

SUPPLEMENTARY REPORT ON PREPARATION & PLANTING OF HILL GROUND ALONG THE NORTH SIDE OF UPPER GLEN CROE, ARGYLL (ABOVE THE A83) September 2012

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1. INTRODUCTION

This report was commissioned by Angus Corby, Landscape Adviser, Transport Scotland. It aims to complement the thorough assessment undertaken by Rayner & Nicoll of Forestry Research (pers. comm. June 2012).

It examines the aspects of the potential for planting the north eastern (SW facing) slopes of Beinn Luibhean above the A83 roadway as it ascends the upper reaches of Glen Croe. Repeated landslips have blocked the carriageway on several occasions in recent years.

Geological inspections have highlighted the relative instability of the slopes as they rise to c. 600m (qv Winter). The Forestry Research team have already compiled a thorough report on the opportunities to afforest the slopes up to 400m.

This short report seeks to provide some additional horticultural insights into the approaches that may best assist in stabilising the slopes, and thus contribute to Transport Scotland's strategies for alleviating the current problems.

2. ACTIVITY

Site inspections were carried out on Thursday 30 August and more extensively on Saturday 15 September 2012. Evidence of the potential for effective establishment of trees and shrubs was examined from adjacent areas. Ground conditions on the critical sites were assessed from road level up to c. 650m.

3. APPROACHES TO PLANTING

The ground sits at the southern edge of the Loch Lomond and the Trossachs National Park, but is wholly within the Park. Accordingly, it is recommended that all plantings utilise native species only.

Speed of establishment, especially of stabilising root systems is considered imperative and thus it is recommended that every effort is made to facilitate best establishment of any new plantings by means of (a) screening out potential grazing agents; (b) eliminating any major competitive weedy species; (c) applying supplementary fertiliser to selected plantings, where appropriate.

3. ASSESSMENT OF PLANTING POTENTIAL 100 – 400m

This is covered in detail in the report of Rayner and Nicoll. At these intermediate altitudes, their recommended suite of native woodland species is exemplary. The potential climax woodland on a

slope of this nature is Atlantic Oakwood - but this could take several decades to fully establish. Mixed planting that included native pine (*Pinus sylvestris* ssp *scotica*) and Birch (*Betula pendula* and *B. pubescens*) can be intermingled to establish more quickly, with the supporting species recommend by Forest research included.

There is ample adjacent evidence, albeit on sites of different aspect, but fundamentally very similar geology and topography, of good establishment of pine, birch and scrub species, especially in the lower reaches of the Bealach an Easain Duibh, on the west flank of the A83 as it descends to Butterbridge.

4. ASSESSMENT OF PLANTING POTENTIAL ABOVE 400m

Preliminary inspection of the site reveals several instances of ground movement in the upper reaches above 400m. We recommend that consideration is given to the planting of smaller woody shrub species to add stability beyond the acceptable tree zone.

We consider two categories of plants may be of use in this context.

i) Sea Buckthorn

Not extensively used in the UK, but the subject of several schemes in other countries, including New Zealand, the native Sea Buckthorn (*Hippophae rhamnoides*) is a robust shrub, most notably present in coastal zones, but capable of thriving at some altitude.

This species has been extensively employed in parts of northern China, using stock imported from Siberia, to control soil erosion (Dharmanada et al). It is an ideal candidate for stabilising the upper slopes, with its vigorous suckering habit, and the added benefit that its nodularised roots will enrich and modestly nitrify the generally nutrient deficient soils of the upper slopes and should be able to grow successfully up to 600m.

It may be necessary to establish a bulk stock rearing programme to bulk up enough material for such Buckthorn planting.

ii) Montane Willows

The Scottish mountains sustain relatively small populations of an array of montane willow species. Some are scarce or rare and occupy very specialised niches. In the absence of excessive grazing pressure, selected taxa could make a valuable initial contribution to stabilisation of the more rugged upper slopes, and will readily thrive at well beyond 600m. Species worthy of consideration would include : *Salix aurita* (Eared Willow), *Salix reticulata* (Reticulate Willow), *Salix arbuscula* (Mountain Willow).

The availability of source plants in sufficient quantities to make an impact on this substantial landscape may be a constraint; but elements of pocket planting at scattered locations may, in the absence of grazing, lead to wider colonisation within a decade.

5. SITE PREPARATION RECOMMENDATIONS

Standard forestry practices will suffice on this site, but we believe that in the special circumstances that prevail in Glen Croe, it is desirable to undertake two major preparatory works :

i) Perimeter Deer & Stock Control Fencing

In the absence of such fencing, there is a significant risk of on-going depredations by both farmed stock (sheep and cattle, that are regularly grazed on site) and the ever present deer. Given the imperative to maximise establishment of young trees and shrubs, it is strongly recommended to protect the entire site with effective deer and stock proof fencing. Over the 5-10 year period that the loss of specimens to unnecessary browsing is worth the extra effort (and significant cost) to exclude.

ii) Bracken Control

Considerable swathes of bracken carpet the lower slopes of the designated afforestation zone. It ascends in certain locations to around 400m, with thinning presences above this in a few locations. This rhizomatous fern may contribute some stabilising of the upper layers, but it is considered that such a vigorous presence will be detrimental to best establishment of young sapling trees.

Accordingly, a programme of active control should be planned for the season prior to planting. Carefully timed for the point of maximum flush, but prior to hardening off of the fronds, a single application during a dry spell in later July/early August can achieve massive decline and death, if rigorously carried out. Until recent legislation, the selective herbicide Asulam was the most effective weapon for bracken control. Equivalent alternatives are expected to be licensed for use by summer 2013.

* Most of these chemicals require a period of 24 hours dry weather, following spray application for maximum efficiency - and thus the spray programme must be carefully timetabled.

6. SUMMARY

* To maximise establishment of all plantings, and to advance the possibility of early natural regeneration, we recommend urgent perimeter fencing of the designated site, to eliminate stock grazing and exclude deer. If possible this should include vulnerable zones up to at least 550m, to allow for selected area high level plantings of scrub species (Sea Buckthorn and Willows).

* To facilitate best performance and early establishment in the afforestation zone (below 400m) we urge a programme of bracken control.

* To encourage stabilisation of the median slopes (to 400m), we fully support the recommendations of the Forest Research report.

* To encourage stabilisation of the upper slopes we recommend consideration be given to layered plantings of selected woody species, especially Sea Buckthorn, and possible limited areas of willow scrub.

7. REFERENCES

Rayner B. & Nicoll B. 2012. Assessment of the hill ground North of the A83 in Glen Croe for the ability to grow trees/shrubs to potentially reduce the incidence of debris flow. Unpublished report. Forestry Research.

8. IMAGES

