



WSWG Five Mile Wood 25 Year Management Plan

2024-2048

A Positive Vision of the future



Summary

This Woodland Management Plan outlines how WSWG proposes to manage the woodland. The plan addresses the interconnected, and worsening, Climate and Ecological Emergency from day one, implementing emergency actions to create a Biodiversity Network across the woodland for rapid Nature Recovery and Carbon Sequestration. We will embrace the concept of Whole Forest Utilisation to ensure we have a sustainable woodland based resource ranging from timber to “Living Forest” revenue streams.

Community-Led Delivery – by working together we can not only imagine a more positive vision of the future, we can actually make it happen. By discarding the old destructive ways and adopting a new regenerative system, we will ensure our woodlands are:

- 1) Replete with life in all its infinite wonder, where future generations can still enjoy an intimate engagement with nature.
- 2) Enjoyed by people from all walks of life, young and old, from near and far.
- 3) Supporting a sustainable green economy that protects, not degrades our life support systems.
- 4) Sequestering carbon within trees and living soils for decades to come, to afford the younger generation some time to address the deepening Climate Crisis which we have sadly failed to do in any meaningful way.

The woodland restructuring within the first few years is essential if we are to meet our ambitious objectives. The restructuring will involve felling one limited section of the mature woodland adjacent to the access gate which is of low ecological and amenity benefit. This will be replaced by amenity improvements ranging from a car park to children’s play areas. Across the wider woodland we will carry out thinning works in the younger plantation blocks and selected areas to ensure both economic and ecological aims are addressed. These actions will be part of a comprehensive strategy of low impact interventions for positive gains, with particular focus on the large rewilding zone at the north end of the wood aptly named the “Gap Site”.

To view an overview of felling and restructuring, please see accompanying maps: Felling Phases Map and Restock Map.

Contents

1. Woodland overview	4
1.1 Location and background	4
1.2 Access	4
2. Our long-term vision	4
3. Management objectives	4
3.1 Reconnecting people with nature	5
3.2 Ecological restoration	5
Rationale for rapid nature recovery	5
3.2.1 Nature Recovery zone 1 (the gap site)	6
3.2.2 Nature Recovery zone 2 : Oak tree recovery	8
3.2.3 Woodland wildflower restoration	8
3.2.4 Proforestation - creating natural reserves for wildlife and carbon sequestration.	9
3.2.5 Red squirrel conservation	10
3.2.6 Breeding bird populations under this plan	10
3.2.7 Increase deadwood component and ecological continuity	10
3.2.8 Establish a wider, more natural age class component	11
3.2.9 Increase tree species and plant diversity	11
3.3 Improve access and recreational infrastructure	12
3.4 Increase social return and wellbeing potential	12
3.5 Visual aesthetics and forest bathing	13
3.6 Whole Forest utilisation	13
3.7 Carbon sequestration	13
4. Woodland description	14
4.1 Biodiversity	14
4.2 Woodland composition	14
5. Proposed felling and thinning operations	16
6. Appendices	17
Appendix WMP1: Deadwood Management Plan	17
Appendix WMP2: Birch Management Plan	19
Appendix WMP3: Wildlife Management Plan	20

Appendices attached: FMW1- Felling phases

FMW2 - Prescriptions

Maps attached:

1 - Compartment map,

2 - Felling phases map

3 - Restock map

4 - Final vision map

1. Woodland overview

1.1 Location and background

Five Mile Wood is located within an area of farmland, north of the village of Stanley, Perthshire. The woodland has been managed by Forestry and Land Scotland (formerly Forest Enterprise Scotland), East. The main entrance is at OS Grid Ref: NO 0920 3249

1.2 Access

The main access is on the southern boundary at the public road. A further foot path is located on the northern extent, which links south to the forest road network. This footpath is presently in poor condition with regular flooding. WSWG plans to upgrade this path by creating an all-abilities path. The car park will also be expanded and have an all abilities path created in the immediate vicinity.

The main forest track is in good condition structurally but will require surface scraping of gorse in some verge sections to allow pedestrian and vehicular movement.

2. Our long-term vision

“To achieve significant progress towards a thriving community living in a sustainable, healthy and enjoyable landscape in eastern Strathgairn centred on the two rapidly naturalising Taymount Wood and Five Mile Wood. Substantially enhanced landscape ecology, improved and integrated access provision and a boosted local wellbeing economy.”

3. Management objectives

Our Approach to forest management

We aim to initiate a paradigm shift in forest management thinking, which can be replicated across the country at both local and regional scale. Humanity now faces an existential threat from the interlinked Climate and Ecological Emergency, heralding the collapse of our life support systems across the planet, not seen at this rate for millions of years. Our approach to management must reflect our need to mitigate these combined emergencies, while at the same time ensuring the woodland meets the economic and social benefit aspirations of the community.

Our primary objectives are as follows:

- **Whole forest utilisation**, from sustainable timber production to living forest generated revenue streams.
- Meaningfully increase our woodlands carbon sequestration potential (**Carbon Drawdown**)
- Initiate emergency actions for rapid **Nature Recovery** at Nature’s scale
- Support the **local wellbeing economy** to benefit our community and reduce its carbon footprint.

- **Re-connect people with nature** through community education & activities.
- Ensure **future generations** continue to enjoy the unique benefits which only woodlands can give.
- Help facilitate a **living network** of woodland corridors linking woodlands and communities across the region, where wildlife and people can connect and thrive.

3.1 Reconnecting people with nature

WSWG has already been cited as a delivery mechanism/working partner in the Strathtay Local Action Plan with particular regard to health and wellbeing.

We will continue to facilitate the re-connection of people with nature through a multitude of pathways, such as improved access, educational programmes and woodland events, such as the numerous and well received woodland events which WSWG have already implemented in over the past 3 years. We will bring people together from all walks of life for woodland activities relating to “on the ground” woodland management. However, this is much more than simply getting people out to enjoy their local woodlands.

We envisage our woodlands to be the central hub in a new and positive move towards a more harmonious relationship between people and land management, where the concept of increasing natural resilience, regenerative land management and minimising our ecological footprint at both local and global level is built into every aspect of our daily lives. **Put simply – we will use our woodlands to facilitate a new, positive vision of the future.**

3.2 Ecological restoration

Existing biodiversity: Although there is a wide range of woodland habitat types including upland mixed broadleaved, native pinewood, upland oak/birch, the woodland is severely lacking in essential ecological continuity and resources, such as structural heterogeneity, deadwood habitat, old growth and legacy trees, nectar sources for insects and native tree species diversity. **Put simply - the woodland is ecologically traumatised and not functioning as nature intended.** What we perceive to be a healthy biodiverse woodland is, in reality, symptomatic of the influence of “shifting baseline syndrome”, whereby each generation views their environment as normal, failing to realise the catastrophic erosion of our natural world over time.

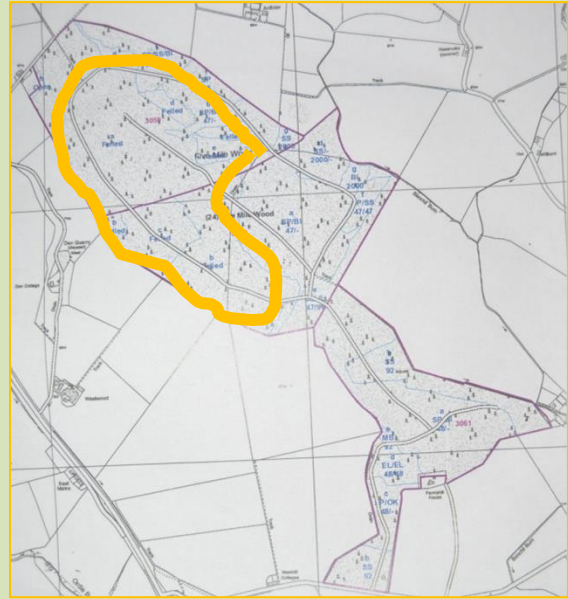
However, Five Mile Wood has good potential to become one of the most biodiverse woodlands in Scotland. First and foremost will be a structural change in species composition to increase diversity of tree, shrub and plant species at scale. This will bring about an exponential increase in biodiversity and act as a Best Practice model for others to learn from. Only by working at nature’s scale can we hope to stem the haemorrhaging of species loss being witnessed globally.

3.2.1 Nature Recovery zone 1 (the Gap Site)

Wild rose is one of many pioneer species on the site



Overview showing FMW Nature Recovery zone 1 – “The Gap Site” Rewilding zone



Situated on the northern extent of the woodland is the “Gap Site”, an area of cleared windblow extending to approximately 60ha.

At present the site is regenerating under a heavy mix of birch scrub with sporadic sitka spruce and gorse. If left unchecked this area will become an impenetrable thicket with poor ecological, financial and community benefit.

Action required: We will facilitate a Rewilding zone covering approximately 58 hectares. A 2 hectare conifer section will be planted on the northern extent as a buffer to winds and for amenity benefits. The regenerating scrub – gorse, bramble and wild rose - will be encouraged (away from paths) both for their wildlife benefits and, in particular, to act as natural protection against deer for regenerating and planted oak trees, together with wild apple, cherry, rowan, hawthorn, alder, willow and other species in a mosaic of open native woodland, wet systems and heath habitats.

The extensive birch regeneration will be lightly managed to act a soil builder and nurse tree for other species, thus increasing biodiversity as the site develops over time with nature in the driving seat.

Image below: Indicative view after nature recovery, with open grown oak and native flowering trees and shrubs. A rich tapestry of colour, scent and sound, haven for wildlife and high amenity value.



This Rewilding zone will form a significant part of our Natural Capital development strategy and our ambitious Five Mile Wood “Woodland Observatory Project” which is a proposal for a long-term, learning-through-observation, educational project through which we can watch Five Mile Wood evolve over time, seeing how different parts of the wood grow, finding out what wildlife comes in at different stages, what effects different management activities bring for wildlife, learning how people and wildlife can best share the woods, monitoring the impacts of climate change, what food and other products our forests can provide, and whatever else we wish to find out.

There will be a staff member who will be based at Taymount Wood Hub and who will work on the project with local people, community organisations, schools, colleges and others. The project will be for all ages and levels, from Forest School to U3A (University of the Third Age), from citizen science to academic research links. The University of Edinburgh already has a long-term research project in which Five Mile Wood is one of forty sites looking at the impact of climate change on the nesting dates and breeding success of blue tits in Scotland.

We will observe, investigate and write up about:

- i The Rewilding of the northern “Gap Site”
- ii Management to naturalise the southern Mature Plantation Woodland
- iii Sustainable Forest Products for use or sale
- iv Historical Features in Five Mile Wood

The goal of this Flagship Project is that by coming to know Five Mile Wood inside out, our community will be best placed to love, protect and nurture this precious and historic wood long into the future. We will add to the archives of the future, just as the archives of the past have saved for us the story of Five Mile Wood as recorded for WSWG in Christopher Dingwall’s report of 2022 entitled “Notes on the Early History of Five Mile Wood and Taymount Wood.”

3.2.2 Nature Recovery zone 2: Oak tree recovery

This section broadly covers the southern half of the woodland. There are many sporadic oak trees in this zone which are invaluable to wildlife and enjoyed by woodland users. A single oak can support over 300 species of invertebrates and the acorns are an important food resource for the red squirrel population. However, oak trees are shade-intolerant and many are now becoming over-shaded by adjacent conifers, which will result in early die back, severely cutting their lifespan.

Action required: We intend to “halo” these oaks by removing many the over-shading conifers that surround them, thus increasing their survival chances and longevity. This preservation action will complement woodland wide protection of newly regeneration of oak saplings in suitable locations.

3.2.3 Woodland wildflower restoration

It’s a sobering thought that wildflower meadows have been eradicated by over 97% since the 1930s. Our woodland flowers have suffered similar declines, although for different reasons.



WSWG will ensure wild flower restoration and protection is incorporated into our Nature Recovery zones and other woodland management actions, as well as along the network of forest road verges where thin soils foster a rich assembly of specialist species, which in turn support thousands of insects across the woodland.

3.2.4 Proforestation - creating natural reserves for wildlife and carbon sequestration.

Proforestation is a term used to describe allowing trees to grow and reach their biological potential instead of felling them at an early age, as is the usual case. This is now considered as the most effective way to sequester carbon as individual large trees absorb significantly more carbon than many smaller trees. It's also the only way to achieve large dimension trees for the benefit of wildlife and people. As such we have identified the most critical areas where proforestation can be implemented. This will also attract nature-based funding to ensure we can actually make a sustainable income from the living forest, while protecting the planet as the same time.

Image below showing aerial view showing the contrast between 75 year old Scots pine habitat and the adjacent "Gap Site" at Five Mile Wood.



3.2.5 Red squirrel conservation

The woodland plan also incorporates actions required to safeguard the red squirrel population. This has now become critical after unprecedented storms destroyed over 50% of the red squirrel habitat in eastern Scotland in November 2021. Crucially it will prioritise the retention of the small, but strategically distributed sections of Scots pine and thinly scattered oak trees to ensure a sustainable food supply and shelter habitat throughout the year. We will augment this supply by planting a wide range of other tree species, such as hazel.

The resulting increased red squirrel carrying capacity through year-round habitat provision (food, shelter, nesting, etc) across the wood will increase the red squirrel population. We will also work with neighbouring landowners to improve landscape ecology through connectivity of habitat. Over time, the large rewilding zone in the “Gap Site” will become an important red squirrel habitat, ensuring their persistence in the wood.

3.2.6 Breeding bird populations under this plan

There are currently around 20 or so species breeding in the wood, although the numbers of most of these are very low, due to a lack of nesting habitat and feeding resources – mainly insects. Our habitat enhancement measures will significantly increase these resources to halt the sharp declines in woodland bird numbers witnessed across the UK over recent years. The rewilding zone in particular will have profound benefits for nesting birds as the site evolves.

3.2.7 Increase deadwood component and ecological continuity

Almost 5,000 British species depend upon deadwood habitat for survival. WWF recently called on European governments to help conserve Bio-diversity by substantially increasing deadwood in forests by 2030.

To address the critical shortage of deadwood habitat across the site (in particular, the continuity of successive stages of decaying wood), we have produced a Deadwood Management Plan to ensure this resource is restored and protected for decades to come. This can only be realised to



its full potential with our Proforestation objectives. Allowing trees to grow under natural processes, to reach their biological potential, whereby deadwood habitat is an integral component of a dynamic woodland ecosystem. In areas where there is a severe deficiency, we will also speed up the process by intervention, tree veteranisation and other methods.

Image Left: protection of standing dead trees will be a priority to increase this essential woodland habitat. Under this Woodland Management Plan, our Deadwood Management Plan ensures a continuous deadwood resource for decades to come.

Deadwood habitat such as dead trees, decaying logs, etc is essential for woodpeckers – a keystone species. Their disused nest holes in trees become critical nesting habitat for other hole-nesting birds, bats and insects. Other bird species also utilise them during winter weather for survival.

Aquatic deadwood habitat: In-stream large woody debris (LWD) will also be restored in all water courses / water bodies.

3.2.8 Establish a wider, more natural age class component

There is a comprehensive absence of old growth trees across the site, which is a reflection of historic management. The comprehensive absence of trees over 50 or 60 years old in this and most other woodlands is one reason UK woodlands are biologically impoverished and ecologically dysfunctional.

Nothing else can substitute this habitat. Visually, from a distance, legacy / ancient trees have high landscape and aesthetic value and attract a range of funding. At near distance they can afford a unique spiritual connection to the visitor. Study after study has shown a measurable physical health and well being benefit from this intimate engagement with nature.

Our restructuring will create a more natural age structure, meeting social, economic and ecological objectives.

Image below: Are we to deprive future generations of the opportunity to experience ancient woodland for short term profit, or do we act as responsible custodians of the ancients of the future?



3.2.9 Increase tree species and plant diversity

Specifically - our objective here is to ensure the woodland is resilient to climate breakdown and associated weather extremes, disease and biodiversity collapse. We will substantially increase plant (woodland flowers) and tree species diversity throughout the woodland by enrichment planting and protection of natural regeneration of species presently suppressed by deer pressure.

Species composition will be largely influenced by soil types and woodland NVC, as well as nature driven processes such as natural dispersal (eg: jays, wood pigeons, thrushes importing seeds). Broadly - increasing coverage of hazel, goat willow, wild cherry, bird cherry, holly, rowan, wild apple, wych elm, alder, hawthorn, blackthorn, elder, juniper and, specifically, oak. Birch regeneration is already widespread, especially in the extensive gap site. We will allow this to continue across site as a pioneer soil builder until other species can become established, although many birch zones will continue to be retained for both economic and ecological reasons.

3.3 Improve access and recreational infrastructure

Our proposals include two all abilities paths, one of which will be situated at the northern access point and will link with the existing surfaced forest road, with the other path being located at the southern access point where most of the infrastructure will be situated. This will include standard and disabled parking facilities, outdoor gym, cycle stand, electric vehicle charging point, compost toilets, picnic and forest school area. An additional forest school location will be situated on the south eastern woodland edge adjacent to the Active Kids centre.

Interpretation and information facilities will also be located throughout the woodland. An extensive network of un-surfaced walking trails will be established and these will link with existing forest roads.

3.4 Increase social return and wellbeing potential

Health and wellbeing: Our vision for the woodland will herald in a more positive vision of the future, with boosted local green economies and where user groups experience an enhanced engagement with nature through a myriad of nature-based activities, thus boosting health and wellbeing of user groups. These diverse groups will range from local school children and mentally and physically vulnerable people to the elderly and socially isolated.

Employment opportunities: Our facilities at the Taymount Hub and associated woodland programmes both at Taymount and Five Mile Wood will generate up to 6 direct posts. These will in turn generate indirect employment opportunities as projects are developed in conjunction with local stakeholders. The many varied activities related to the woodland management and nature-based activities will also boost the local economy.

WSWG grant aid for community projects: WSWG will establish a small grant aid scheme dedicated to funding local charities, groups, schools, green initiatives (including from individuals) that aim to implement actions, activities and business ideas that benefit the environment and health and wellbeing. These will be primarily targeted at activities not related to the woodlands, thus contributing to the wider community benefit.

3.5 Visual aesthetics and forest bathing

Five Mile Wood has extensive maturing Scots pine woodland sections still remaining. These will be allowed to grow old naturally so that future generations can experience a naturalising woodland and walk amongst massive trees hundreds of years old.

The combined maturing forest of pine, oak and larch, and developing rewilding zone will allow visitors to experience an intimate engagement with nature from the rich tapestry of colour, sound, scent and life in all its diversity. The health and wellbeing benefits of this cannot be over-exaggerated. Neither can the medicinal benefits of simply walking through the woodland, where walkers literally breathe in the natural chemicals in the air called Phytoncides produced by trees, especially conifers. These Phytoncides actively reduce stress hormone levels and can boost the immune system, which can last up to a month afterwards.

3.6 Whole Forest utilisation

We will embrace the concept of Whole Forest Utilisation, from sustainable timber production to “Living Forest “ income streams from both the public and corporate bodies, including Biodiversity related revenue streams, tree sponsorships, Natural Capital and carbon Sequestration payments. We envisage industry-led changes in environmental legislation will foster new opportunities for nature-based revenue. Our biodiversity survey and monitoring programme will help inform where high quality Natural Capital credits can be developed and utilised.

Other examples of potential income generation which could be developed at Five Mile Wood include ecotourism (eg A9 “Aire” stop-off for campervans and other visitors), forest activities, fungi / mycoforest, birch sap, honey production and ground lease to honey producers, special events venues and renewable energy.

3.7 Carbon sequestration

There is now only one process via which we can effectively secure our future by cooling the planet. This is **pedogenesis**: the microbial bio-conversion of organic matter by fungi and soil microbes into stable soil carbon. Forests can only effectively cool the planet if they have surplus water. That water can only come from healthy biodiverse living soils, increasing bio-fertility, the living micro-biome driving the longevity of growth and carbon drawdown potential and, crucially, increases the rates of transpiration of water from the forest back into the upper atmosphere where it actually cools the planet via the hydrological cycle which is responsible for 95% of the heat dynamics of the planet.

We aim to substantially increase tree diversity by at least 14 species. Studies have shown carbon sequestration significantly increases with tree diversity.

Existing forests could, if managed differently, remove at least twice as much atmospheric carbon than they currently do (Erb et al.2018). We will implement **Proforestation management** to allow trees to reach their biological potential for carbon storage, in both above and below ground biomass. We will also maximise diversity of mycorrhizal fungi to help maximise stable soil carbon sequestration. Fungi-rich soils can sequester around 70% more than depleted soils.

We will seek income from carbon offsetting – industry-funded, as well as carbon footprint offsetting for individuals / members of the public.

Priority actions:

- 1) Avoid soil disturbance in all tree planting operations to avoid carbon loss and heat re-radiation from bare soils.
- 2) Avoid all biocides in the forest to protect soil biology.
- 3) Restore / protect the forest’s soil carbon sponge by substantially increasing deadwood, tree and plant diversity, fungi communities and implementing Proforestation.

4. Woodland description

4.1 Biodiversity

FMW is within the catchment of the River Tay SAC. The local red squirrel population at Five Mile and Taymount Woods has been studied for the past ten years in the Saving Scotland’s Red Squirrels project, managed by the Scottish Wildlife Trust. Preliminary ecological surveys carried out by WSWG ecologists have also found several species of invertebrates which are extremely rare in the region.

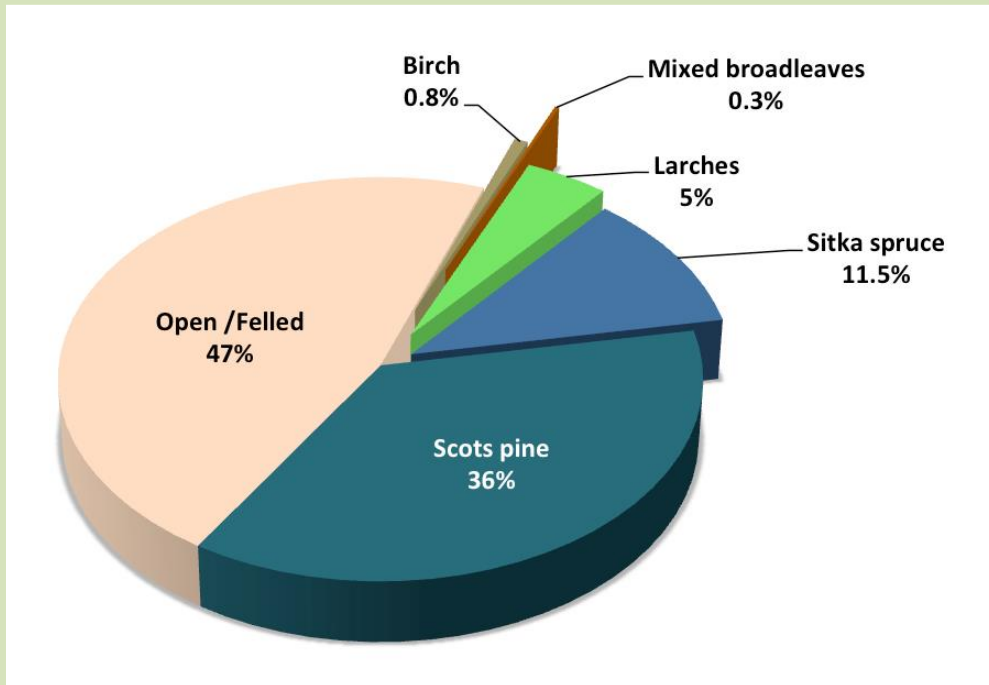
Both Five Mile Wood and Taymount Wood are considered biodiversity refugia, where species have found refuge as the landscape around them has been fragmented and destroyed over recent decades, leaving these two woodlands as “mainland islands” in a degraded landscape.

Protecting the ecological integrity of the woodland is even more significant when put into context of the national and global biodiversity crisis we are witnessing at present.

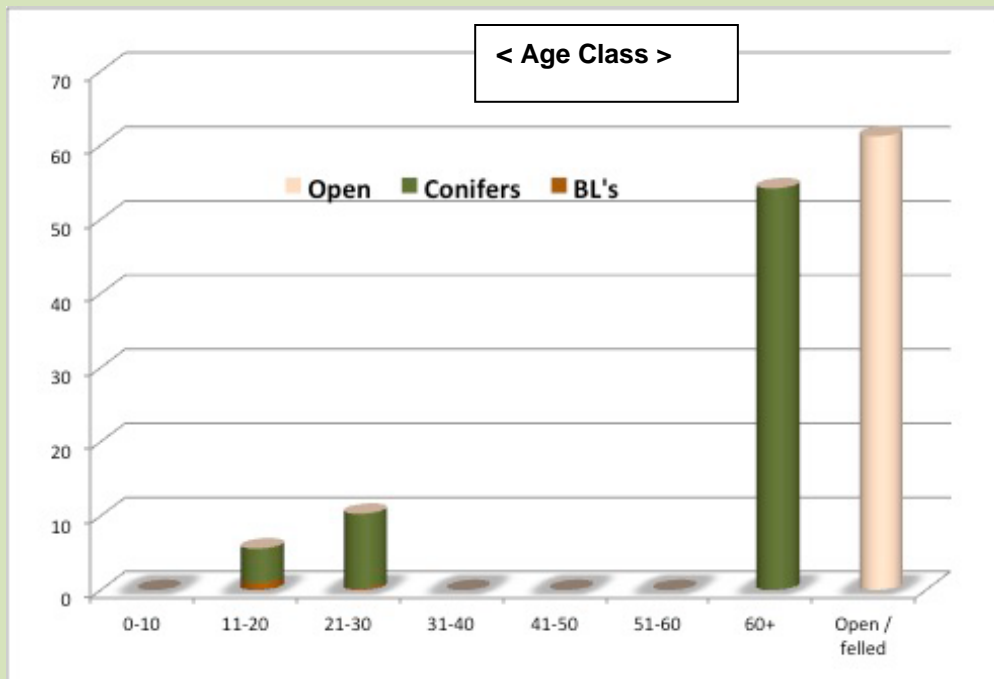
4.2 Woodland composition

Scots pine is the dominant species with a coverage of approximately 46Ha / 36% of the species composition. All of the pine blocks are around 70 years of age. Sporadic oak, birch and beech are found throughout the lower sections of the wood in a mosaic of broadleaved, pine and larch. The northern section is dominated with the 60ha felled zone, which is now regenerating rapidly with a diverse mix of broadleaved species, sitka and pine. See chart below for a breakdown of species composition.

Figure below: showing species composition



Age class: The age class of FMW is illustrated in the bar chart below and shows the major dominance of conifers over 60 years old within the stocked woodland category.



5. Proposed felling and thinning operations

For detailed overview please see the accompanying Felling Phases Map and Restocking Restructuring Map

Felling will be limited to the 1.4 ha sitka spruce block at the access gate to allow for car park extension and amenity infrastructure. This will be carried out during Phase 1 (2024 – 2028)

Thinning cycles are set at around 5-7 years. Thinnings will have three main objectives.

1) To allow increased light levels to afford suitable conditions for a more diverse species mix of trees to be planted / regenerate and, to reduce the impact of Dothistroma Needle Blight in the Scots pine.

2) To increase log quality of the sitka spruce and larch blocks for future production.

3) To generate income.

Table below showing 25 year felling and thinnings proposals

	Phase 1 Years 1-5	Phase 2 Years 6-11	Phase 3 Years 11-15	Phase 4 Years 16-20	Phase 5 Years 21-25
Felling Area by hectare	1.4	0	0	0	0
Thinnings Area by hectare	30.1	9.8	9.8	13.1	9.8

Table below showing proposed volumes of timber in cubic metres felled in each 5-year phase for Taymount and Five Mile woods. Sales are estimated at slightly below the UK average prices as stated in the National Statistics on Timber Price Indices produced by Forest Research. Estimates as follows - £70/m³ for sawlogs, with SRW at either £35 or £40m³ (sawlogs at 75.8%, with SRW at 24.2%).

5-year phases	T W volumes	T W Income	F M W volumes	F M W income
Phase 1	6,306.4	£367,712	2,244	£114,746
Phase2	1,638	£96,372	470	£17,950
Phase 3	1563	£91,881	470	£17,950
Phase 4	795	£44,503	570	£24,103
Phase 5	2,360	£145,211	470	£17,950
Total		£745,679		£192,699

6. Appendices

Appendix 1: Deadwood Management Plan

The UK Forestry Standard (UKF) and the UK Woodland Assurance Standard (UKWAS) both emphasize the need to take account of deadwood when seeking to attain standards of sustainable management. This Deadwood Management Plan outlines the deadwood strategy which WSWG will adopt as part of our commitment to sustainable woodland management. Deadwood in the form of fallen logs, dead branches and standing stems (snags) are an essential component of a woodland. In the UK about 5,000 species (13%) of our native invertebrate, animal and fungus species have life cycles associated with the deadwood environment. However, the deadwood component within British woodlands is critically low and, in most cases, simply inadequate to sustain the dependent wildlife associated with it. Taymount and Five Mile Woods have been found to support many rare invertebrate species, including some classed as Nationally Scarce, which are dependant upon the deadwood resource. Of particular value from standing deadwood is its provision as woodpecker habitat. Woodpeckers are a keystone species. The cavities excavated by woodpeckers are an indispensable habitat resource for many other species of birds, mammals and invertebrates. Woodpeckers are also an indicator species, with their presence directly correlating to the density and diversity of woodland bird populations. This factor has important implications for deadwood habitat management.

Management actions to maintain decaying wood habitat resource

Management category	Actions needed
Working with natural processes	<p>Allow natural processes such as wind, natural decay, accumulation of Large woody debris (LWD) in streams to create and maintain deadwood habitats.</p> <p>Allow trees to age and hollow.</p> <p>Only harvest windblow when it is of significant economic value or is more than is required to contribute to accumulating deadwood volumes on site. Leave a significant proportion of windblown wood. Aim for at least 30m³ per hectare.</p>
Protecting and adding value to existing deadwood	<p>Match retained deadwood to the requirements of species likely to be important on the site.</p> <p>Improve habitat diversity by having a range of tree/shrub species at varying stages of decay and in a variety of light conditions; stems greater than 10 cm diameter, with emphasis on large dimension timber large enough to take many woodpecker cavities. Spruce and beech can be good options in shaded conditions, but may take 20 years of decay to become suitable, so prioritise diversity and continuity of deadwood stages with a range of species.</p>

	<p>Leave stems of no commercial value that die through shading. Carry out gradual thinning/haloing to open up existing veteran trees and glades.</p> <p>Aim for a minimum of 3 veteran trees per hectare across the site.</p>
Creating and expanding deadwood habitat	<p>Increase diversity of structure, to ensure a sustainable variety of decaying wood habitat, and to maintain canopies of existing and potential veteran trees.</p> <p>Aim for a minimum of 30m³ /ha of deadwood, (various stages of decomposition) with particular focus on standing deadwood >20cm DBH.</p> <p>Retain all standing deadwood throughout the forest and implement protection measures during timber operations. In particular – protect snags with woodpecker holes as these may have bat roosts in them.</p> <p>Consider scope for designating some stands as Natural Reserves and manage on a minimal intervention basis.</p> <p>Create deadwood, in particular, standing stems (snags) where there is < 10% deadwood available. Prioritise creating snags with woodpecker nesting capacity.</p>
Improving linkage between deadwood habitats	<p>Target the creation of deadwood habitats to enable buffering of High or Medium value areas.</p> <p>Create deadwood corridors linking fragmented high value deadwood habitats.</p>

Appendix 2: Birch Management Plan



The birch component in Five Mile wood, although not as extensive as in Taymount wood, is still worthy of a dedicated management plan due to both the present limited distribution and the extensive birch regeneration now occurring throughout the wood and, in particular within the rewilding zone in the Gap Site. Much of this in the future will need to be thinned to reduce density and extend their lifespan, if we are to maximise their value either for biodiversity, future logs or birch sap revenue. It may not be cost effective however to fell and extract hundreds of small logs and removing them will be highly destructive to the woodland and carry a massive carbon footprint. It will also remove an essential food resource for invertebrates and fungi – the life support system of the woodland.

Because there is a critical shortage of deadwood habitat across the site, and in particular the birch zones, we must see to the needs of nature first before embarking on costly and destructive timber processing operations. This will meet our primary objective of increasing woodland Biodiversity.

Action required:

- 1) Leave the felled trees in situ to feed the soil fungi and other soil biology. This significantly increases carbon sequestration and feeds the soil biology which supports the woodland and helps to cool the planet.
- 2) Logs are heaped as habitat piles for wildlife - invertebrates, hedgehogs, amphibians and nesting birds and small-scale commercial fungi growing. Logs are also removed from birch zones to be used for similar benefit in other depleted areas across the woodland. Logs are also extensively used in children's activities – bug hotels, bee nesting areas, beetle logs, hedgehog and bird nesting sites. These activities will also attract funding. Some logs will also be used for on site fencing, arts and crafts, building materials and other needs.

Appendix 3: Wildlife Management Plan

Rationale

To enable us to maximise success on restoring woodland ecosystem function, and to identify Natural Capital revenue stream opportunities, we will first need to understand what species are present and what their ecological needs are. Baseline information will be required in the early stages. In addition to these actions, we also have drawn up a list of activities to be carried out including but not limited to the following:

Habitat creation projects

- Artificial bat roost installation
- Badger sett construction
- Amphibian breeding habitat – ponds, blocked ditches. Hibernacula creation.
- Wood ponds for habitat specific invertebrates (shallow scrapes, seasonal wet/dry)
- Owl and kestrel nest site construction - on poles with marten deterrent.
- Invertebrate habitat piles.
- Beetle boxes
- Solitary and bumble bee breeding habitat. Honey bee log hives.
- In-stream LWD habitat in selected watercourses, ponds for aquatic invertebrates.
- Butterfly habitat – foodplant protection and expansion, eg: common blue butterfly, green hairstreak, small copper, purple hairstreak, others.
- Moth species – foodplant protection and expansion. Species to be determined after survey data collation.
- Deadwood habitat creation
- Reptile habitat creation, including hibernacula.
- Windblow retention (unprocessed), identification, mapping, database, liaison with felling contractors, demarcation and survey monitoring.
- Nesting habitat for selected bird species where natural sites are limited, for example - tree creeper, song thrush, spotted flycatcher.
- Pine marten den construction
- Otter holt construction
- Hedgehog breeding and hibernacula habitat piles.

Reintroduction of species (includes expansion of on-site rare species.)

- Wood ant species - *F. lugubris*, *F. sanguinea*, *F. aquilonia*. Other invertebrate species.
- Twin flower and other rare woodland plants
- Reptiles – common lizard and slow worm, unless recorded on site.
- Aquatic plants in created wet zones / ponds.

Priority species conservation management plans

These will inform forestry management and design.

- Red squirrel
- Hedgehog
- Invertebrate species – rare bees, beetles, moths etc discovered on site.
- Reptiles.
- Common blue butterfly, other species added after survey results and reintroduction



“A society thrives when old men (and women) plant trees, knowing they will never rest in their shade.”