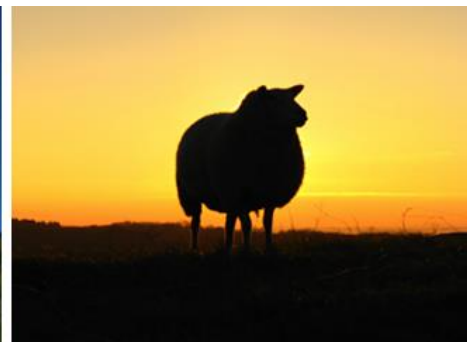




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Using Forestry for Resilience in Sheep Farming

Malcolm Young, Senior Forestry Consultant

Benefits of Woods

- Shelter
- Flock/herd separation
- Removal of fluke areas
- Reduction of diffuse pollution
- Bank stabilisation
- Flood reduction
- Sporting
- Source of firewood / chip-wood
- Alternative income stream
- Succession planning



Tax Benefits

- Growing asset which adds value to farm
- No income tax on timber sales or grants
- No capital gains tax on the growth in value of trees
- 100% relief on inheritance tax



Woodland Shelter - Benefits



Livestock and pasture:

- Reduced wind speeds
 - reduced evapotranspiration
 - reduced evaporative chilling of livestock
 - improved lamb survival – 50% reduction
 - reduced ewe mortality after shearing – 12%
 - improved weight gain
 - reduced feed costs – 20% less

Woodland Shelter - Benefits

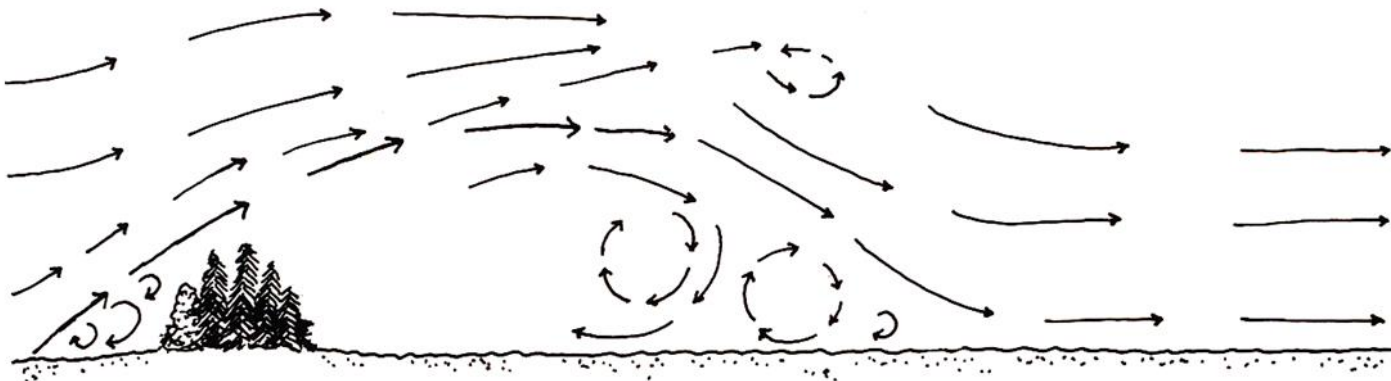


Livestock and pasture:

- Leaf fall
 - increased soil organic content, leading to:
 - improved soil water retention & N availability
- Buffering of features:
 - watercourses, reducing diffuse pollution
 - utilisation of marginal areas eg. seasonal flooding
 - ‘trapping’ features
- Improved water filtration
- Animal health – separation of herds

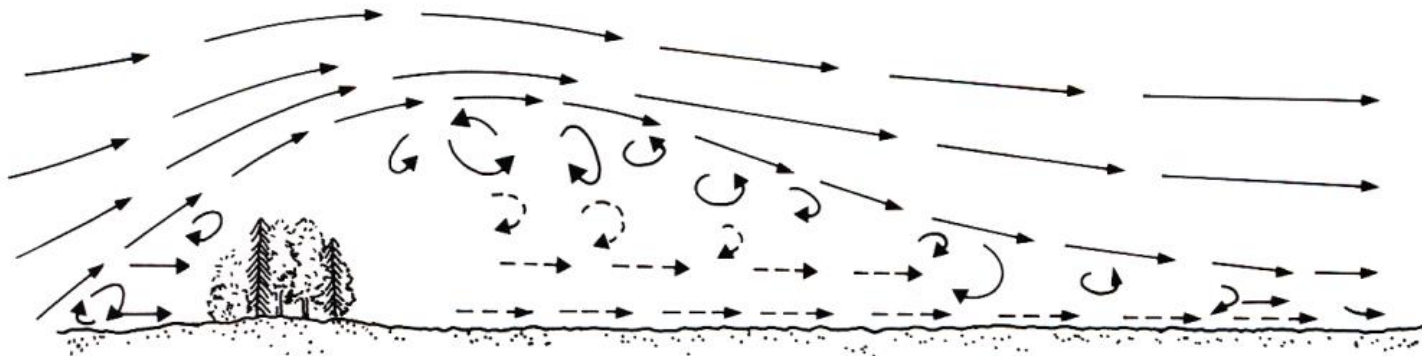
Shelter Design - Windshield

- Virtually impermeable woodland (<40% porosity)...dense conifers
- Reduces wind speed by up to 90%
- Wind speed reduction up to 10 times tree height
- Maximum shelter within 3 to 5 times tree height
- Completely stops wind within small area
- Best for livestock protection
- High turbulence in field



Shelter Design - Windbreak

- Permeable woodland (40 – 60% porosity)...broadleaves/mixed
- Reduces wind speed by up to 70%
- Wind speed reduction 20 – 30 times tree height
- Achieves reduced wind speeds across large area
- Little turbulence, well above ground
- Best for crops and silage





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Trees and water



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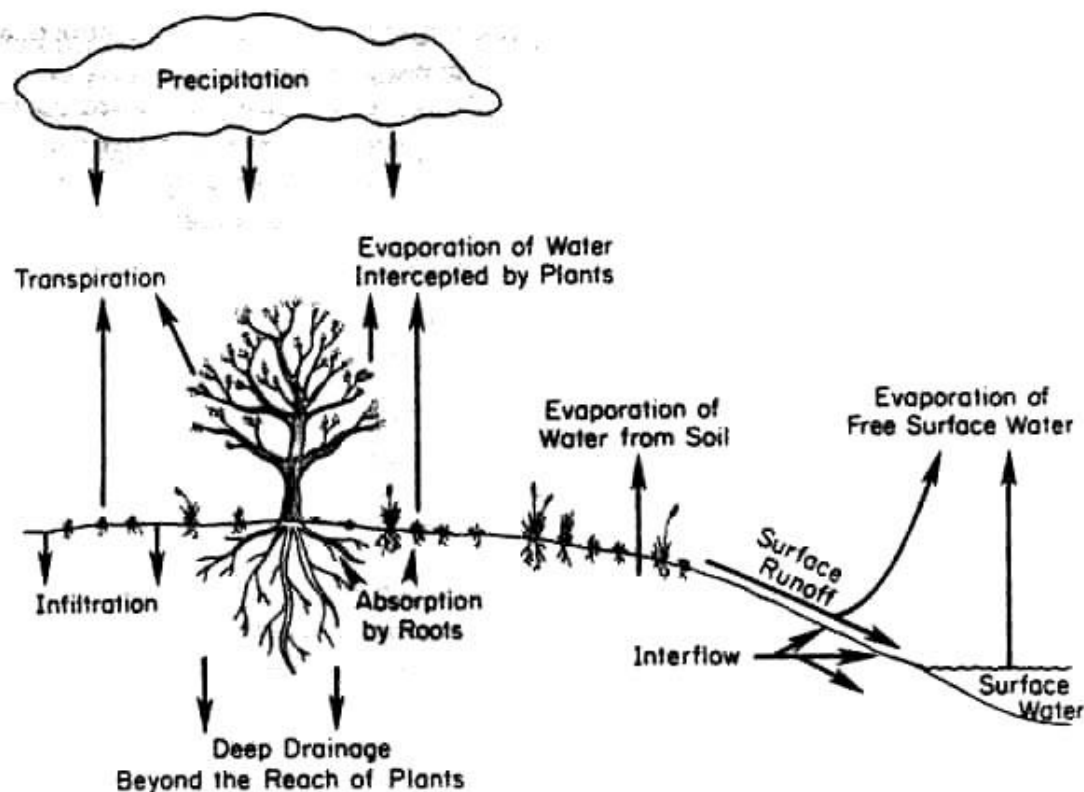


Figure 6.1. The water cycle showing major processes and pathways of water movement through a watershed. Water inflow = water outflow \pm storage.

Trees and water

- Canopy reduces speed at which rain reaches ground
- Evapotranspiration
- Over-ground flow vastly reduced
- Water infiltration to soil 60 times greater in woodland than pasture
- Water follows live tree roots, reaching deeper into soil than pasture
- 90% roots in top 60cm soil
- ADHB – field drainage 450mm deep

Trees and Water

- Peak flow reduced by up to 40%
- Sediment trapping
- Effects achieved only two years after planting
- Pontbren study, Wales

Creating Woodlands

- Planting of shelter belts across slopes
- Broadleaves or mixed
- Minimum width 20m



Woodland Type & Location



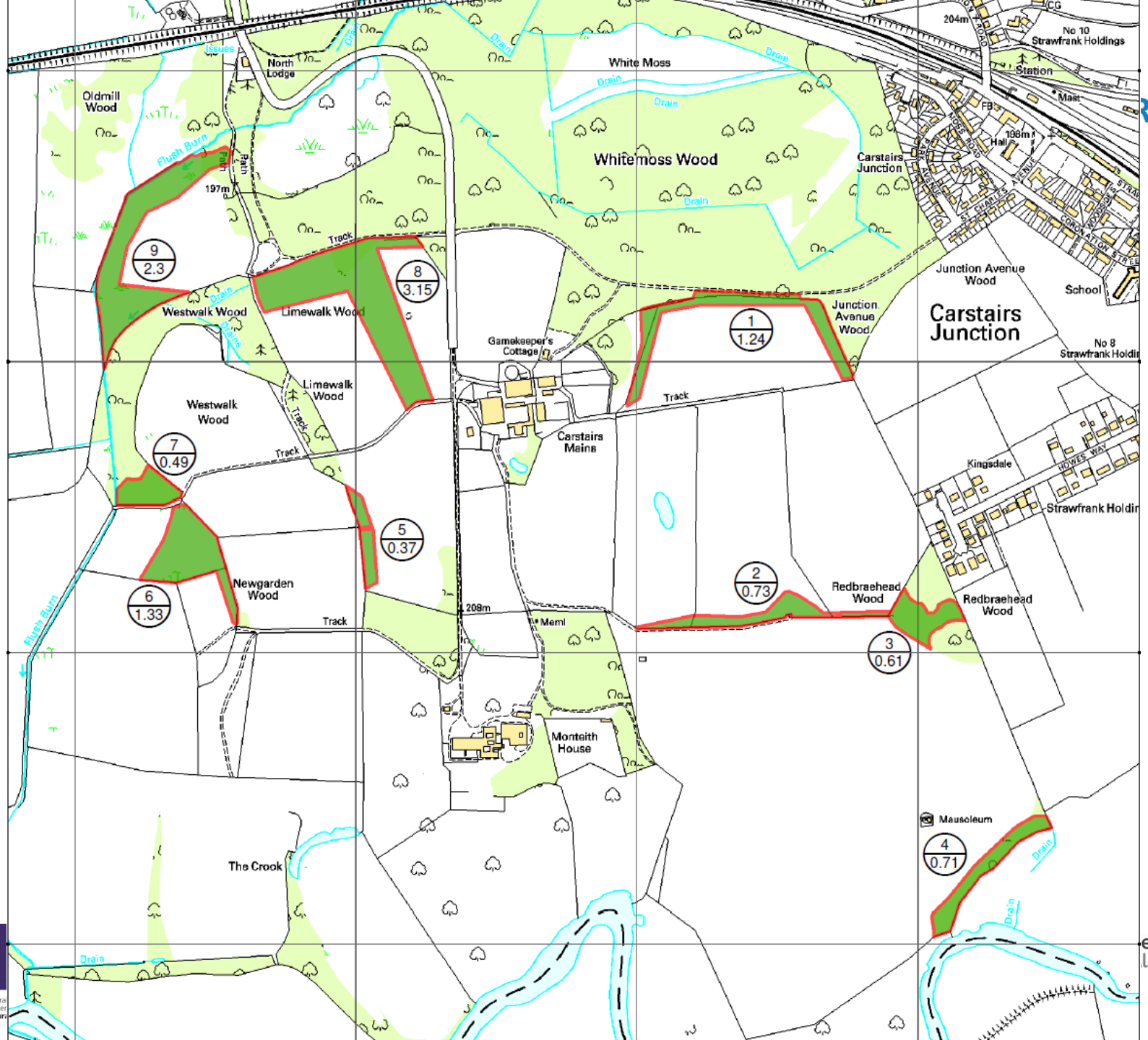
- Type of ground available:
 - Peat depth and soils
 - Wet
 - Topography
 - Access
 - Objectives – what are you trying to achieve?

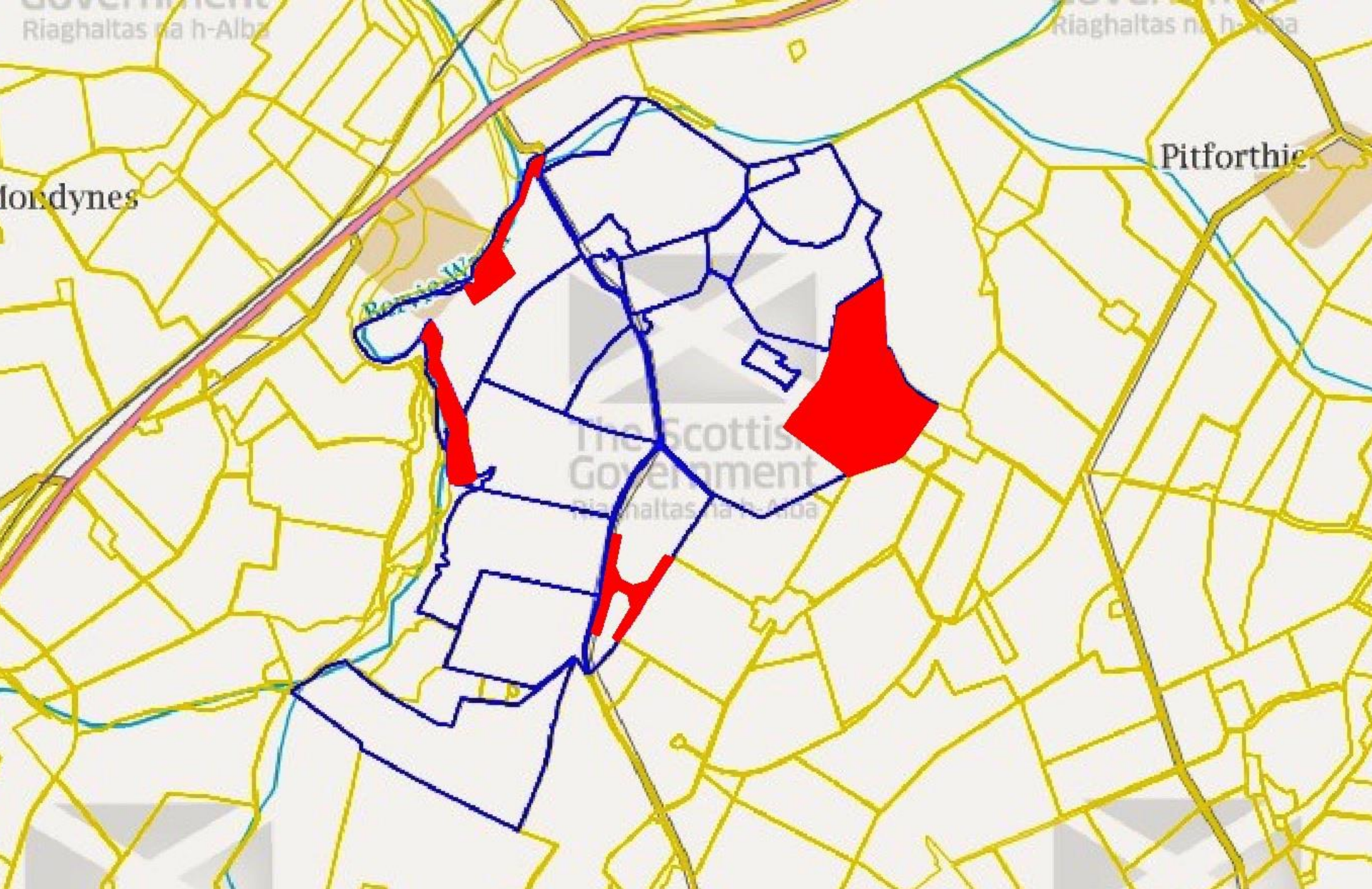
Woodland Type & Location

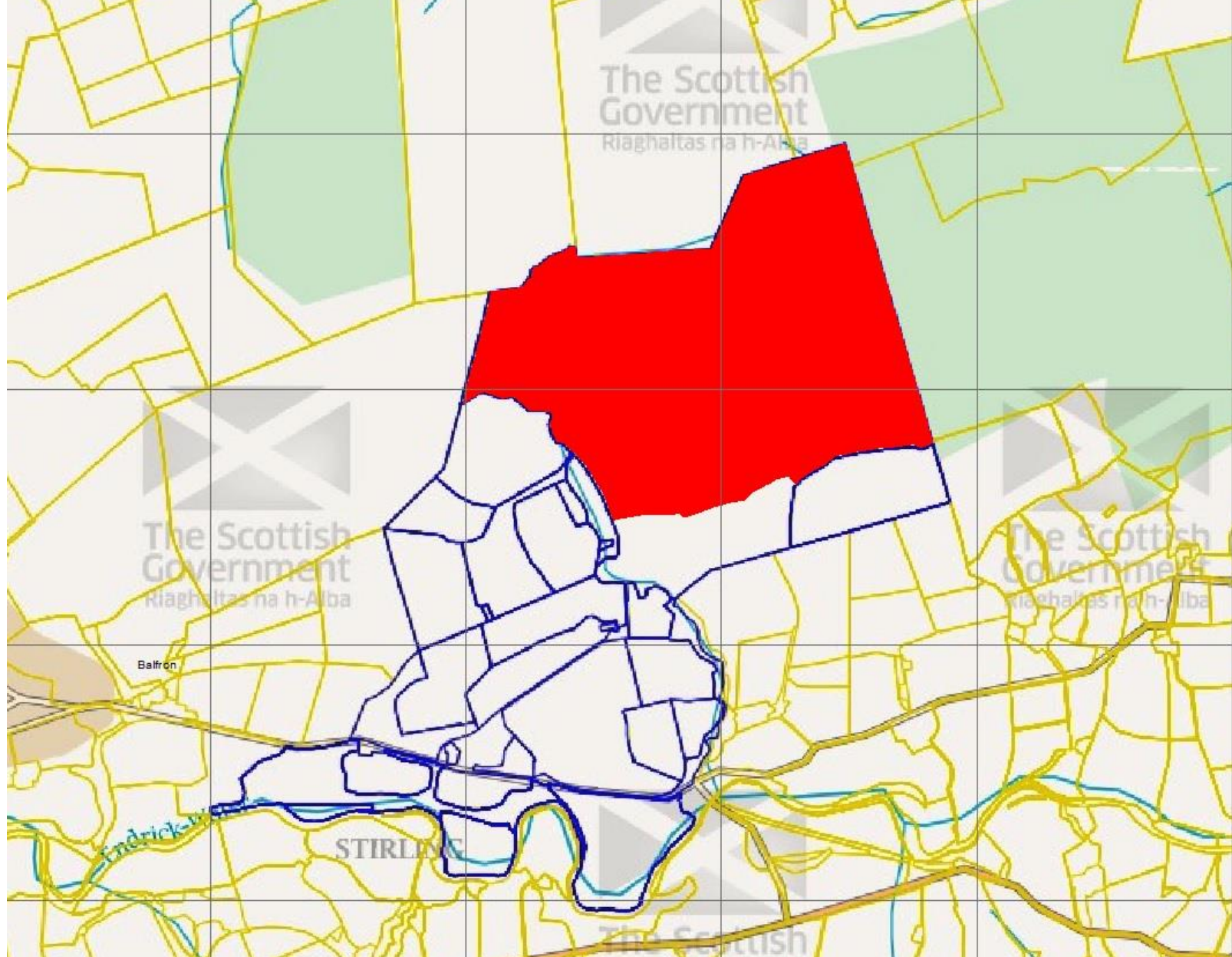
- eg. dens:
 - Steep sided
 - Inaccessible
 - Conifer grants – dense planting – unharvestable – windblow
 - Broadleaves – wide spaced planting, no need to harvest

Woodland Type & Location

- eg. hill ground:
 - Moderate slope
 - Access – existing? Is new access viable?
 - Conifer grants – establish harvestable timber crop
 - Broadleaves – native upland birch, no produce







FGS Funding for New Woods

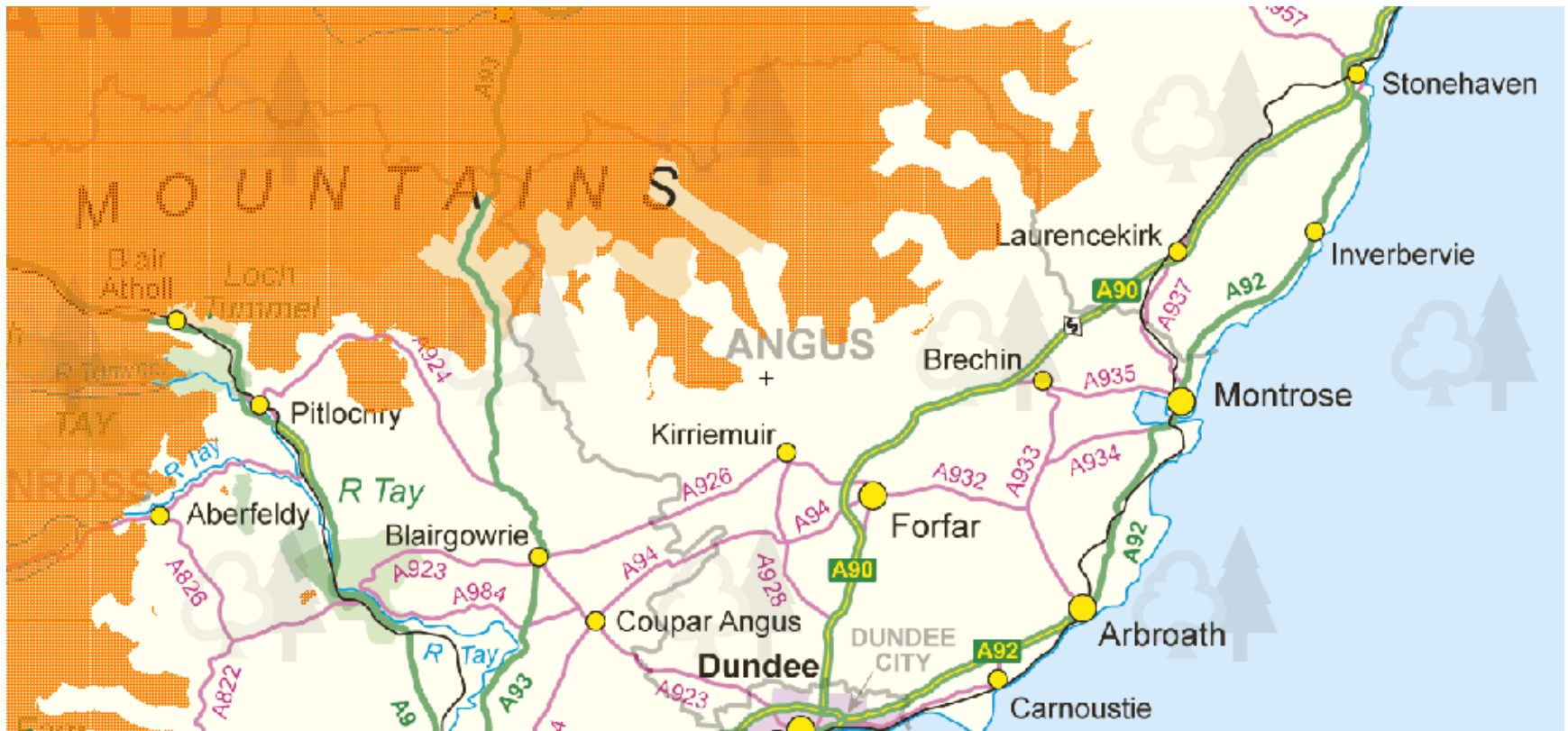


- Initial planting grant
- Coupled with annual (x 5) maintenance grant
- Fencing: deer, stock, rabbit, upgrade, marking
- Tubes and vole guards
- Bracken control
- Gorse removal (new)
- Sheep and Trees package
- Keep Basic Payment



Funding for New Woodland

- Increased rate for fencing



Some Basic Rules

- No planting permitted on peat >50cm
- Minimum width 20m
- Productive options – minimum area 2ha
- Other options – minimum area 0.25ha
- In reality, minimum viable area approx. 6ha
- Value of fence/tube grants <150% of initial planting grant
- Scoring!

Planting Grants

Payment rates in standard areas

Payment rates in target areas

Woodland Creation option	Initial planting payment rate (£/ha)	Annual maintenance payment rate (£/ha/year) for five years *	Total payment rate (£/ha)	Initial planting payment rate (£/ha)	Annual maintenance payment rate (£/ha/year) for five years *	Total payment rate (£/ha)
Conifer	1920	208	2960	2160	234	3330
Diverse Conifer	2160	336	3840	2430	378	4320
Broadleaves	2880	528	5520	3240	594	6210
Native Scots Pine	1840	272	3200	2070	306	3600
Native Upland Birch	1840	128	2480	2070	144	2790
Native Broadleaves	1840	272	3200	2070	306	3600
Native Low- density Broadleaves	560	96	1040	630	108	1170
Small or Farm Woodland	2400	400	4400	2700	450	4950

Example Cashflow

21ha Diverse Conifer (no SS)



ESTABLISHMENT COSTS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Deer Fencing	25,428					
Ploughing	4,771					
Plants and Planting	20,501					
Tree shelters/guards	809	24				
Weeding	3,910	7,819	7,819	3,910		
Replace losses		1,052	601			
Sundries/ contingencies	2,771		421			
Project management	8,728	1,068	1,068	1,068		
Professional Fees	2,759					
TOTAL COSTS	69,677	9,964	9,909	4,978	0	0
INCOME						
Planting & maintenance	50,860	7,912	7,912	7,912	7,912	7,912
Shelters, gorse, bracken control	210					
Deer fencing	21,848					
TOTAL INCOME	72,918	7,912	7,912	7,912	7,912	7,912
NET INCOME (EXPENDITURE)	3,241	(2,052)	(1,998)	2,934	7,912	7,912
CUMULATIVE INCOME (EXPENDITURE)	3,241	1,189	(809)	2,125	10,036	17,948

Plus Basic payment

Example Cashflow

14ha Conifer (SS)

ESTABLISHMENT COSTS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Deer Fencing	13,694		0			
Mounding & Drainage	4,274		0			
Plants and Planting	13,153		0			
Tree shelters/guards	607	18	0	9		
Weeding	3,158	3,789	1,579	789		
Replace losses	1,346	678	339			
Sundries/ contingencies	1,812		96			
Supervision	5,706	673	673	336	336	
Professional Fees	2,635					
TOTAL COSTS	46,384	5,158	2,687	1,134	336	0
INCOME						
Planting & maintenance	28,922	2,960	2,960	2,960	2,960	2,960
Tree shelters & bracken control	502					
Deer fencing	14,028					
TOTAL INCOME	43,453	2,960	2,960	2,960	2,960	2,960
NET INCOME (EXPENDITURE)	(2,931)	(2,198)	273	1,825	2,623	2,960
CUMULATIVE INCOME (EXPENDITURE)	(2,931)	(5,129)	(4,856)	(3,031)	(407)	2,553

Plus Basic payment

Example Cashflow

130ha Conifer (SS)



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Income	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Initial planting grant & top-ups	300823					
Maintenance payments		32589	32589	32589	32589	32589
Capital payments	55624					
Basic payment	5591	5591	5591	5591	5591	
Carbon sales						
Total income	362038	38180	38180	38180	38180	32589
Expenditure						
Fencing and gates	58997					
Ground preparation	34268					
Plants, planting and protection	107611					
Maintenance	40559	33228	1192			
Contingency 5%	12072	1661	60			
Project management	30421	1890	1890	1418	1418	
VAT (if not VAT registered)						
Total expenditure	283928	36779	3142	1418	1418	
Balance	78111	1401	35038	36763	36763	32589
Cumulative balance	78111	79512	114550	151313	188075	220664

Plus Basic payment

Sheep And Trees

- Access to infrastructure grant with planting grant
- 10 to 50ha productive conifer grant
- 30m road per ha, capped at 1500m
- Capable of carrying timber lorries
- Infrastructure (roading)
 - Roading £25.80/m
 - Lay-bys £6.60/sq. m
 - Bell-mouth junction £32.40/sq. m



Agroforestry

- Utilising the same piece of ground for both tree forestry and agriculture.
- Silvo-arable
 - Trees typically planted in avenues, arable strips wide enough to accommodate two passes of widest machinery (no grant)
- Silvo-pastoral
 - Trees planted throughout grazed ground (grant-aided)

Agroforestry



Agroforestry



- Silvo-pastoral
 - Land Capability for Agriculture, 3.1 – 4.2
 - PGRS
 - Sheep grazing only, for contract period, 20 yr
 - Productive broadleaves (20% fruit trees)
 - 200 stems/ha OR 400 stems/ha
 - Trees guarded, weldmesh and stobs x 2
 - Maintenance includes pruning, stem quality
 - 400 trees/ha - £3,600/ha, maint £84/ha/yr x 5
 - 200 trees/ha - £1,860/ha, maint £48/ha/yr x 5
 - Grant = £9/tree, cost = £20/tree (contractors)



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- Phone 0300 323 0161
- Email: advice@fas.scot
- Forestry Grant Scheme
<https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/forestry-grant-scheme/>

Thank You

