
Borders Machinery Ring
Farm Woodlands – Audit Survey

FINAL REPORT

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Background

In early 2013, Borders Machinery Ring (BMR) completed an initial member survey to look at attitudes to engaging in woodland management activities on their farm. BMR is a co-operative whose membership consists of local businesses and individuals. Members can either supply and/or request services as required. BMR was the first machinery ring in the UK and is a member of the Scottish Machinery Ring Association. It has comprehensive links with other UK and European based machinery rings. The ring covers an area including Scottish Borders, Lanarkshire and North Northumberland. The main purpose of the ring is to help members reduce their fixed costs by sharing labour and machinery, as well as act as a buying group to source inputs more competitively.

During 2013, and with the financial support of Scottish Enterprise and Scottish Borders LEADER funding, a series of woodland audits were completed to evaluate the potential of woodlands on members' farms in order to generate income from woodland management operations. These audits were carried out through BMR who commissioned seven consultants to go on the ground to a number of the farm members with woodland, gathering information on the current state and composition of the woodlands; the management recommendations for the next 5 years and a set of estimated costs of operations for the planned activities.

A standard proforma was prepared to record the woodland audit information meaning that the results are in line with and therefore comparable to similar analyses in other parts of Scotland. So far, other similar projects have been carried out in Grampian, Tayside and Perthshire and are commencing in Highland, although the Borders project is one of the more advanced initiatives in terms of progress that has been made.

BMR is ideally placed to provide a co-ordination and direct farmer engagement role in respect of woodland management activities but there are risks and uncertainties from their perspective too. Building the scale of farmer participation and organizing the markets and logistics, will require specialist management and therefore the overhead cost of that service needs to be carefully assessed.

This report provides the results of these audits and assesses the potential that has been identified thus far.

Detailed Audit Findings

The headline results of the audit are shown in Table 1 below. The average size of woodland surveyed and the compartment sizes are smaller than has been found in other areas of Scotland so far by around 30%.

Table 1

Basic data	Detailed woodland audits (as at January 2014)
Number of farms audited	74
Total woodland area	1,263ha
Average size of woodland	17.0ha
Total number of compartments	655
Average number of compartments per farm	9
Average compartment size	1.9ha
Woodland area on which work is required	619ha

It is also worth noting that of the 74 farms surveyed, 4 turned out to require no woodland management in the next 5-year period leaving 70 farms with work identified.



Table 2 examines the current state of the woodland.

Table 2

Current state of the woodlands	Percentage of compartments reporting "yes"	Percentage of compartments reporting "no"
Well-established woodland?	88%	12%
Evidence of previous management?	26%	74%
Any obvious damage from pests?	15%	85%
Any foliage discolouration	1%	99%
Good access to the site?	69%	31%
Any hazards on site?	30%	70%
Any evidence of windthrow?	17%	83%

Woodland characteristics

The general impression of the type of woodlands that were audited typically indicated a mixture of mature and semi mature mixed conifer and broadleaved woodlands, typical of estate policy woodlands with quite a high proportion of newly planted woodlands or woodlands that were pre-canopy closure. However, many of the smaller compartments were primarily shelterbelt strips, very typical of Borders farms.

Many of the compartments comprised mixed broadleaves with a variety of conifer species. A higher than anticipated proportion of woodlands were reported as not well established and this was mainly due to early establishment failure in some of the more recent plantings resulting in a need for beating up. The need for general maintenance was also noted as a priority on a significant number of compartments. There are some good stands of more mature broadleaves, particularly Oak, Ash, Sycamore, Beech and Poplar where some select felling was suggested for natural regeneration purposes or infill replanting where appropriate. Some crops of mature Larch, Scots pine, Douglas fir and Sitka spruce were also reported.

As noted in Table 2, just over a quarter of the woodlands showed some evidence of prior management; perhaps a first thinning had taken place for example, but the age distribution of the remaining crop suggests that some compartments are in need of active intervention to get them back on track. Fewer than 20% of the stands are reporting signs of windblow although some of the consultants noted that the lack of management was likely to lead to premature clearfell of the crop because of the potential risk of future windblow.

Despite the lack of management, it was notable that the level of deer and squirrel damage and general foliar problems were less than has been reported in other areas.

Generally speaking, access to each compartment was good with only 31% being recorded as difficult and 30% of compartments having site hazards, typically watercourses and powerlines.

The overall impression of this particular batch of woodlands compared to other regions already analysed is that there is a higher proportion of woodlands under 10 years old and a higher proportion requiring general maintenance. Despite that, the overall age profile of the woodlands audited covers the whole spectrum, through the thicket and thinning stage to mature and indeed very over-mature crops, which offers plenty of potential for active management intervention.



Other details of the woodlands audited are shown in table 3 below:

Table 3

Other factors	% "yes"	% "no"	Comment
Does the woodland have a management plan?	9%	91%	
Is the woodland to UKWAS standard?	55%	45%	Not consistently interpreted by consultants
Currently in receipt of grant aid for the woodlands?	7%	93%	
Do the woodlands have a current felling licence?	2%	98%	
Do boundary shapes restrict future design options?	20%	80%	Quite a lot of shelterbelt style woodlands here.
Is there a need to fell early due to poor crop performance?	3%	97%	Some crop failure reported and also early windblow.
Rights of Way on the site?	7%	93%	
Known archaeology on site?	2%	98%	
Statutory designations on site?	30%	70%	Mainly NVZ and SSSI designations
Watercourses on site?	18%	82%	

Management objectives

For those woodlands that were consistently reported, the common theme was one of managing the woodlands for shelter, landscape, sporting and conservation reasons followed by a source of woodfuel. The management objectives are ranked in order in Table 4 below. Note that multiple objectives are possible and so they do not add to 100%.

Table 4

Management Objective	Percentage compartments (total 655)
Shelter	92%
Improve landscape quality	86%
Enhance sporting potential	83%
Improve nature conservation	76%
Reduce heat/fuel costs on farm	41%
Produce commercial flow of timber	11%
Produce products for use on farm	11%
Improve public access	7%
Carbon sequestration	4%
Protect archaeology	2%



Planned Management Operations

A range of management operations are recommended with the emphasis on thinning and general maintenance confirming the general impression of the overall state of the woodlands. The estimates of area to be worked over the coming five-year period on the audited farms are:

Table 5

Operation	Area (ha)
Total woodland area	1,263
Gross area identified on which operations required	619
Thinnings	297
Clear fell	102
Select fell	30
Restock conifer	56
Restock broadleaves	46
Natural regeneration	18
New planting	72

The consultants carrying out the audits picked up on a range of management options and it was interesting to see the suggested use of natural regeneration and selection or group felling where it was thought to be appropriate. These management practices would fit well with the nature of the woodlands that have been surveyed. The audits also featured the highest area of new woodland creation in any area of Scotland surveyed so far, consisting of both the extension of existing compartments and creation of entirely new planting schemes on farms that already had woodland.

Volumes and value of operations identified

From an operational perspective, the audits of the 74 farms identified 11,965m³ of thinnings and 35,542m³ of clear and select fell, a total of 47,507m³. The breakout of these volumes by sales category is difficult to estimate because of the species variety and the likelihood that some of the mature hardwoods are likely to have issues with splitting on felling or perhaps internal rot. As a minimum, it is estimated that for all farms, the volume of small roundwood/fuel wood identified is around 16,000m³ with the balance of around 31,000m³ finding sawlog markets.

These figures plus the area of maintenance identified by the auditors, form the basis of the following financial analysis. It is important to note that the cost estimates, values of timber and estimated harvesting costs are the opinions of the professional auditors undertaking the on the ground survey work. Values may change once operational decisions are actually made and timber is subsequently felled, so the figures quoted below should be considered with that caveat in mind.



Table 6

Harvesting	£+	£-
Roadside value of thinnings	£371,129	
Roadside value of clear/select fell	£1,080,985	
Cost of thinning		£269,577
Cost of felling		£541,967
Net return from thinning and felling	£640,570	
Planting	£+	£-
SRDP Grants	£229,197	
Cost of planting, restock and maintenance		£451,436
Net return from planting, restock and maintenance		£222,239
Net return to farms	£418,331	
Net return per ha worked	£675/ha	

The above figures give a very positive picture of the overall potential of the audited woodlands in terms of giving a good return at farm level. The average return per farm across 70 farms on which work was identified is around £6,000 but of course, it has to be remembered that this is an estimate of achievable returns and is based on work required in the next five-year period rather than annually. There is no doubt that overall, the future potential of the woodlands would be improved and therefore the future returns and timber values would be improved, through producing better quality final crops.

It should be noted that the SRDP scheme has now closed and whilst it appears that transitional arrangements are in place in so far as forestry measures are concerned, there are already significant forward commitments into years 2014/15 and 2015/16 which may result in some of the new planting proposals being delayed. This situation should not however affect the restock areas.

Importantly, not all farms produced positive returns. Often this is because the woodlands either require significant maintenance work or are principally new planting proposals, without any commensurate income from thinnings and fellings to offset the cost.

An analysis of the breakdown of the farms by size of net return is shown in Table 7 below

Table 7

	Number of Farms	Woodland area (ha)	Volume thin or fell (m3)	FEC cost (£)	Roadside value (£)	Area planted or restock (ha)	SRDP grant (£)	Plant; restock; maint. gross cost (£)
Total farms	74	1263	47,507	811,544	1,452,114	174	229,197	451,436
>=£500 net return	44	927	43,341	749,847	1,331,207	167	199,056	350,042
>=£1,000 net return	40	863	42,674	734,485	1,310,386	165	197,092	345,742
>=£2,000 net return	32	768	38,215	639,457	1,176,216	149	186,608	307,030
>=£5,000 net return	22	617	32,758	538,747	1,011,779	117	125,063	216,389



The interesting feature of Table 7 is that 22 of the farms have individual net returns of more than £5,000 and they are therefore likely to be the ones that are motivated to carry out the schedule of activities described in the audits. They represent 30% of the farms audited thus far and account for about 50% of the woodland area; 70% of the harvested volume and roadside value, 50% of the planting and restock area and 66% of the gross cost of planting, restock and maintenance. Priority could therefore be given to those farms in order to maximise the level of activity at the earliest possible opportunity.

Commission earning potential

The levels of commission and how that might be targeted are for BMR to decide but, as an example, and based on a commission rate in total of 4%, the following potential commissions could be earned from organizing the services identified in the audits.

Table 8

	Number of Farms	Commission based on FEC costs plus planting; restock and maintenance costs	Commission based on Roadside values plus planting; restock and maintenance costs
Total farms	74	£50,519	£76,142
>=£500 net return	44	£43,997	£67,250
>=£1,000 net return	40	£43,209	£66,245
>=£2,000 net return	32	£37,859	£59,330
>=£5,000 net return	22	£30,205	£49,127

It should be noted that some Rings are considering a more active role in the marketing of timber on behalf of their members and following that course of action would in turn, increase the income earning potential to BMR based around the value of commissions.



Performance against targets

The audit work carried out by BMR has achieved a number of outputs against the targets set for the funding provided by Scottish Borders LEADER and Scottish Enterprise.

There are a number of targets and outcomes set by both funding parties, some of which are outwith the scope of this analysis of the audit work but, where relevant, the performance to date against targets is identified below in Table 9.

Table 9

Objective	By whom	Target date	Target	Achievement
Undertake woodland audits (approx. 50 farms/estates)	LEADER	May/June 2013	50	74 farms audited
Identify and provide a commercial value for up to 100,000 tons of potential wood fuel	Scottish Enterprise		100,000 tons	At least 16,000m ³ of woodfuel has been identified and all operations costed
Twenty farms and land owners will be supported to diversify into the supply of bio fuels during the project	Scottish Enterprise		20 farms	30 farms indicating that reducing heat/fuel costs on farm is a management priority*
Improved woodland management will result in better quality timber for the processing sector and increased profits for the farmer/landowner.	Scottish Enterprise			Thinning and felling operations to a gross value of £1.4m have been identified. Returns to those farms before commissions estimated at £675/ha
Final Report – For Leader/Forestry Commission etc.	LEADER	December 2013		January 2014

* Calculated on the basis that 41% of 655 compartments were recorded as having woodfuel objectives. An average of 9 woodland compartments per farm results in an estimated 30 farms expressing management objectives related to woodfuel.

Conclusions

There is no doubt that this set of audits has identified potential for significant activity in terms of bringing over 600ha of farm and estate woodland back into active management. The nature of the woodlands encountered during the survey span the entire range of woodland types from opportunities for new planting, crops under ten years old requiring maintenance, thicket and pole stage crops requiring thinning and cleaning and mature and semi mature crops requiring select or clearfell with restocking of felled areas. Compared to other similar audit exercises carried out elsewhere in Scotland, the Borders results show a higher proportion of young crop maintenance and by far the highest opportunity for new woodland creation, which helpfully supports the opportunity to integrate woodland management with agriculture.

Over 47,000m³ of thinnings and felling have been identified for removal offering the opportunity for some of this volume to be used for woodfuel projects on farm and external supply chains. The balance of removals could contribute to the needs of niche hardwood and specialist softwood markets such as is typified by the ASHS members in Scotland. More mainstream species, for example spruce and pine, could contribute to the wider timber industry at a time when supplies are tight and market values are quite strong. Some species, such as Larch, will be more difficult to sell onto the conventional timber markets due to the current glut of material caused by the Phytophthora disease issues in neighbouring areas. Larch volumes could therefore add to the woodfuel potential already identified.

From the farmer's perspective, there is in 60% of cases, a positive net return from all operations generating nearly £500/ha before commissions and 30% of farms achieve £5,000 or more net



return before commissions.

From BMR's perspective, the audits completed so far have identified a potential baseload of commissions through co-ordinating the woodland management operations and engaging in the marketing of products. BMR's aspirations extend well beyond the woodland management activity alone and include establishing woodfuel supply chains; undertaking training and developing niche product markets all of which offer income earning potential through commissions beyond the level that has been identified thus far.

The results to date indicate a win-win for all parties.

1. Potential returns to farmers that without the initiative of BMR would be unlikely to be realized
2. Volumes of fuelwood identified will help to develop local woodfuel supply chains
3. Sawlog material that had previously not been identified in production forecasts help to support the processing sector in Scotland and offers niche product development opportunities for local businesses.
4. A valuable co-ordination role provided by BMR helps to reduce risk for farmers; achieves scale in the marketplace and helps to reduce bureaucracy.
5. Creating more sustainable woodlands helps to achieve greater potential in the future than would have been the case without the project.

An assessment of the wider economic benefits will form part of the next progress report due in July 2014.



2.4 - Cost and Income Estimates for Potential Operations (next 5 years)

Harvesting

Planting

	Total Estd. Vol. m ³	Estd. No. stems thinned/ felled	Estd. Total roadside cost of felling and extraction £	Estd. Roadside market value £	Estd. SRDP grants £	Estd. Cost of re- stocking and new planting £	Maintenance Cost £
Thinnings	Compt. 1						
	Compt. 2						
	Compt. 3						
	Compt. 4						
	Compt. 5						
	Compt. 6						
	Compt. 7						
	Compt. 8						
	Compt. 9						
Felling	Compt. 1						
	Compt. 2						
	Compt. 3						
	Compt. 4						
	Compt. 5						
	Compt. 6						
	Compt. 7						
	Compt. 8						
	Compt. 9						
Total							
Restock							
Conifer							
Restock							
Broadleaves							
New Planting							
Conifer							
New Planting							
Broadleaves							
Total							