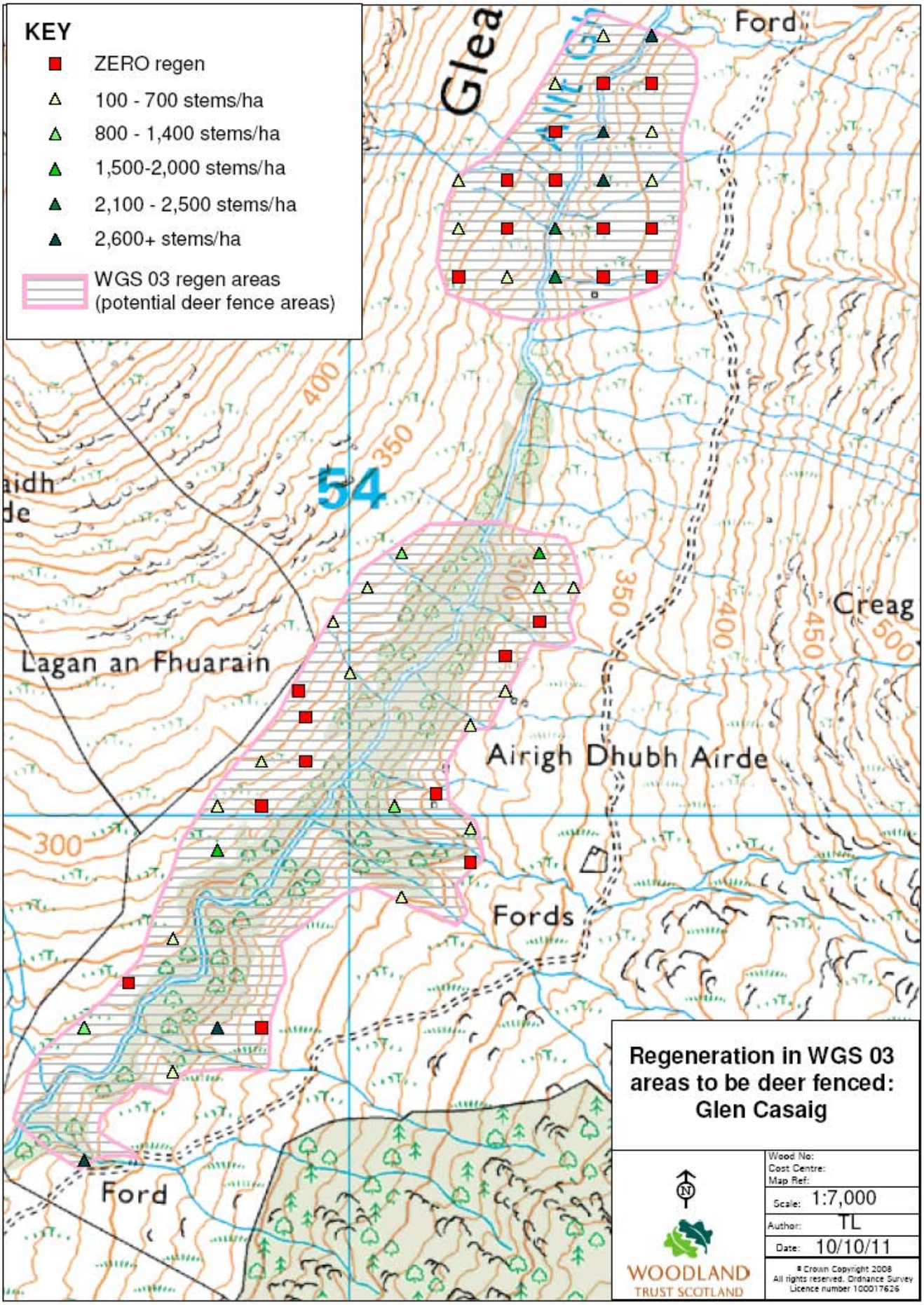
Map 1: Regeneration in WGS 03 area: The Groddach.



Map 2: Regeneration in WGS 03 area: Glen Meann East (LEAP 2, 3 & 4)



Map 3: Regeneration in WGS 03 area: Glen Casaig



Appendix 1: Grid spacing spreadsheet

COUP GROS AREA	NO. PLOT REQ'	DISTAN BETWEE PLOTS
0.1	10	10
0.2	10	14
0.3	10	17
0.4	10	20
0.5	10	22
0.6	10	24
0.7	10	26
0.8	10	28
0.9	10	30
1.0	10	32
1.1	10	33
1.2	10	35
1.3	10	36
1.4	10	37
1.5	10	39
1.6	10	40
1.7	10	41
1.8	10	42
1.9	10	44
2.0	10	45
2.1	10	46
2.2	10	47
2.3	10	48
2.4	10	49
2.5	10	50
2.6	10	51
2.7	10	52
2.8	10	53
2.9	10	54

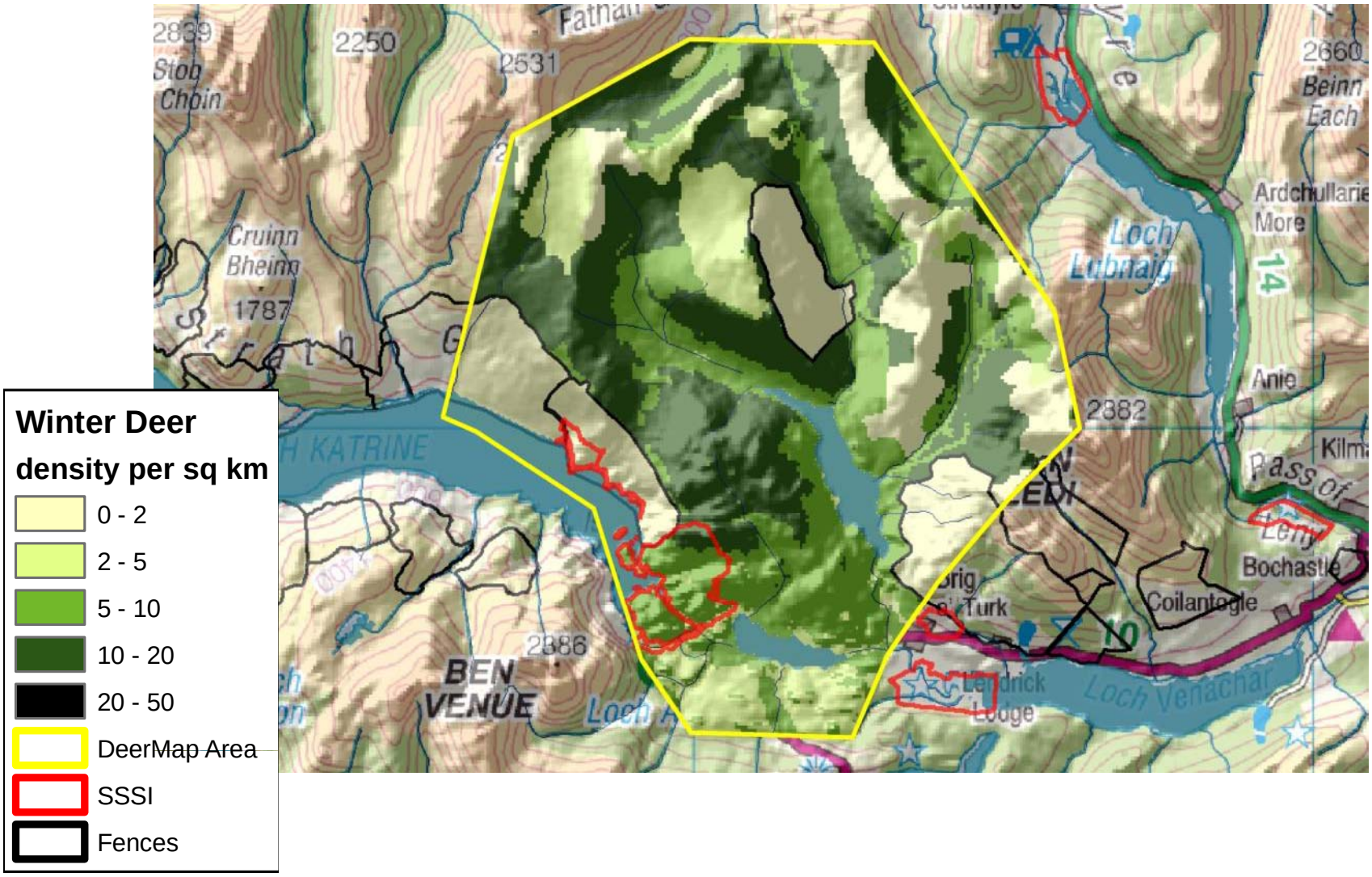
COUP GROS AREA	NO. PLOT REQ'	DISTAN BETWEE PLOTS
3.0	15	45
3.2	15	46
3.4	15	48
3.6	15	49
3.8	15	50
4.0	15	52
4.2	15	53
4.4	15	54
4.6	15	55
4.8	15	57
5.0	15	58
5.2	15	59
5.4	15	60
5.6	15	61
5.8	15	62
6.0	15	63
6.2	15	64
6.4	15	65
6.6	15	66
6.8	15	67
7.0	15	68
7.2	15	69
7.4	15	70
7.6	15	71
7.8	15	72
8.0	15	73
8.2	15	74
8.4	15	75
8.6	15	76
8.8	15	77
9.0	15	77
9.2	15	78
9.4	15	79
9.6	15	80
9.8	15	81
9.9	15	81

COUP GROS AREA	NO. PLOT REQ'	DISTAN BETWEE PLOTS
10	23	66
10.2	23	67
10.4	23	67
10.6	23	68
10.8	23	69
11.0	23	69
11.2	23	70
11.4	23	70
11.6	23	71
11.8	23	72
12.0	23	72
12.2	23	73
12.4	23	73
12.6	23	74
12.8	23	75
13.0	23	75
13.2	23	76
13.4	23	76
13.6	23	77
13.8	23	77
14.0	23	78
14.2	23	79
14.4	23	79
14.6	23	80
14.8	23	80
15.0	23	81
15.5	23	82
16.0	23	83
16.5	23	85
17.0	23	86
17.5	23	87
18.0	23	88
18.5	23	90
19.0	23	91
19.5	23	92
19.9	23	93

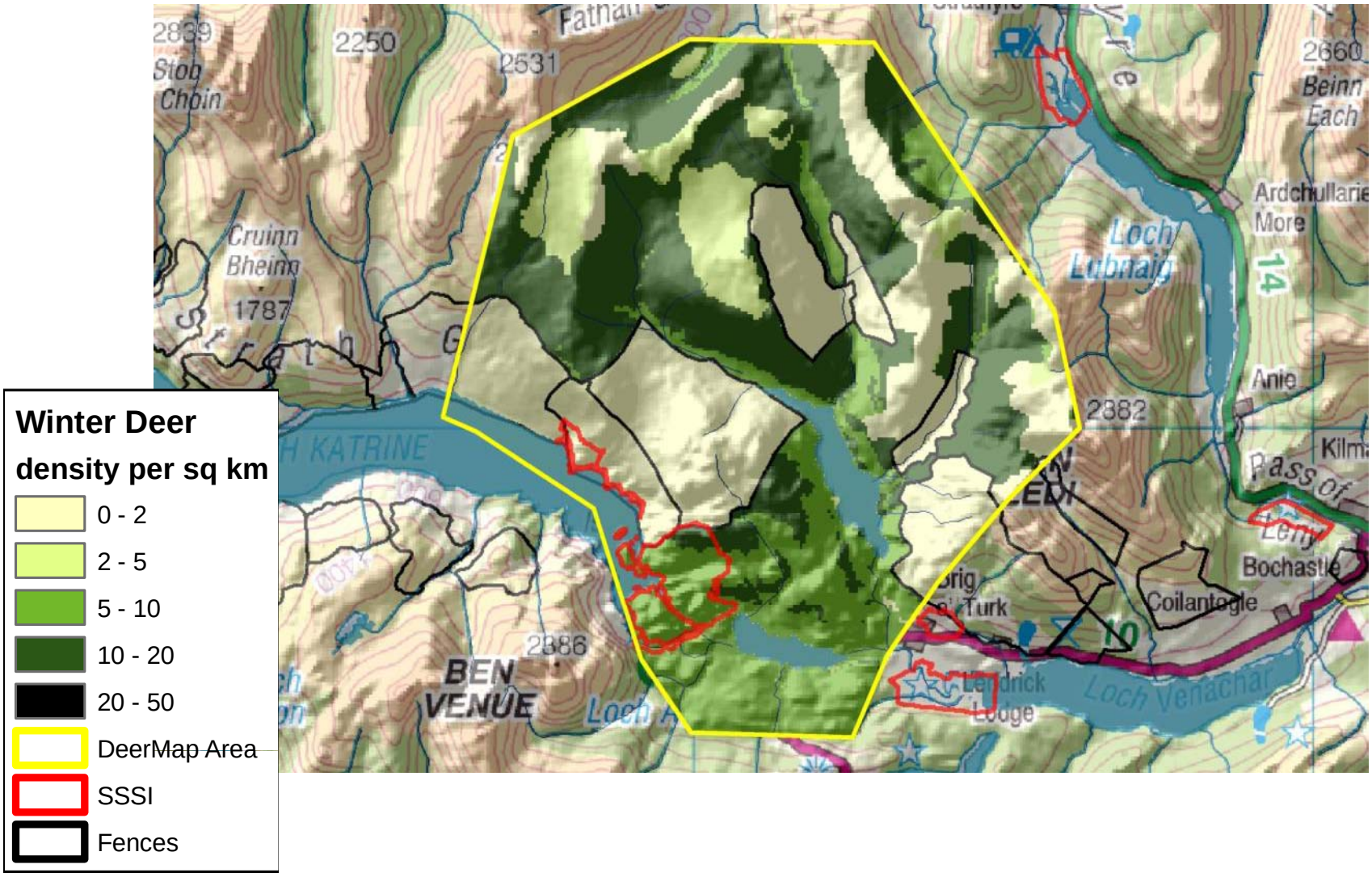
COUPE GROSS AREA(h	NO. PLOT REQ'	DISTAN BETWEE PLOTS
20	30	82
20.5	30	83
21.0	30	84
21.5	30	85
22.0	30	86
22.5	30	87
23.0	30	88
23.5	30	89
24.0	30	89
24.5	30	90
25.0	30	91
25.5	30	92
26.0	30	93
26.5	30	94
27.0	30	95
27.5	30	96
28.0	30	97
28.5	30	97
29.0	30	98
29.5	30	99
29.9	30	100
30.0 +	1 per	100

Appendix 4 – Deer Map Results

Glen Finglas
4.7 hinds / sq km, 1.8 stags / sq km
fences1 (current)



Glen Finglas
4.7 hinds / sq km, 1.8 stags / sq km
fences3 (+RSPB)



Appendix 5 – Glen Finglas Grazing Management Plan

Glen Finglas Grazing Management Plan 2012 to 2017

Woodland Trust's Approach
The Woodland Trust's approach to nature conservation is that conservation should maintain and enhance biodiversity by enabling the widest range of habitats and species to survive and evolve. We therefore take an approach that focuses on natural processes rather than species, which enables us to address a wider range of biodiversity, rather than the perceived (and often poorly understood) needs of individual species. Furthermore given the problems of fragmentation and its exacerbation by climate change, and species' need to move to keep up with appropriate climate space, we take a landscape scale approach to nature conservation.

Research shows Glen Finglas has a long wood-pastoral history (see management plan) which has enabled development of thinking within the sector about wood pasture in Scotland (it was not previously thought to have existed in Scotland). Given our approach to conservation we will not be taking a spatially explicit or species centred approach to the management of the site, but rather we seek to develop a robust, dynamic, wood pasture mosaic, able to survive and evolve in the face of climate change.

Plant and animal populations are dynamic and subject to spatial and temporal change, so whilst the nature conservation interest of Glen Finglas will always be high, due to its wood pasture history and its unimproved character, the site's specific interest will change over time. This philosophy is captured with the Management Plan's Long Term Intentions.

Long Term Intentions
The long term vision for Glen Finglas is to provide a dynamic wood pasture system incorporating a wide variety of wooded and non-wooded habitats. The system will be dynamic and the proportion of woodland and open ground will be allowed to expand and contract over time, in response to natural processes.

Given this vision for the site the key feature for the biodiversity interest will be the wood pasture and therefore the primary management will be grazing. Limits of acceptable change for the various attributes of the wood pasture are identified in the Glen Finglas Management Plan.

Grazing philosophy
Glen Finglas has been managed by mixed grazing for centuries, and before settlement, would have been grazed by wild animals such as wild cattle (auroch), elk, wild boar and red deer for millennia. It is this natural grazing, but more particularly the extensive, pastoral system of settlers to the Glen that has created the wood pasture habitat that still remains, albeit it now in a degraded state. In more recent history, from the end of the 18th century onwards, upland livestock farming has become increasingly dominated by large-scale, commercial sheep farming in this area.

So, the dynamic has changed from a wild landscape, to a low intensity pastoral one (both with mixed grazing) and then to a high intensity commercial landscape in which sheep (an animal native to the Middle East) became dominant for the first time. This dominance by sheep in Scotland, almost to the exclusion of other domestic grazing animals, was initially started by the profitable wool trade and more recently supported by late 20th century EU agricultural 'headage' payments. This has resulted in GF, together with many of the upland landscapes in GB, becoming tightly grazed and wildlife impoverished. Indeed at the time of purchase GF was reported to be one of the most heavily grazed upland estates in Scotland with over 5000 animals on its 4000ha (see Appendix 1 table), over 4900 of which were sheep. Indeed much of what remains of the wood pasture is alder, the most unpalatable of our tree species and as such one that is the most resistant to grazing pressure. Slope alder woods are also a natural feature of the Trossachs due to the high rainfall.

While some conservationists aspire to re-wilding of landscapes and re-introduction of formerly native herbivores and even some carnivores, such as wolves, there are significant blocks to such an approach, not least differing objectives of neighbouring landowners and public perceptions of safety. Doubtless debates about re-wilding will continue, but it is doubtful that truly wild systems (i.e. not just simply large nature reserves surrounded by fences) are achievable in the UK. Glen Finglas, therefore, is certainly not a re-wilding project, but we do aspire to a much more extensive approach to grazing, in which sheep cease to dominate and mixed grazing once again truly harnesses the benefits of different types of grazing animals. In this sense we are seeking, as far as is possible given the constraints within which we operate, to develop as natural a grazing system as possible. We believe that in this way vegetation dynamics can be let loose and tree regeneration can once again be recruited.

Clearly most of the primeval wild herbivores are extinct - there are no aurochs, no elk and no wild boar. However we do still have red deer and we do have the descendents of the auroch, our domestic cattle. These then will be the basis of the new system of grazing and therefore the balance will continue to shift from dominance by sheep to a more mixed approach in which, at least, philosophical priority will be given to deer (as the natural wild grazer), then cattle as the descendent of the auroch and the animal most appropriate to encourage a diverse sward and conditions suitable for generation, and finally sheep.

Sheep

There is much debate amongst conservationists, and much published, about the merits of sheep as grazing animals. Research into foraging behaviour shows that when not shepherded and allowed to graze extensively sheep are much more affected by the scale of heather fragmentation than deer and their habitat use was more closely focused on paths and grass patches, particularly large grassy patches, which contrasts with the more even use of the mosaic by deer[1]. The same study found their movement from grassy patch to grassy patch caused path creation through the heather, and therefore further fragmentation. This is different from the habits of deer, which while similar in grazing technique, browse a much wider range of forage over a much larger area and therefore help to maintain the structural heterogeneity of the vegetation across the whole landscape.

Glen Finglas is not large enough to act as a herd's home range and we have relatively little control over deer numbers. This is because some neighbouring landowners have differing objectives to WT. The sporting estates to the north which rely on stalking income but also keep sheep would be quite happy were the numbers of over-wintering deer at Glen Finglas to rise, but this would increase pressure on the neighbouring FES and RSPB estates whose objectives include the creation and establishment of woodland. Following a compensatory cull to allow for the deer fencing of the regeneration area on the Groddach, deer control will continue at levels similar to the present. We will be retaining a small hefted flock of sheep (c. 300), such that we have both a surrogate for unacceptably increased numbers of deer and also flexibility in terms of hefted grazing animals, at least in the short-term future. Cattle will reduced to approximately 60 breeding cows plus followers, along with approximately the same number of adult steers.

There are now an increasing number of large conservation sites where variations on such an approach are being adopted[2]. In some, such as both Glenmara Park[3] & 'Wild' Ennerdale[4] in The English Lake District and Glen Garry[5] in Scotland. At these sites cattle are the preferred grazing animal as they are thought to provide biodiversity benefits at low densities, creating a structurally diverse sward as they eat vegetation of low digestibility and break up vegetation mats with hooves, creating conditions for regeneration. The mixed element of the grazing is provided by wild deer. However regardless of livestock used, increasingly such projects are seeking to allow animals to behave and graze more naturally, throughout the year, without the constraints of fences, and to develop mixed age herds so that older animals get to know the sites. Such an

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[1] Hester A.J., Gordon I.J., Baillie G.J., Tappin E. (1999) Foraging behaviour of sheep and red deer within natural heather / grass mosaics. Macaulay Land Use Research Institute. Journal of Applied Ecology. 36:133-146

[2] Vakblad NATUURBEHEER (2002) Special Issue "Grazing and Grazing animals" *for numerous Dutch examples*

[3] Nugent E. (2003) Wood Pasture Management in The Lake District ESA The example of Glenamara Park, Patterdale. Rural Development Service, Penrith.

[4] http://www.wildennerdale.co.uk

[5] West Highland Woodland Grazing Project (2005) Livestock in woods. Spring newsletter.

approach is more natural in character and allows vegetation dynamics to take place more freely, so essential in time of rapid climate change when to try and preserve features in situ is untenable (as is the case with traditional 'enclosed' conservation management). In reality a free-ranging more natural grazing system is likely to see grazing of more palatable areas first, but it will also see other areas become more rank and tree regeneration to take place.

In such a system bracken becomes part of that dynamic. Clearly there are limits above which bracken cover is unacceptable, but stands of bracken should not be seen as a problem in themselves. Indeed in many cases bracken stands are the places where regeneration may appear in some density. They are not subject to grazing pressure, but are subject to trampling as cattle move around the site, or indeed seek some light cover. Such trampling will not only help to suppress the bracken, but will also provide conditions for regeneration.

Tree Regeneration Success

Deer and sheep numbers are detailed in the attached Appendix 1. These figures show that by 2011 the grazing pressure (including deer) had been reduced by 53% of what it was in 1995 when Glen Finglas was acquired by the Woodland Trust (See Appendix 1).

While this may have addressed some of the more acute issues associated with the estate before we bought it, we are still, 16 years on, not getting any significant regeneration outside of the deer fences (see points above about deer and sheep). In addition, regeneration in areas where livestock are excluded (e.g. the Groddach) are not establishing due to deer browsing. This lack of new native woodland regeneration in the upper glens, despite the presence of seed trees, is the main driver to changes in grazing management proposed for the current plan period.

Grazing Management by Glen –To help evaluate the impact of grazing regimes and grazing and browsing animals on tree establishment, a different approach will be taken in each of the 3 upper glens in terms of grazing management from 2012. Glen Casaig is to have no grazing by cattle or sheep. Grazing regimes will be different in each of the other two glens. Glen Meann is to have year round sheep grazing, and summer only cattle grazing. Glen Finglas is to have year round cattle and sheep grazing. The intention is to maintain these regimes for the 5 year duration of this management plan as a minimum to allow for monitoring to begin to detect any changes in tree seedling development.

The intention is to maintain in the region of 60 adult breeding cows, comprising approximately 30 in Glen Meann and 30 in Glen Finglas during the summer months. The breeding herd would be maintained by the addition of 10-12 heifers each year. 2 or 3 bulls will be employed. Steers (male castrates) will make up the balance of the adult cattle with approximately 30 all year round in Glen Finglas, and 30 on the low ground at Milton. Actual numbers may alter based on experience.

While the figures in Appendix 1 give numbers of animals, this should be a guide. In a more natural system we should aim to see some fluctuations in numbers year to year, as a management guide say 10-20%

Single management unit - We will operate an open-gate policy to start with, rather than undertaking costly removal of fences (albeit this could be a job for volunteers). However if desire lines through gateways are getting poached, a distance of fencing will be removed either side. As fences deteriorate they will not be replaced. Most of the site to the north of the A821 will be managed as one unit and grazing will take place throughout the year. As areas planted with trees, behind deer fences, come out of the Woodland Grant Scheme (WGS) they will also be opened to grazing, such that eventually the whole site is grazed as one unit.

Low Ground Winter Cattle Grazing

The practice of bringing pregnant cows and heifers to the land near the village (Compartments 2, and 7) will continue to allow for conservation grazing of these areas. However the intention is to change to in-wintering the in-calf heifers (approximately 15 no.) as well as the growing heifers (approximately 15 no.) using existing under-utilised shed space. . This practice would take into account the need to maintain grazing of the lower fields, balanced against current levels of trampling as well as cattle welfare issues. This would allow for summer only grazing of Wester (Compartment 4) and Heifers park (part of Compartment 7).

Cattle condition and supplementary feeding - Limits of acceptable change will be set for the cattle based on the accepted 'condition score' method. It is not anticipated that condition will be allowed to drop below 2 for most of the year. The SSPCA would be seeking confirmation that at all times the livestock will have adequate access to clean water, sufficient suitable food and enough shelter. It is essential that "shelter" is not confused with "housing"; indeed the most natural of all shelters is a tree, followed by a cave or a rock. There is a legal requirement for all livestock in the UK to enjoy the "5 Freedoms",[6]

- Freedom from hunger and thirst
- Freedom from fear and distress
- Freedom from discomfort
- Freedom from pain injury or disease
- Freedom to express most normal behaviour

and it would not be our intention to contravene this approach to animal welfare.

In a more natural grazing system the animals' condition will fluctuate considerably and supplementary feeding may have to be used in periods of total snow cover or if body condition plummets, but not as a matter of course. Supplementary feeding, most likely concentrates in the form of "cow-rolls" which are large nuts placed directly onto the sward, will be used. Feeding should be taken to where the cattle are, rather than being fed in the same place- this method ensuring the least disruption to normal foraging behaviour. Any supplementary feeding could also be used to encourage bracken trampling in certain areas.

The ewe flock of 400 with its replacements will be reduced to about 300, as a result of the removal of livestock from Glen Casaig,,plus flock replacements possibly housed for the winter period.

Deer numbers will be reduced following a compensatory to allow for the proposed new fenced exclosures in all 3 glens (see Appendix 2). The cull will reduce to allow for the loss of open hill range, but effort will be maintained in the light of current browsing pressure outwith and within the deer fences.

[6] The Welfare of Farmed Animals (Scotland) Regulations 2000

Appendix 1

Glen Finglas Grazing management 2012-17

Domestic livestock numbers at Glen Finglas

The historic priority in terms of grazing animals was 1st sheep, 2nd cattle, 3rd deer. The current priorities are be 1st deer (as the natural, wild grazer), 2nd cattle (as the grazing animal most appropriate to encourage a diverse sward and recruitment of regeneration, 3rd sheep (as a surrogate for further deer and in order to keep flexibility in our grazing system). Deer control is to be maintained as evidence to date indicates that numbers are still too high to allow for tree regeneration outwith deer fences. Reduction in numbers of deer planned for current management plan period reflects a compensatory cull to take account of the lost deer range as a result of planned new deer exclosures.

Grazing animals	**Acquisition total in 1996 (management plan)**	**LU**	**Total LU equivalent**	**Approx available ha**	**LU/ha**	**NOTES**
Ewes	3850	0.10	385	4038	0.113 with deer 0.146	4038ha total estate size Hoggs and cattle fed over winter
Tups	110	0.13	14			
Hoggs	950	0.02	3			
Cows	100	1.00	50			
Bulls	3	1.50	5			
Deer	c524	0.25	131			
		Total LUs	**588**			
Grazing animals	**Total at 2005 (management plan)**	**LU**	**Total LU equivalent**	**Approx available ha**	**LU/ha**	
Ewes	1810	0.10	181	2887 dom 3354 deer	0.079; With deer 0.080	2887ha forage area paid by SEERAD. LU/ha down by 0.034 from time of acquisition (a reduction of 30%) Or 0.080 if deer inc =45%reduction
Tups	60	0.13	8			
Hoggs	530	0.02	2			
Cows	63	1.00	31			
Bulls	4	1.50	6			
Deer	c160	0.25	40			
		Total LUs	**268**			
Grazing animals	**Total at 2011 (management plan)**	**LU**	**Total LU equivalent**	**Approx available ha**	**LU/ha**	
Ewes	300	0.10	30	2887 dom 3354 deer	0.055 0.061	LU/ha reduction by a further 0.024 amounting to a further 30% reduction in grazing pressure. (or 0.019 if deer incl =24%). Since acquisition this is a grazing pressure reduction of 51%.
Tups	12	0.13	1.6			
Hoggs	70	0.02	1.4			
Cows	120	1.00	120			
Bulls	4	1.50	6			
Deer	C180	0.25	45			
		Total LUs	**204**			
Grazing animals	**Future Total (agreed at 01/02/12)**	**LU**	**Total LU equivalent**	**Approx available ha**	**LU/ha**	
Ewes	300	0.10	30	2887 dom 3104 deer	0.063 0.070	Although this appears to show an increase in grazing pressure, for the plan period, there has been a recalculation of Lus resulting
Tups	10	0.13	13			
Hoggs	90	0.02	18			
Cows	60	1	60			

Bulls	2	1.5	3			from a more accurate breakdown of domestic Lus as well as a more accurate assessment of actual livestock numbers. The removal of 22 cows and 100 ewes and followers from Glen Meann represents a real reduction in Lus from the previous plan period.. (Further areas will be added to the grazed area in the future as trees planted under WGS become established and fences are removed.)
Steers	60	0.8	48			
Heifers	15	0.6	9			
Deer	C150	0.25	37			
		Total LUs	**218**			

Appendix 2

Glen Finglas Deer Management Plan 2012-17

Introduction

The 4875ha Glen Finglas Estate lies within the Trossachs 5 miles west of Callander and within the Balquhidder Deer Management Group area.

Both roe and red deer are present on the property. To date there have been no sightings of Sika deer although they are known to be present in the neighbourhood. Deer are considered to be an important species within the woodland and open range habitats.

One of the key features of the site is Wood Pasture and this is to be managed mainly by grazing by wild deer and domestic cattle and sheep. Philosophically deer will be given first priority being the only large herbivores native to the area.

It is intended to maintain their populations at levels at which in the long-term will allow a mosaic of woodland and open ground habitats to develop across the property with an expansion in woodland and scattered tree cover as per the "Limits of Acceptable Change" identified in the Glen Finglas Management Plan.

Deer Counts

Since the Woodland Trust acquired Glen Finglas in 1996 the red deer population has been reduced from approximately 500 to less than 200, mainly as a result of compensatory culls to take account of the reduction in range as a result of erecting the deer fences around the two large areas of new woodland planting on Lendrick Hill and Glen Meann West. Roe deer tend to frequent the lower ground although they have occasionally been found high up on Lendrick Hill and within the upper glens. They have been kept at low numbers particularly within the newly planted Lendrick Hill deer fenced enclosure.

The results of whole estate red deer counts are given below:-

Date		**Stags**	**Hinds**	**Calves**	**Totals**
March 1997		182	268	74	524
August 1998		26	210	88	324
May 1999		48	195	64	307
March 2000	Helicopter	20	188	64	272
May 2000		42	109		151
August 2000		53	194		247
August 2001		33	123		156
December 2001		34	138	47	219
April 2002	Helicopter	115	193	30	338
August 2002		32	172		204
January	Helicopter	7	74	28	109
March 2003	Helicopter	72	43	28	143
April 2005	Helicopter	116	43	22	181
Av Jan-Feb 06		77	67	24	168
March 2010	Helicopter	83	64	19	166
March 2012	Helicopter	107	27	9	143

The open hill counts show that the number of red deer on the areas of the property accessible to them (ie out with the deer-fenced new woodland areas) has reduced from over 13 deer/km2 in 1997 to under 5deer/km2 in 2010.

Although the average red deer density on the upper part of the property outwith the deer fenced woodland creation areas is low, at about 4deer/100ha, there are areas in which the average local density is high. These are in Glen Casaig (8deer/100ha), the Groddach (Glen Finglas S) (11deer/100ha) and the Mell (Glen Finglas North) (16deer/100ha). Periodic large herds are seen in these areas with densities of over 40deer/100ha being occasionally counted. All these are areas adjacent to wooded areas in which sapling naturally regenerated trees are being browsed.

Tree Regeneration and Browsing

A regeneration survey was carried out in 2010 within areas currently fenced to exclude either livestock, or livestock and deer with the aim of achieving some degree of woodland establishment by natural regeneration. This regeneration survey provides evidence that natural regeneration is present at densities varying from 100 trees up to 2600 trees per hectare within fenced enclosures. The broad pattern indicates however that in the absence of fencing to exclude deer as well as domestic livestock, whilst regeneration is present and frequently at densities in excess of 500 stems per hectare, browsing is preventing the young trees from getting above surrounding vegetation height. Within deer fenced areas on Lendrick Hill (Compartment 8) and Glen Meann West (part of Compartment 11), regeneration is at higher densities, and most is above 50cm in height. The 2010 survey included for 4 no. one kilometre transects outwith these fenced areas. These transects indicate the presence of regenerating trees outwith current exclosures, with on the lower ground some of these become established at over 50cm in height. Whilst tree numbers were found to be low, they are considered to have the potential to contribute to the mosaic of wood pasture.

Current Deer Management

Since March 2002 the Woodland Trust has employed a full time Ranger who currently spends over half of his time on red and roe deer stalking together with deer monitoring on both Glen Finglas and Milton. The Ranger is qualified to NVQ Level 2 and is equipped by the Trust with a 4WD vehicle, quad bike, argocat and own working dogs. There is a lease with the Forestry Commission to allow for the use of the deer larder at Strathyre, and the deer carcasses are sold to game dealers for venison. Larder sheets giving the weights of the deer culled and other information are completed. Glen Finglas Estate's deer operations are accredited to Scottish Quality Wild Venison standards.

Over the past few years approximately 100 red deer and 15 roe deer have been culled annually. It is considered that the population recruitment is likely to be in the region of 30-40%. The level of culling over the past 2 years has been approximately 3 to 4 times the rate of recruitment from the Glen Finglas population alone, showing that there is an ongoing incursion of red deer from other parts of their range.

Cull Targets Targets have been set annually for the numbers of red deer to be culled. When targets have been set for the whole Balquhidder Deer Management Group these have been reported and agreed at the group meetings. Recently no targets for individual estates have been set by the local deer group, although culls are reported to the Group.
Glen Finglas culls in recent years have been:

Year	Stags	Hinds	Calves	TOTAL RED DEER	Roe
2005-06	31	29	22	82	
2006-07	23	30	15	68	
2007-08	37	9	3	48	22
2008-09	6	47	19	72	
2009-10	30	51	7	88	2
2010-11	22	93	18	133	28
2011-12	37	39	9	85	26

The recent 2010 deer counts on Glen Finglas and Milton indicate a red deer population of 83 stags, 64 hinds and 19 calves. The most recent March 2012 deer count was 107 stags, 27 hinds and 9 calves.

In 2012/13 it is intended to carry out a compensatory cull of approximately 15 hinds on the Groddach to allow for the eventual exclusion of deer from this area through the upgrading of fences to deer height in 2013 as anticipated. For the next few years, and in all likelihood for the period of this plan, it is otherwise intended to maintain current cull, with only a slight reduction in the light of the expected continuing

negative impact of deer browsing on tree regeneration which will occur in the remaining unfenced areas. The manipulation of livestock grazing between the 3 glens as described, combined with continued monitoring of tree regeneration and habitat quality, will allow the assessment of relative browsing impacts and hence inform future deer cull targets. This cull target will initially be set at 30 stags and 60 hinds and calves, with the hind cull reducing to 50 to 55 once proposed deer exclosures in the 3 glens are established.

Roe deer have only occasionally been seen in the upper parts of the property but will be kept at low enough numbers within the deer fenced woodland creation areas on Lendrick Hill and Milton such that browsing of the naturally regenerated and planted trees is insignificant. Based on previous years this will be achieved by spending sufficient time within this area to shoot approximately 20 roe deer per annum.

Cull targets for future years will be adjusted according to the results of surveys of tree regeneration and vegetation, together with the regular vantage point deer counts and information from neighbours. It is proposed that unless a particular problem arises that all the deer will be shot in season. Night Licences will be sought as necessary to allow for control in specific locations. Should there be a red deer break in to the deer fenced enclosures or a significant build up of deer numbers in the stock fenced natural regeneration areas then out of season stalking may take place subject to currently proposed SNH notification procedures.

Collaborative Working

As deer are wild animals and range over large areas it is essential to continue to collaborate with neighbouring landowners and managers in planning and undertaking red deer management in particular. The Great Trossachs Forest project offers increased opportunities for RSPB, FCS and the Woodland Trust to work together and has already resulted in a draft strategic deer plan for the area. This plan is the basis for the proposals to establish new deer exclosures on Glen Finglas as described in this document and offers continued scope for joint working. In addition the Glen Finglas Estate will continue to be a member of the Balqhuidder Deer Management Group (BDMG) and report proposed and completed culls to the Group. The Trust will also feed into and help develop a management plan for the BDMG in consultation with Scottish Natural Heritage.

Cull targets by Location

The cull targets given below are given as a guide to where the stalking effort will be required but will be adjusted according to where the deer are actually present on the ground.

Agricultural Land and Woodland: (Compartments 1—7)

Mainly roe but periodically groups of red deer frequent the low-level agricultural land and woodlands around Brig o' Turk, Lendrick and Venachar. Red deer in particular have in the past caused damage to the improved grassland required for silage or hay and also are a danger to road traffic on the A821 at night. Recently evidence of roe deer pressure on the lower part of the deer fence around Lendrick Hill has been observed. The deer are mainly working their way down from the dense Forestry Commission Scotland plantations above Wester and at Milton. The number of deer migrating from Achray West to Wester has reduced significantly over recent years since the construction of a deer fence by Forestry Commission Scotland around the adjacent restock site and increased their stalking pressure in that area.

The Ranger and Farm staff are to keep an eye on these areas particularly in the Spring but it is expected that only the occasional red or roe will be culled.

Lendrick Hill (Compartment 8)

Any red deer, which manage to gain entry to the deer fenced enclosure, are to be culled at the earliest opportunity with the aim of completely excluding red deer from this area until the trees are above browsing height.

The dense vegetation on the lower hillsides means that a small population of roe deer will remain. Their numbers are to be kept at a low level so that significant damage to planted and naturally regenerated trees is not occurring. It is estimated that this will require approximately 10 roe deer to be culled annually. The area is to be walked regularly by the Ranger to monitor any browsing damage and appropriate action will be taken should this become noticeable or if there is significant evidence of deer on the ground.

The deer fence is to be checked on a regular basis for bird strikes and to ensure that there are no holes through which deer are gaining access to the exclosure.

Likely annual cull target 10 Roe deer

Glen Casaig (10)
The local population in this glen will be maintained at the current level by culling the annual increment and also to take account of the ingression of red deer which appears to be occurring in this area. There is potential for pressure on the deer fence around Lendrick Hill and also on the proposed deer fence upgrade on the exclosure in the valley bottom along the Casaig Burn.. The deer tend to graze on the open hill particularly in the Upper Farm Parks during springtime but they do also shelter within the wooded areas. Monitoring of browsing levels on the open hill will be undertaken as part of the programme of tree regeneration and vegetation monitoring set up in 2011. The proposed new deer fenced exclosure boundary is to be checked as per Lendrick Hill.

Likely annual cull target 5 Red stags; 15 Red hinds and calves

Glen Meann (11)
Any red or roe deer, which gain entry to the deer fenced enclosure in Glen Meann West are to be culled at the earliest opportunity.

The existing deer fence and the proposed new deer fenced exclosure are to be checked as per Lendrick Hill.

The annual increment of the population remaining within this glen will be culled. Monitoring of browsing levels on the open hill will be undertaken as described above for Glen Casaig.
Likely annual cull target 5 Red stags; 10 Red hinds and calves; 6 roe deer

Glen Finglas (12)
This area includes the deer beats with the highest average densities of red deer (The Mell and the Groddach) and therefore the majority of the annual cull will be taken here.

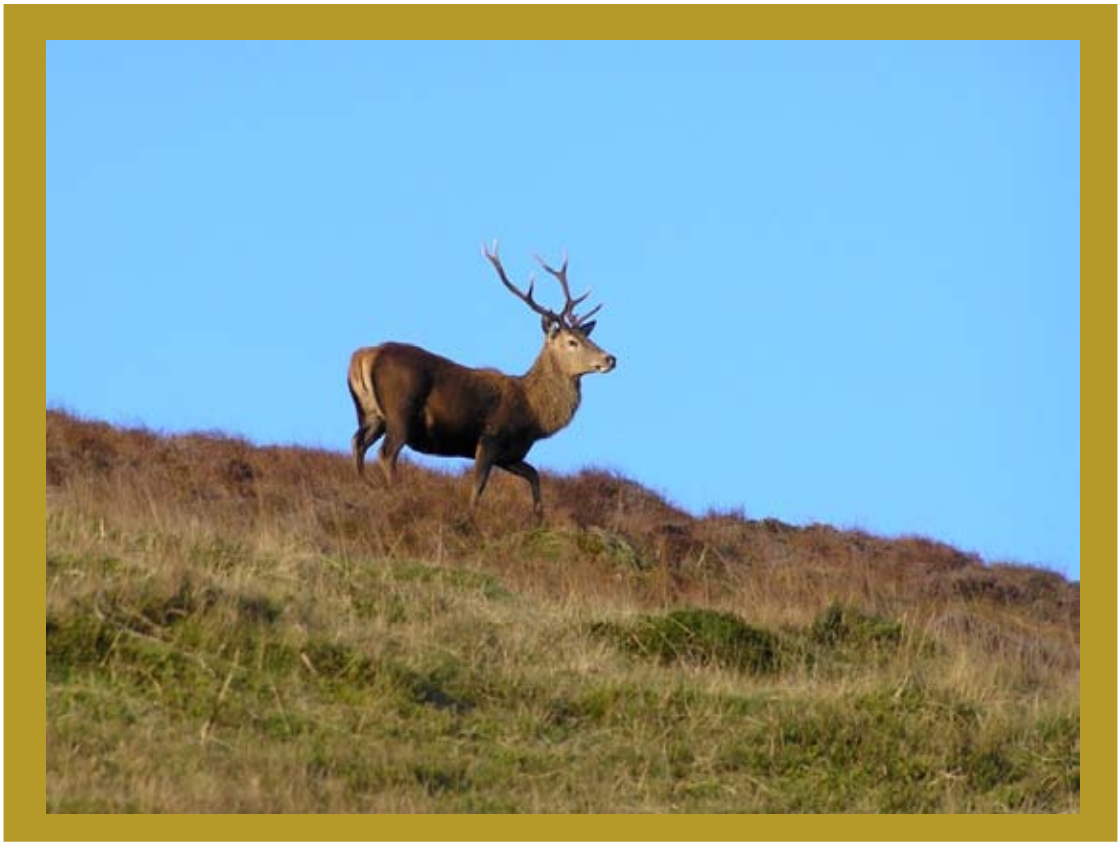
The proposal to upgrade the stock fence on the Groddach will remove a significant area of open hill range which will result in a reduction in the local population which will be reflected in the cull target. The proposed new deer fence is to be checked as above. Monitoring of browsing levels on the open hill will also be undertaken as described above.

Likely annual cull target 15 Red stags; 30 Red hinds and calves reducing to 20 to 25 once the new deer fence on the Groddach is erected.

Milton
The Red deer tend to move between Milton and Glen Casaig.

Likely annual cull target 5 Red stags; 5 hinds & calves; 6 roe deer

Appendix 6 – Great Trossachs Forest Deer Management Plan



THE GREAT TROSSACHS FOREST

The Management of Deer within The Great Trossachs Forest 2012-2017

Supported by BP through the Scottish Forest Alliance

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Coimisean na Coilltearachd Alba

WOODLAND TRUST SCOTLAND

1) Introduction

The Great Trossachs Forest Deer Management Plan (TGTF DMP) has been written and produced in partnership by all three of the land owning partners Woodland Trust Scotland (Glen Finglas Estate), Forestry Commission Scotland (Loch Katrine) and RSPB Scotland (Inversnaid Nature Reserve).

TGTF DMP has been designed to accompany the individual partner organisation's site deer management plans for deer management. TGTF DMP therefore presents the strategic context, direction and actions for the management of deer within The Great Trossachs Forest (TGTF). It also addresses the landscape scale cumulative factors which are not covered by the individual site level plans as well as internal and external communication processes. However, TGTF DMP does not set out how deer will be managed on a day to day basis as this is adequately addressed by the individual partner organisations deer management plans (see appendices for more information).

2) Strategic Context

TGTF DMP does not exist in isolation as it draws on best practice guidance and legal requirements as set out by SNH. TGTF sits within the larger Balquhidder Deer Management Group Area. This therefore ensures that all partners maintain high standards and good practice with regard to deer management.

2.1 National context

The diagram below illustrates the key documents to support the management of wild deer across Scotland.

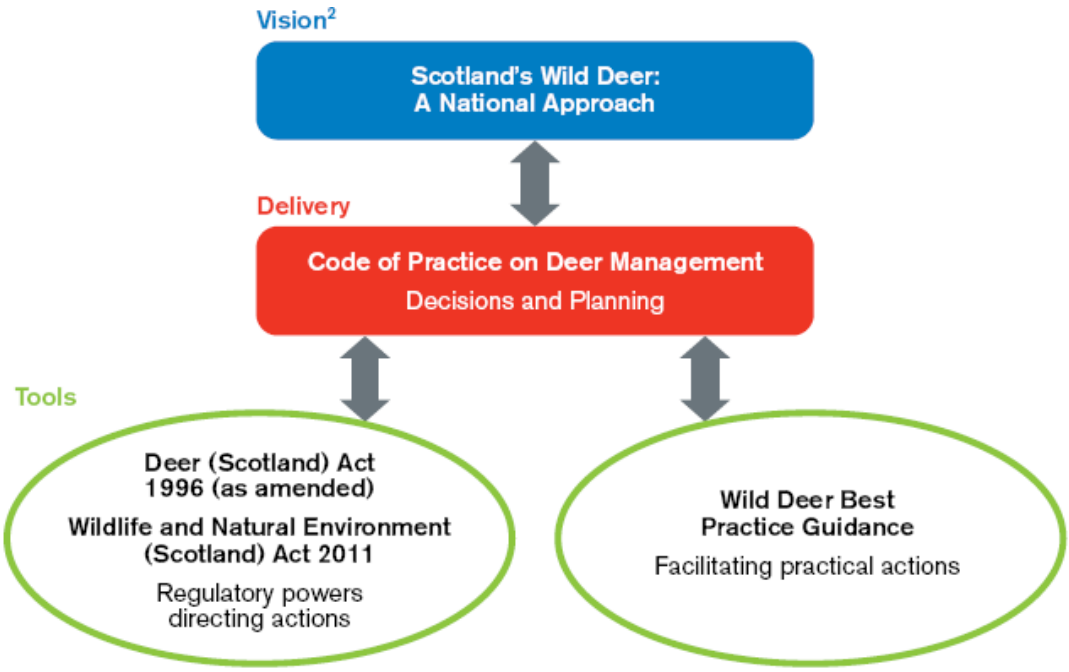

Figure 1: National Context of Deer Management. NB Diagram taken from SNH's Code of Practice on Deer Management document

2.2 Local context

This DMP is also a key strategic document in a local context. TGTF sits within the Balquhidder Deer Management Group (BDMG) area. A Deer Management Plan for BDMG is currently being developed and it is anticipated that TGTF DMP will provide a major contribution to the compilation of this document.

It is anticipated that the Balquhidder Deer Management Plan will provide the overall direction for the management of wild deer in this part of Scotland. TGTF DMP sits underneath this, and above the three individual partner organisation's Deer Management Plans by providing the overarching strategic context.

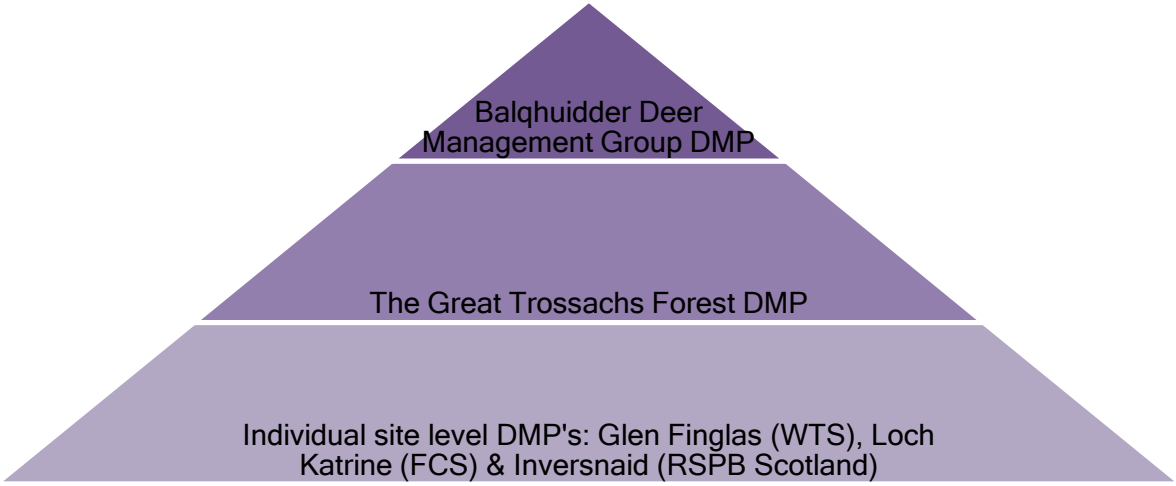

Figure 2: TGTF DMP in a local context

2.3 Neighbouring Land Owners

Adjoining Estates to the north of TGTF are FCS Strathyre, Immeron, Ballimore, Muirlaggan, Blaircreich, Inverlochlarig and Glen Falloch. To the south, TGTF's direct land neighbours are Comer, FCS (various estates) and Drumlean which are in a different Deer Management Group catchment.

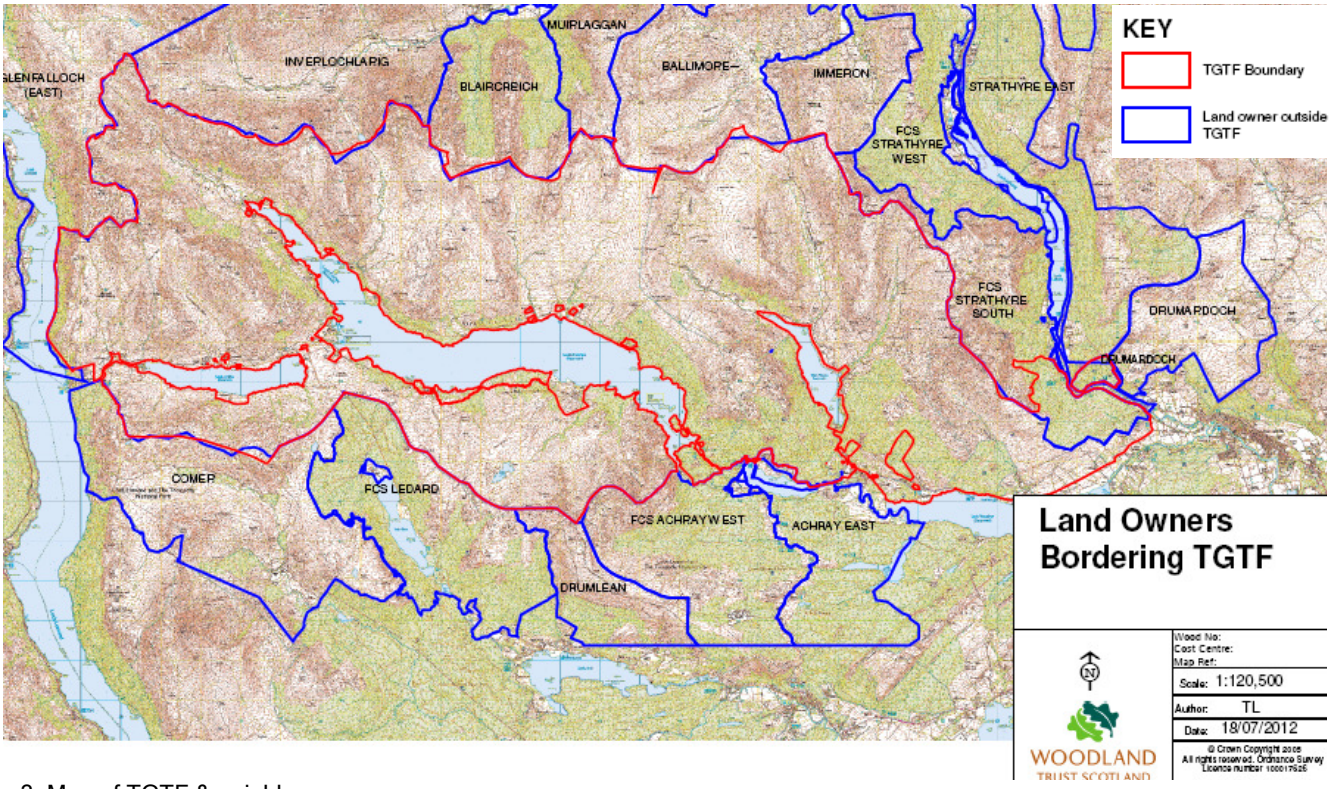

Figure 3: Map of TGTF & neighbours

2.4 The Great Trossachs Forest

2.4.1 Site Overview

The Great Trossachs Forest project area spans 16,650 hectares and encompasses a wide range of habitats, many of which are of national or international importance. Contained within the site is one reservoir, two major lochs with a further three lochs directly on its boundary. Loch Katrine, with the other two water-bodies acting as 'feeders', is the primary water supply for Glasgow with much of the 16,650 ha being contained within this water catchment. Currently many of TGTF's woodland habitats are fragmented and so a primary aim is to reconnect these to form an integrated habitat network.

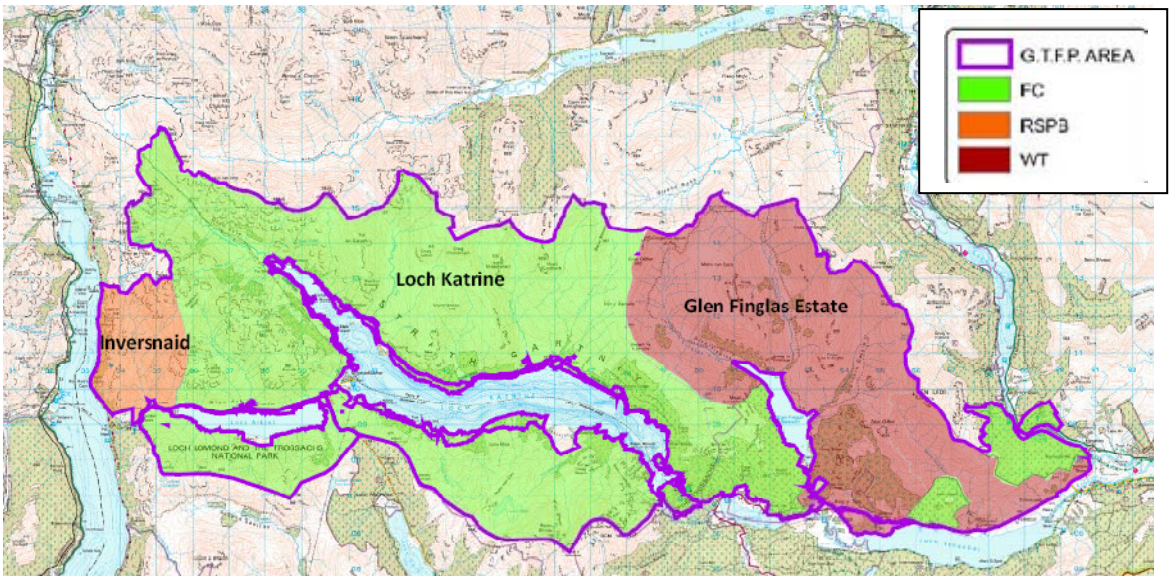

Figure 4: TGTF land owning partners

2.4.2 Designations

There are a number of special designations within TGTF. These include:

- Pollochro Woods SSSI[1]
- Loch Lomond Woods SAC[2]
- Loch Lomond NSA[3]
- Ben A'an & Brenachoile SSSI
- Trossachs NSA
- Trossashs SAC
- Brig o'Turk Mires SSSI
- Black Water Marshes SSSI (at the boundary of TGTF)
- Leny Flushes SSSI

Glen Meann, part of WTS Glen Finglas, also has a feature of particular geological interest.

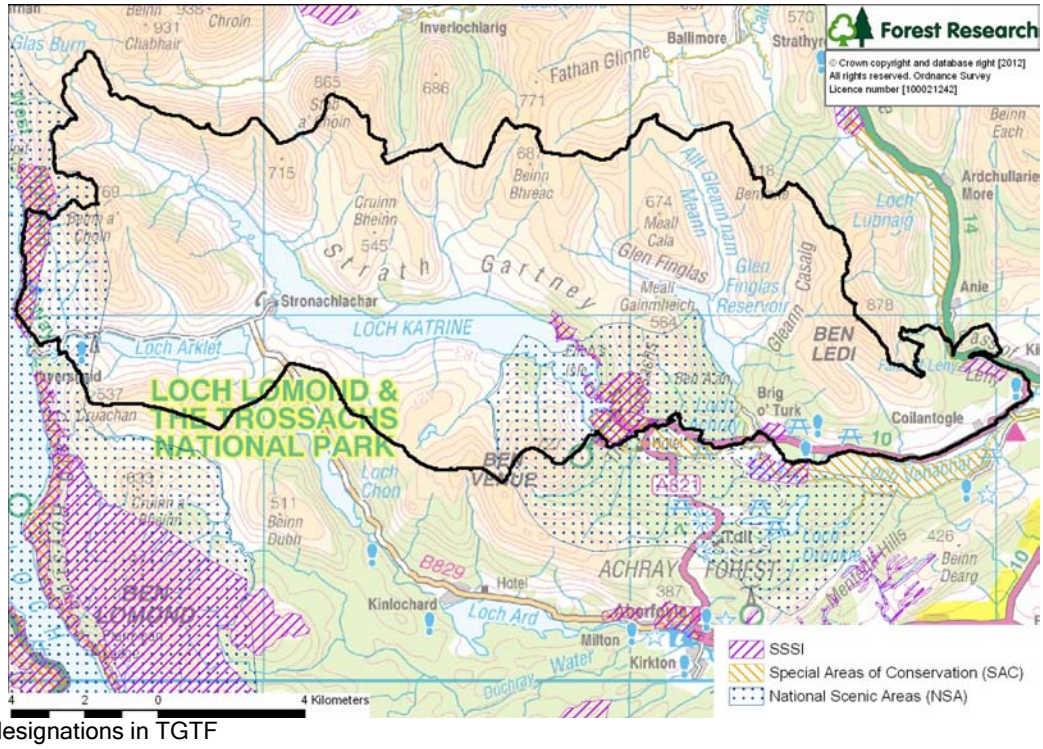

Figure 5: Special designations in TGTF

[1] Site of Special Scientific Interest
[2] Special Area of Conservation
[3] National Scenic Area

2.4.3 Our conservation aims and objectives

The vision for The Great Trossachs Forest is:

The Great Trossachs Forest will celebrate the incredible beauty of the area and its rich natural and cultural heritage. It will restore, protect and enhance native habitats including high canopy oak woodland, Caledonian pine, wood pasture, wet alder woods, open moorlands, montane, wetlands and grassland. Ecosystems with a high biodiversity value will be created and land management practices will result in a dynamic system with components expanding and contracting over time in response to natural processes. Additionally the area will become a showcase for wildlife, tourism, outdoor leisure activities, outdoor learning, research and partnership working.

To achieve this long term vision, TGTF has four main aims underpinned by related objectives. These are documented in the Appendices.