

Woodlands for Water

The Brisbane Glen Case Study

Introduction

“The narrow strip between the road and the burn was a real problem to manage. It is sheltered so there was a fly problem which stopped us grazing cattle in the summer as they would suffer with mastitis. In the winter the land was too wet to graze cattle and, because it hadn't been grazed earlier by the cattle, the vegetation was too long for sheep. The area was becoming overgrown with weeds and a bit of an eyesore. There are areas of native woodland on the other side of the burn we thought the woodland planting would blend in well with that and become an asset to the land.”

These are the comments of Oswald Wardrop, Brisbane Glen Estate, giving his main reasons for planting a 9ha strip along the Noddsdale Water, Brisbane Glen, Largs.



Figure 1 New planting extending up to the road above.



Figure 2 New planting extending existing native woodland by the Noddsdale Water.

Over a period of 4 years, more than 136ha of woodland creation will be carried out in the Brisbane Glen, by four separate landowners. Most of the new trees planted will be native broadleaves, with productive broadleaves planted where soil conditions, shelter and access made the area suitable for timber production. An area of pine forest has been planted where the soil conditions and access made this appropriate and to highlight landscape features.

Each landowner involved had their own numerous reasons for wanting to plant trees but two stood out: the grant funding available through the Forestry Grant Scheme (FGS) and the desire to make better use of under-utilised land.

FGS funding is a particularly strong incentive in this area because of two additional payments that are available:

- Planting within the Central Scotland Green Network (CSGN) target area offers an additional contribution of £1500/ha.
- Woodlands designed to benefit water quality and natural flood management within a Woodlands for Water target area can receive grant payments 12.5% greater than the standard planting grant available. Most of the areas planted in the Brisbane Glen lie within this target area.

Table 1: FGS payment rates.

Woodland creation option	Total payment rate in standard areas (£/ha)	Total payment rate in target areas (£/ha)	CSGN contribution – outer core area (£/ha)
Diverse conifer	3 840	4 320	1500
Broadleaves	5 520	6 210	1500
Native broadleaves	3 200	3 600	1500

By the end of the establishment period, 5 years after planting, the enhanced grants mean that 9ha of native woodland planting is likely to produce a surplus of about £10,000.

The majority of the land planted was under-utilised. Some areas were too steep to maintain properly, with gorse or bracken starting to dominate. In others, a combination of a fly problem, the steepness of the slope and the wetness of the ground in winter meant the area was very difficult to maintain in good a good condition for agriculture.



Figure 3 The future planting site at Coxy Hill, Brisbane Glen with previous year's native woodland planting below the road.

Other motivations included providing shelter for livestock, fencing off areas to assist with livestock movements, to create an additional fuelwood resource to feed a biomass boiler and, not least, to provide wildlife habitats and improve the general look of the farm.

“The grant situation gave some economic return and removed a problem we had previously” – Oswald Wardrop.

The Woodlands for Water enhanced grant

Under the current Forestry Grant Scheme the Woodlands for Water enhanced grant rate encourages new tree planting schemes that provide multiple benefits in terms of water quality and natural flood management. Eligible areas have been defined by SEPA and Forestry Commission Scotland.

Why Woodland?

Woodlands, when carefully designed, have been shown to:

- increase rainfall interception
- increase the infiltration of rainwater into the soil, which reduces water run-off
- improve soil strength and stability
- increase the capacity of soil to hold water
- reduce sediment reaching water courses
- reduce fertiliser and pesticide input, compared to agriculture
- help protect river banks and increase channel diversity
- moderate the riparian microclimate
- provide a food source benefiting invertebrates and fish
- reduce 'muddy' floods.

To be eligible for the Woodlands for Water payment the woodland design should aim to create a well-structured and diverse woodland, using species that are likely to deliver multiple benefits. It is not available for woodland dominated by Sitka spruce where timber production is the overriding objective. The species selected must be suited to the soil conditions and level of exposure so that the trees can develop a good canopy and root system. Planting tree species with different rooting patterns can further enhance soil infiltration.

To be most effective the woodland design should follow the landform, targeting water runoff pathways, particularly where temporary surface water collects and flows during heavy rain. Planting along the contours can intercept both water and pollutants draining from land further up the slope. Leaving an un-grazed grassy edge can also help with trapping sediment in runoff. This can all be achieved with careful planning and by integrating woodland planting with other farm activities.



Figure 4. A diverse woodland with a mix of species, age classes and native flora.

Why was much of the Brisbane Glen in a target area?

The Noddsdale water catchment area north east of Largs, north Ayrshire was identified in the Ayrshire Local Plan as a potentially vulnerable area for flooding. Surface water mapping, together with historical records, indicates that approximately 30 properties in the north of Largs are at risk of flooding. The average annual damages likely to result from flooding in this area amount to £68,000.

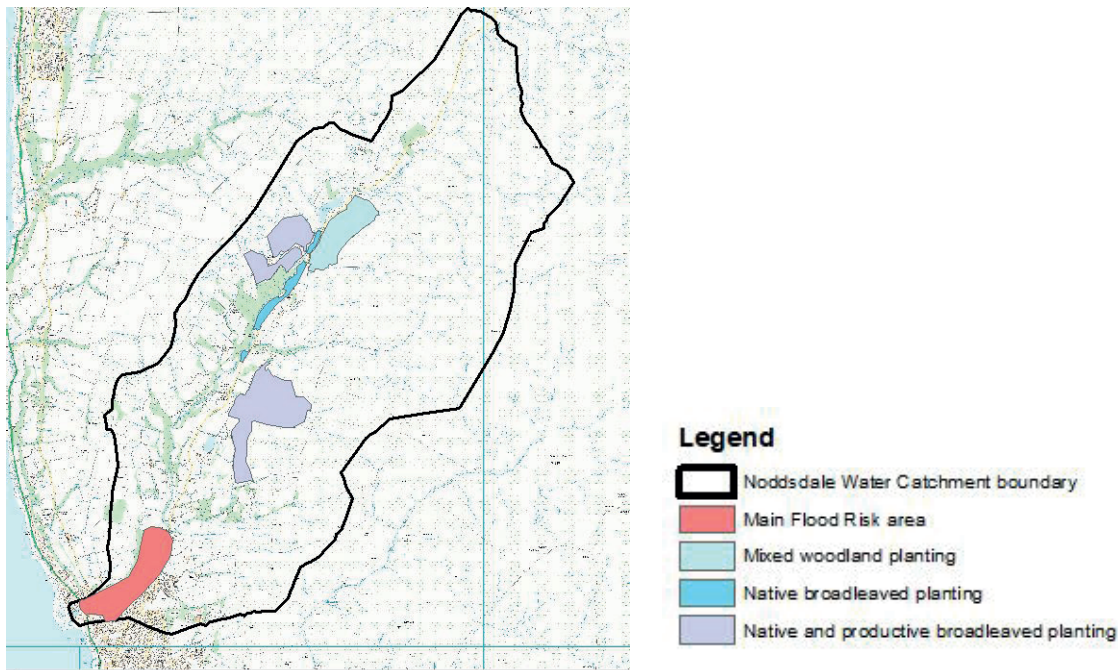


Figure 5 The Noddsdale Water Catchment showing areas of new planting and flood risk zone.

The SEPA Flood Risk Management Strategy for the Noddsdale Water recommended various measures to reduce the flood risk including improving culverts and natural flood management. It also recognised that natural flood management actions could have the additional positive impact of restoring and enhancing natural habitats.

In addition, the Noddsdale Water was identified as having only moderate water quality, largely due to high sediment levels. The bathing water on the coast at Largs is subject to short term pollution resulting largely from agricultural run-off after periods of heavy rainfall. Such pollution events are expected to last 1 to 2 days depending on the duration of the rainfall.

The 136ha of planting being carried out by the four landowners covers 6% of the catchment area of the Noddsdale Water. Existing woodlands within the catchment amount to about 165ha so the new planting will increase the woodland area by over 80%. As a result of the Woodlands for Water grant, the new planting is mainly in areas where it will make the most difference to water quality and natural flood management, e.g. the grant encouraged planting along the various small tributaries to the Noddsdale Water.

The local woodland strategy discourages commercial planting in the Brisbane Glen, mainly for access and landscape reasons and encourages planting types of woodland that will provide multiple benefits.



Figure 6 Planting along the Whittieburn at the southern end of the Noddsdale Water Catchment.

Woodland design and establishment

All water courses within the planting areas were less than 1m wide. A buffer strip adjacent to the water courses were left unplanted, with the width of this open ground varying from 2 to 8m, depended on the landform.

Initial site surveys identified areas of wet flushes that feed water courses within the planting area. These flushes were left unplanted, and the surrounding areas planted as native woodland.

Figure 7 Birch trees next to unplanted wet flush by Whittleburn.

In general, no drainage was carried out in the planting areas, with the wetter areas either being left unplanted or only planted with suitable wet woodland species such as common alder, grey willow and bird cherry. Ground preparation was either by hinge mounding or screening. Mounding the area has made a significant difference to early establishment of the trees by reducing weed competition and providing good root aeration for the young trees. Screening was required where the land was too steep to mound.

On the weedy sites, particularly the riparian areas along the Noddsdale Water, occasional vole damage has occurred. Good weed control has prevented this becoming a major problem on this site by reducing cover and habitat, and allowing natural predation to control vole numbers.

Herbicides have been used to control the competing weeds, which is necessary to get the trees established quickly. This is another reason it is important to leave unplanted buffers around wet flushes and streams, to avoid any contamination of the water courses.

Due to the generally steep, undulating terrain and long stretches of fencing, deer have jumped over the fences and become trapped within the plantations. Providing deer jumps in suitable locations is therefore recommended on such sites. Checking the planting areas regularly and managing the deer population in the wider area is essential, even when using deer fencing.

Other benefits provided by the planting schemes in the Brisbane Glen

In addition to the water quality, natural flood management benefits and specific benefits to the farm, other important benefits are likely to be provided by the planting schemes. Most of the planting areas are within the Primary or Secondary zones of the Native Woodland Habitat Network. This means that the planting is extending or linking generally small, often isolated patches of existing native woodland. Making larger, contiguous areas of native woodland should provide significant benefits to biodiversity enhancement, allowing the native flora and fauna to spread into these areas. It will also help increase the resilience of these woodlands to future conditions such as climate change.



Figure 8. Vole damage to a young birch tree in the Brisbane Glen.



Figure 9 New planting extending a small fragment of native woodland along the Wittlieburn.

The planting is also in an area popular with tourists and locals alike. Some of the planting is adjacent to an existing community woodland with associated car parking. It also links in with a core path along the Brisbane Glen Road. Pedestrian access has therefore been provided to many of the planting areas with footpaths being created through the newly planted woodland.



Figure 10. Waterfall on the Noddsdale Water.