



Irthing Gorge Woodland

**Management Plan
2018-2023**

MANAGEMENT PLAN - CONTENTS PAGE

ITEM	Page No.
Introduction	
Plan review and updating	
Woodland Management Approach	
Summary	
1.0 Site details	
2.0 Site description	
2.1 Summary Description	
2.2 Extended Description	
3.0 Public access information	
3.1 Getting there	
3.2 Access / Walks	
4.0 Long term policy	
5.0 Key Features	
5.1 Informal Public Access	
5.2 Ancient Semi Natural Woodland	
5.3 New Native Woodland	
6.0 Work Programme	
Appendix 1: Compartment descriptions	
Appendix 2: Harvesting operations (20 years)	
Glossary	

MAPS

- Access
- Conservation Features
- Management

THE WOODLAND TRUST

INTRODUCTION

The Trust's corporate aims and management approach guide the management of all the Trust's properties, and are described on Page 4. These determine basic management policies and methods, which apply to all sites unless specifically stated otherwise. Such policies include free public access; keeping local people informed of major proposed work; the retention of old trees and dead wood; and a desire for management to be as unobtrusive as possible. The Trust also has available Policy Statements covering a variety of woodland management issues.

The Trust's management plans are based on the identification of Key Features for the site and setting objectives for their management. A monitoring programme (not included in this plan) ensures that these objectives are met and any necessary management works are carried out.

Any legally confidential or sensitive species information about this site is not included in this version of the plan.

PLAN REVIEW AND UPDATING

The information presented in this Management plan is held in a database which is continuously being amended and updated on our website. Consequently this printed version may quickly become out of date, particularly in relation to the planned work programme and on-going monitoring observations. Please either consult The Woodland Trust website www.woodlandtrust.org.uk or contact the Woodland Trust (wopsmail@woodlandtrust.org.uk) to confirm details of the current management programme.

There is a formal review of this plan every 5 years and a summary of monitoring results can be obtained on request.

WOODLAND MANAGEMENT APPROACH

The management of our woods is based on our charitable purposes, and is therefore focused on improving woodland biodiversity and increasing peoples' understanding and enjoyment of woodland. Our strategic aims are to:

- Protect native woods, trees and their wildlife for the future
- Work with others to create more native woodlands and places rich in trees
- Inspire everyone to enjoy and value woods and trees

All our sites have a management plan which is freely accessible via our website

www.woodlandtrust.org.uk. Our woods are managed to the UK Woodland Assurance Standard (UKWAS) and are certified with the Forest Stewardship Council® (FSC®) under licence FSC-C009406 and through independent audit.

In addition to the guidelines below we have specific guidance and policies on issues of woodland management which we review and update from time to time.

We recognise that all woods are different and that the management of our sites should also reflect their local landscape and where appropriate support local projects and initiatives. Guidelines like these provide a necessary overarching framework to guide the management of our sites but such management also requires decisions based on local circumstances and our Site Manager's intimate knowledge of each site.

The following guidelines help to direct our woodland management:

1. Our woods are managed to maintain their intrinsic key features of value and to reflect those of the surrounding landscape. We intervene when there is evidence that it is necessary to maintain or improve biodiversity and to further the development of more resilient woods and landscapes.
2. We establish new native woodland using both natural regeneration and tree planting, but largely the latter, particularly when there are opportunities for involving people.
3. We provide free public access to woods for quiet, informal recreation and our woods are managed to make them accessible, welcoming and safe.
4. The long term vision for our non-native plantations on ancient woodland sites is to restore them to predominantly native species composition and semi-natural structure, a vision that equally applies to our secondary woods.
5. Existing semi-natural open-ground and freshwater habitats are restored and maintained wherever their management can be sustained and new open ground habitats created where appropriate.
6. The heritage and cultural value of sites is taken into account in our management and, in particular, our ancient trees are retained for as long as possible.
7. Woods can offer the potential to generate income both from the sustainable harvesting of wood products and the delivery of other services. We will therefore consider the potential to generate income from our estate to help support our aims.
8. We work with neighbours, local people, organisations and other stakeholders in developing the management of our woods. We recognise the benefits of local community woodland ownership and management. Where appropriate we allow our woods to be used to support local woodland, conservation, education and access initiatives.
9. We use and offer the estate where appropriate, for the purpose of demonstration, evidence gathering and research associated with the conservation, recreational and sustainable management of woodlands. In particular we will develop and maintain a network of long-term monitoring sites across the estate.
10. Any activities we undertake will conform to sustainable forest management principles, be appropriate for the site and will be balanced with our primary objectives of enhancing the biodiversity and recreational value of our woods and the wider landscapes.

SUMMARY

This public management plan briefly describes the site, specifically mentions information on public access, sets out the long term policy and lists the Key Features which drive management actions. The Key Features are specific to this site - their significance is outlined together with their long (50 year+) and short (5 year) term objectives. The short term objectives are complemented by a detailed Work Programme for the period of this management plan. Detailed compartment descriptions are listed in the appendices which include any major management constraints and designations. A short glossary of technical terms is at the end. The Key Features and general woodland condition of this site are subject to a formal monitoring programme which is maintained in a central database. A summary of monitoring results is available on request.

1.0 SITE DETAILS

Site name:	Irthing Gorge Woodland
Location:	Gilsland
Grid reference:	NY634685, OS 1:50,000 Sheet No. 86
Area:	33.62 hectares (83.08 acres)
Designations:	Ancient Semi Natural Woodland, National Park, Planted Ancient Woodland Site, Site of Special Scientific Interest, Special Area of Conservation

2.0 SITE DESCRIPTION

2.1 Summary Description

This ancient woodland lines the steep slopes of a deep gorge chiseled by the River Irthing, with Crammel Linn waterfall at its head. Red squirrels and badgers inhabit the gorge, alongside a varied bird population and a rich mix of woodland plants.

2.2 Extended Description

The gorge lies at an altitude of 150-210m and is deeply cut through gently undulating moorland. The exposed rocks of the Gorge are part of the Scottish calciferous sandstone series, consisting of thick beds of sandstone varying from acidic to calcareous with thinner bands of calcareous shale. Both sides of the Gorge support an excellent example of upland gorge woodland and have been designated a Site of Special Scientific Interest (SSSI). They are semi-natural in nature with relatively inaccessible, untouched Ancient Semi-Natural Woodland (ASNW). However, the some of the more accessible parts that have been managed and are Planted Ancient Woodland Sites (PAWS). Most of the wood is within the Northumberland National Park, and adjacent to the river and moorland areas which are a Special Area of Conservation (SAC). The gorge woodland forms part of a complex of habitats associated with the river and surrounding moorland. The upper reaches of the gorge to the east abut Ministry of Defence land and to the west over the river is Forestry Commission land, both of which are commercial coniferous plantations. The river is fast flowing and rocky and has side streams and waterfalls. The cliffs vary from 10m to 40m high with many crags and ledges with rich and varied bryophyte communities, lichens in the drier areas and several species of ferns.

The 34ha ancient semi-natural woodland is predominantly upland mixed ash wood with patches of birch woodland. A typical mix is of ash, hazel with elm, oak, birch, rowan, some willow and areas of sycamore and beech. The planted ancient wood areas contain ornamental specimens and very small blocks of conifers such as larch, pine, poplar, spruce, fir which were planted in Victorian times, particularly in the southern section, and are now mature and increasingly impressive trees. The density of these large, mature ornamental specimens increases around the nearby Gilsland Hall Hotel. The shrub layer is generally quite frequent on steeper slopes and sparser elsewhere and contains hazel, hawthorn and blackthorn. On the lower slopes adjacent to the river there are areas of wet woodland, predominantly alder with ash and hazel. Yew trees can be found on cliff ledges, one of few native-Northumberland localities. There were large areas of rhododendron in the southern section when the wood was acquired, which have nearly been eradicated after many years of control, although there is still some regeneration in places. The woodland was extended in 2004 when over 13ha of rough grassland within Woodland Trust ownership in the north east was planted with native trees. The ancient woodland flora is quite rich and is composed of nutrient-loving water demanding species such as dog's mercury, water avens, tufted hair-grass and on slightly more acidic slopes woodrush and wavy hair-grass. Richer flushes include the rare variegated horsetail and wood fescue plus the uncommon yellow saxifrage, which was a once widely distributed mountain plant. The wood is in area that has both native red squirrels and also non-native grey squirrels, and as such is a priority area for action to conserve the red squirrel. Roe deer are common and occasionally red deer are present. Badgers habit the Gorge (although not known to be in the wood) and the bird life is rich, including waders, waterfowl, dippers, yellow wagtail, common sandpiper and hen harrier. Six notable species of beetle were identified on site in 1998.

A public footpath crosses the woodland at the very southern end, leading to Wardrew Lodge and Farm to the east and a permissive path connects the woodland via a pedestrian suspension bridge to the Gilsland Hall Hotel to the southwest. To the south-west a public footpath exits the wood over another pedestrian suspension bridge leading to a local feature known as the Popping Stone said to be where Sir Walter Scott 'popped the question' to his future wife. Much of the central and northern section of the wood is remote and inaccessible on foot but can be viewed from the adjacent bridleway, just outside the eastern boundary, and also from the opposite river bank. The river is popular for fishing, canoeing and kayaking.

3.0 PUBLIC ACCESS INFORMATION

3.1 Getting there

Irthing Gorge Wood is situated 1 mile north of the village of Gilsland on the River Irthing just in the boundary of Northumberland National Park. It can be reached by a public footpath past Wardrew House from the bridleway running on the eastern edge of the woodland. At this entrance there are two step stiles to cross. Alternatively from the south west, there is permissive access through the Gilsland Spa Hotel grounds. Following the path north from the car park there, it descends into the gorge and crosses over the River Irthing to join a public footpath into the wood. From here it is possible to head either up or down river, accessing local beauty spots like the "Popping Stone" and Crammel Linn waterfalls although there are steep sections on some routes. There are many other footpaths routes and links in the area; including the route of Hadrian's Wall Path which passes just to the south of Gilsland village. The Gilsland Spa Hotel is open to non residents for food and drink. More information on local walks from the East Cumbria Countryside Projects and Hadrian's Wall Trail.

Public transport is available on the Hadrian's Wall Bus (AD122) which runs between Wallsend in Newcastle to Bowness-on-Solway from April - October, travelling the length of the Wall and stopping at Gilsland. For those using the Hadrian's Wall cycle route the bus can carry up to 4 bikes, making it easy for those who want to catch the bus out with their bikes and cycle back. To reserve a space telephone: +44 (0)1434 322002 by 3.00pm the day before you travel. For more information on cycle routes contact www.cycleroutes.org/hadrianscycleway or contact Sustrans 0845 113 00 65.

There is no Woodland Trust car park but visitors can park with care in Gilsland village, or at the Gilsland Spa Hotel if using the facilities there. There is a pub, Post Office and general store in the village and numerous local attractions. The website www.hadrianswallvillages.org.uk gives much information on the village and facilities available.

3.2 Access / Walks

4.0 LONG TERM POLICY

It is the Trust's objective to conserve and enhance the typical ancient characteristics of this woodland and to maintain and improve the biodiversity of the whole site within the landscape, as well as increase people's awareness and enjoyment of this ancient habitat.

- 1) Informal Public Access: Public access will be maintained and encouraged throughout the woodland where safe to do so, along 660m of footpath, with the provision of entrances and access facilities as required; currently four entrances. Public information and promotion of the woodland both nationally through the Trusts publications, website and directory's and locally will be used where possible and posters will be used to inform and involve visitors with the woodland.
- 2) Ancient Semi Natural Woodland: The long term aim focuses on management of the overall habitat and is to maintain the existing continuous cover high forest woodland and to conserve the variety and character of the ancient, native woodland types present, including northern ashwood, birchwood and wet alder woodland. Additionally, where possible the aim will be to enhance and extend the diversity and richness of this ancient woodland, by restoring areas of Planted Ancient Woodland, removing invasive non-native plant species such as rhododendron where they are causing change and ecological damage. Where feasible, and as part of landscape scale action, non-natives such as grey squirrels will also be controlled to promote native species. The wood will have an uneven aged structure with a well developed shrub layer, natural succession and typical ground flora to maintaining the continuity of this gorge woodland within the matrix of habitats. The condition aspired to will include the retention of old growth trees and of standing and fallen deadwood.
- 3) New Native Woodland: The 13ha of new woodland, planted on rough grassland adjacent to the gorge woodland, will be managed to create high forest, ensuring it is fully established and sustainable by natural regeneration. It will extend the overall core area of woodland, and buffer the ancient gorge wood and link it with other woodland habitats.

It is anticipated that this approach will safeguard and enhance the existing environmental value of the wood and maintain and enhance the level of public access in the woodland.

5.0 KEY FEATURES

The Key Features of the site are identified and described below. They encapsulate what is important about the site. The short and long-term objectives are stated and any management necessary to maintain and improve the Key Feature.

5.1 Informal Public Access

Description

There are three public entrances at the southern end of the wood; one from the east on the public footpath from Wardrew House, one from the south-west on the public footpath over the River Irthing on a pedestrian suspension bridge and a permissive route from the south over another pedestrian suspension bridge from the Gilsland Hall Hotel, which offers refreshment facilities and parking.

There is a fourth entrance at the north-east end of the wood from the adjacent bridleway which runs parallel (but some distance away) on the eastern boundary. There is a commemorative bench close to the south west entrance with views over the river which is on a well-used route. There is also a bench and cycling locking facilities at the north east entrance, just off the a public bridleway, at a remote end of the whole site. An extensive network of public footpaths links the woodland to adjacent land, providing good walks and views from Gilsland, through the National Park and Forestry Commission plantations and up to the waterfalls at Crammel Linn. Some of the walking is over steep ground and rough moorland.

Significance

Irthing Gorge is on the edge of Northumberland National Park and public access has been a key component of the woods history. Increasing enjoyment of woodland is one of the Trust key outcomes. Encouraging safe and enlightened access to Irthing Gorge is particularly important given the rich and varied habitats and features within the ancient woodland and the importance of its habitat on both a local and national scale. The wood is connected with the local landscape and has a fabulous history of Romans, Border reivers, poets and explorers. Wardrew House to the east shows evidence of a Roman history and in the 18th century when it was a hotel both Robert Burns, the poet and Sir Walter Scott stayed there. On the western bank of the Irthing is a round boulder "The Popping Stone" where Sir Walter Scott 'popped' the question to his future wife. There are basic remains of the 19th century fashionable spa baths - said to cure rheumatism, ailments and skin disease, but once the cliff shelf of the river Irthing had bathing rooms and refreshment stalls and a dance floor, bookstall and bazaar. This history and the woods intrinsic qualities make it an important local resource to the surrounding villages and towns and an educational resource for visitors and organised groups.

Opportunities & Constraints

Much of Irthing Gorge woodland is very steep, with no paths and so is inaccessible to most walkers. However the footpaths in the south are very well used by the many visitors to the Gilsland Hall Hotel and by local people. The footpath network enables good circular walk to be done and offers links to more extensive routes but the walking can be rough and steep in places. The River Irthing offers an alternative route to explore the area and is used by canoes, kayaks and fishermen. There is an opportunity to promote the Trust and inform the public (including many tourists), of management practices and the history, geology and botanical interest in the wood through and information board, posters and local leaflets.

Factors Causing Change

Long term Objective (50 years+)

Ongoing management of the footpaths and entrance facilities to continue to provide good visitor access and promote a safe and welcome environment as appropriate. The Trust will continue to promote the woodland amongst people in the region and members nationally so long as the primary objective of 'no further loss of ancient woodland' (in terms of both quality and quantity) is not compromised.

Short term management Objectives for the plan period (5 years)

Manage to a pedestrian width the network of approx 660m network of footpaths and 3 main entrances at the popular southern end of the wood strim to a high standard for easy use and safety. This will include safety works, regular strimming, drainage, welcome and exit signs and entrance furniture as necessary to keep areas stock-proof but easily accessible. New information board to be considered for the main south-west entrance. Maintain the bench by to the south-west entrance as long as it is feasible. Regular safety inspections at defined intervals. Clear litter and tipping as necessary. The fourth entrance on the north east boundary will require only very basic management, with an entrance point and sign only and other facilities (bench and cycle racks) will not be replaced when they become unusable. All work to the Woodland Trust Estate Management Specifications.

5.2 Ancient Semi Natural Woodland

Description

Irthing Gorge lies at an altitude of 150-210m and cuts deeply through gently undulating moorland. The exposed rocks in the gorge consist of thick beds of sandstone with thinner bands of calcareous shale belonging to the Scottish Calciferous Sandstone series. The steep sides of the gorge are mostly wooded and are an excellent example of upland gorge woodland. Irthing Gorge Woodland in cpts 1a-e is predominantly upland mixed ash wood NVC W9 with patches of birch woodland and wet ash-alder woodland NVC W7. A typical mix seen is P1940 ash, hazel with elm occasional, oak, birch, willow rare. There are more mature planted larch, pine, poplar, spruce, fir, some in small blocks. Sycamore and beech are also present. The density of non-native, mature (P1900), ornamental species increases around the Gilsland Hall Hotel. Rhododendron was present in the south-east section of the wood, but it had largely been eradicated by 2012. However, it still regenerates (2018) as it is present on neighbouring land and small patches are very difficult to locate on the steep slopes. There is much fallen dead wood and some standing deadwood. The understorey is generally quite frequent on steeper slopes and sparser elsewhere and contains hazel, elm, ash, birch, sycamore and beech with hawthorn and blackthorn occasional. On the lower slopes adjacent to the river there are areas of wet woodland, with predominantly alder with ash and hazel. Rowan and hawthorn occur, whilst yew can be found on cliff ledges - one of few native-Northumberland localities. The woodland flora is quite rich and is composed of nutrient-loving water demanding species such as dog's mercury (*Mercurialis perennis*), water avens (*Geum rivale*), tufted hair-grass (*Deschampsia caespitosa*) and on slightly more acidic slopes woodrush (*Luzula sylvatica*) and wavy hair-grass (*Deschampsia flexuosa*). Richer flushes include the rare variegated horsetail (*Equisetum variegatum*) and wood fescue (*Festuca altissima*); with yellow saxifrage (*Saxifrage aizoides*) a once widely distributed mountain plant. The rock ledges and shady crevices support several species of fern, including brittle bladder fern (*Cystopteris fragilis*), green spleenwort (*Asplenium viride*) and hard shield fern (*Polystichum aculeatum*). The bryophyte flora of these ledges is also rich and varied, with drier areas covered by lichens *Lepraria membranacea* and *Cystocoleus niger*. NB Species information gathered from SSSI notification 1984 revision.

Significance

The woodland is designated as ancient on the Nature Conservancy Council (now Natural England) register in 1959 and has a documented ancient history going back to the turbulent history of Romans and Border reivers as well as more recent use of a spa well. Irthing Gorge is an important landscape feature mostly lying within Northumberland National Park and is a key semi-natural habitat adjacent to the River (Special Area of Conservation and part of the River Eden SSSI) and surrounding moorland, forming a complex of habitats important for bird species including waders and waterfowl. As a Site of Special Scientific Interest (SSSI) the woodland is an excellent example of upland gorge woodland and is one of only 24 woodland SSSIs in the county. It is host to an impressive array of species, particularly one of the few native Northumberland localities for yew, the rare variegated horsetail, wood fescue and yellow saxifrage, a mountain plant once more widely distributed. It is also notable for a well-developed uneven aged shrub layer and a diverse ground flora. The wood is in area that has both the native red squirrel and also the non-native grey squirrel, and as such is a priority area for action to conserve the red squirrel. Sites of ancient woodland provide a continuous habitat for our native species and many of these species can live nowhere else. Continuity of habitat is extremely important, as many ancient plants and animals have very specialised requirements and spread very slowly, if at all, into new woods.

Opportunities & Constraints

All works must comply with the constraints laid down under the SSSI designation and some may fall within the ‘List of Notifiable Operations’, and Natural England must be consulted. Throughout much of the wood the steep working conditions and the fast flow of the River Irthing will restrict management options. There is an opportunity to retain the magnificent trees brought and planted around the Spa by previous owners as a legacy to this era and a living heritage. There is extensive boundary to grazing fields to the east and it is important to the continuation of the well developed understorey and shrub layer that these boundaries are maintained in a stock proof condition, working with neighbouring landowners where necessary. The red squirrel reserve of Kielder is adjacent to the Gorge both east and west; there is an opportunity to work in partnership on this landscape scale scheme with the Red Squirrel North England project. Maintaining the SSSI Favourable condition will be highly important.

Factors Causing Change

Grazing by stock (managed within a fenced zone), invasive rhododendron, Planted Ancient Woodland areas, Increasing deer populations and deer browsing of regeneration and ancient woodland & SSSI ground flora. The presence and expansion of grey squirrel populations would result in the decline of red squirrels. Ash dieback from 2017.

Long term Objective (50 years+)

The long term aim is to conserve this ancient woodland and enhance its diversity and richness by restoration and extension. The PAWS areas of rhododendron and non-native conifers will be restored in line with the latest guidance and best practise. In addition, the uneven aged predominantly native structure will be maintained throughout, with a well developed shrub layer, native regeneration and a good ground flora. The condition aspired to includes the retention of old growth trees, including non-native feature trees; continuity of woodland canopy through managed stock access area; establishment of an increased area of woodland and the retention of standing and fallen deadwood. Native red squirrel populations will be conserved, where remains feasible and sustainable to do so in the wider landscape. Woodland condition and potential threats to the woodland will be monitored and intervention will occur if necessary.

Short term management Objectives for the plan period (5 years)

The steps to achieving the vision include: -

Eradicate rhododendron from the wood through cutting and control of regrowth (Cpt 1a southern end).

PAWS areas planted with non-native conifers will be monitored and assessed. Where these have a negative impact on the ancient woodland components of the wood, action will be taken in line with best practise for PAWS restoration, usually by regular, frequent light thinning to manipulate light levels and allow ancient woodland remnants to survive and then thrive.

Maintain all boundaries to stock proof condition to prevent grazing by domestic stock which could threaten the continuity of the well-developed shrub and ground flora.

Cpt 1c. Monitor this stock access area and area (fenced in 2002) for continuity of woodland and predict timing for altering fencing or alternatives.

Cpt 1c. Carry out limited planting and protection to establishment of suitable native trees and shrubs to ensure that the scattered tree cover is maintained, as natural regeneration is not occurring and the existing trees are senescent.

Assess the extent, spread and growth of natural regeneration throughout the woodland, especially within the open ground and glades, monitoring deer numbers and impact through regular assessment, and working with adjacent landowners to take a landscape type approach to deer management whilst taking account of the different outcomes required of the SSSI ASNW woodland opposed to the adjoining commercial plantations.

Assess the impact of ash dieback.

Conserve red squirrel populations by: controlling grey squirrels and carrying out work to promote red squirrels, within the context of landscape scale initiatives, and under the umbrella of these projects.

Monitor woodland condition and any threats to the achievement of the long term vision once per plan period.

5.3 New Native Woodland

Description

Cpt 1f is new native woodland, with 14,000 native trees and shrubs planted in 2004 on a long thin 13ha strip of land to the north east of the wood on formerly grazed rough pasture, extending the core area of woodland. Approximately half of the area was been deer-fenced and vole-guarded for protection and mounded, and the rest of the planted trees outside the fence were protected against deer with 1.2m shelters. Prior to planting the grassland had been fenced against stock for about 15 years to allow regeneration, but very little had occurred. The grass became increasingly dense and tussocky, limiting any chance of regeneration and substantially increasing the risk of fire, in an area adjacent to conifers plantation and moorland. There was a grass fire covering approx. 0.5ha in the southern part of the deer fenced area in 2009-10, but the trees were large enough to survive (although the vole guards melted and had to be prised off). The trees within the deer fenced area are now established and growing well, albeit slowly because of the exposed location (2018). Trees planted in the 1.2m tubes have had lower survival rates, but stocking density is still acceptable. Heavily browsed, scattered regeneration of native broadleaved species is present both inside and outside the deer fenced area. A public bridleway runs parallel and just outside the Trust's boundary along about half of the length of the planting, and there access points into it but this area is remote, with difficult, wet ground and so is infrequently visited.

Significance

This 13ha of new native woodland has increased the core area of woodland, buffered the existing ancient wood, and also linked it with surrounding woodland. This should be augmented by significant increases in natural regeneration. In addition, the adjacent landowner to the east has planted over 40ha of new native woodland increasing the critical core area of woodland integral with this ancient gorge woodland.

Opportunities & Constraints

There is the opportunity to continue to manage the area to improve its diversity and enable the woodland to develop into a fully sustainable system. The remote nature of the site limits the level of public access and engagement on site.

Factors Causing Change

Deer damage, severe weather (snow damage, late frosts), accidental fire.

Long term Objective (50 years+)

The aim within this compartment is to achieve the establishment of native species with a mixture of tree & shrub species and a wide age range. Initially this has been started with planting but in the long-term this should be continued by natural regeneration. Ideally the area should not require special deer fencing or protection, but be managed with the rest of the woodland, however, this will depend largely on controlling deer numbers. This woodland creation will in the long term buffer and substantially increase the core area of native ashwood present in the adjacent gorge and link it to other woodland. Native trees planted in P2004 mimic the structure and composition of the natural ash and alder woodland following the landform, soil composition and existing vegetation and protecting the open flushes.

Short term management Objectives for the plan period (5 years)

The process of creating the new woodland started with the tree planting, and will continue with continuing to establish the planted trees, and encouraging natural regeneration, which will be monitored at a minimum of every 5 years. To achieve this it is vital that trees are protected from deer damage and managed to achieve sufficient density and survival until fully established, with the deer fence inspected annually. Individual tree shelters will be retained as long as they are still providing protection, then removed when redundant, or if empty. Deer management will be guided by the deer number and impact assessments which will be undertaken twice annually. In addition, non-native regeneration will be controlled where necessary and open limestone flushes highlighted in the survey (2003) kept open, once every 5 years. Entrances and signs will be maintained into the compartment and boundaries inspected annually.

6.0 WORK PROGRAMME

Year	Type of Work	Description	Due By
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APPENDIX 1: COMPARTMENT DESCRIPTIONS

Cpt No.	Area (ha)	Main Species	Year	Management Regime	Major Management Constraints	Key Features Present	Designations
1a	10.33	Ash	1940	High forest	Diseases, Gullies/Deep Valleys/Uneven/Rocky ground, Management factors (eg grazing etc), No/poor vehicular access within the site	Ancient Semi Natural Woodland, Informal Public Access	Ancient Semi Natural Woodland, National Park, Planted Ancient Woodland Site, Site of Special Scientific Interest, Special Area of Conservation

Compartment 1a incorporates much of the southern woodland that makes up the Irthing Gorge Woodland and is known locally as Wardrew Wood. It is mainly ASNW with area of PAWS containing Scot's pine and patches previously affected by rhododendron, all in the process of restoration. It is irregularly shaped, steep mostly with a westerly aspect down to the river Irthing to the west and up to adjacent stock field (semi improved) to the east and neighbouring woodland also known as Wardrew Wood. The river is fast flowing and rocky and has side streams and a small waterfall to the south of the compartment. The cliffs are up to 40m high with many smaller crags and ledges with bryophyte communities. A public footpath crosses the sub compartment in the south leading to Wardrew Lodge and Farm to the east and a permissive path connects the woodland via a pedestrian suspension bridge to the Gilsland Hall Hotel to the south. To the west the public footpath exits over a span bridge leading to a local feature known as the Popping Stone said to be where Sir Walter Scott popped the question to his future wife. The woodland is predominantly upland mixed ashwood, dominated by ash and sometimes oak. A typical mix seen is P1940 ash, hazel with elm occasional, oak, birch, willow rare and areas of more mature larch, pine, poplar, spruce, fir, sycamore and beech. Where the river floods in the west of the wood the species is predominantly birch P1960 (Peterken stand type 12D translating to NVC W11) with mature (P1900) beech, Douglas fir, larch, spruce and sycamore around the edges. There are mosses on the deadwood and lichens on stems. The ground flora is rich and varied with tufted hair-grass, wood sedge, wood sorrel, male fern and bramble. The density of non-native, mature (P1900), mainly conifer, ornamental species increases around the Gilsland Hall Hotel. Just west of Wardrew House there is a small area (0.47ha) of predominantly Scots Pine (P1945) with sycamore, beech and few oaks; there is limited under the pine with the occasional regenerating beech sapling. The ground flora is sparse with male fern and velvet grass. However throughout the rest of the sub-compartment the understorey is generally quite frequent on steeper slopes and sparser elsewhere and contains hazel, elm, ash, birch, sycamore and beech with hawthorn and blackthorn occasional. Yew occurs on cliff ledges in this area. Parts of the compartment contained dense patches of rhododendron which has been virtually eradicated, but occasionally regenerates especially seeding in from neighbouring land. The terrain makes mapping and controlling this difficult. The woodland flora is quite rich and is composed of nutrient-loving water demanding species such as dog's mercury, water avens, tufted hair-grass and on slightly more acidic slopes woodrush and wavy hair-grass and mosses particularly *Mnium hornum* and *Dicranum majus*. There is much dead wood fallen and standing within the sub compartment. The aim within this compartment is to restore and conserve the ancient woodland, with a high forest structure of the mature mixed ashwood and areas of wet alder birch woodland whilst encouraging the development of a naturally regenerating understorey and maintaining and enhancing the uneven aged structure. The mature non-native species will be retained for their historical, ornamental and environmental value. However the small dense area of Scot's pine will gradually be thinned to allow more light through the canopy, until it is assessed as restored. The non-native rhododendron in the understorey will be eradicated. It is vital the wood is kept stock proof to prevent stock grazing and to achieve this the Woodland Trust boundary to the east will be maintained and kept secure. This is challenging as access, installation and maintenance of the fence and associated watergates is on very difficult terrain. The entrances and paths will be maintained as necessary, with the paths enhanced where possible. Litter will be collected and tree safety inspections completed at defined intervals with standing and fallen deadwood retained where safe to do so. As this compartment has a high proportion of ash, it is likely to be affected by ash dieback, which first became noticeable in the area in 2017.

1b	2.60	Alder species	1940	High forest	Mostly wet ground/exposed site, No/poor vehicular access to the site, No/poor vehicular access within the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Ancient Semi Natural Woodland, Informal Public Access	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation
Sub-compartment 1b is a predominantly alder stand with ash and hazel (Peterken stand type 7b). Rowan and hawthorn occur occasionally and eared willow. It is situated on the lower slopes of the woodland with the River Irthing on the western boundary, cpt1a to the south and 1f and 1d to the north. The ground flora is a rich flush of meadowsweet, marsh ragwort, marsh hawksbeard and the rare variegated horsetail.							
1c	1.80	Birch (downy/silver)	1940	High forest	Legal issues	Ancient Semi Natural Woodland, Informal Public Access	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation
<p>Sub-cpt 1c takes in the upper slope of the woodland and is heavily grazed birch stand with oak, ash and occasional hazel and hawthorn, of NCV type W9/7. The ground flora is grazed but displays wood-sorrel, velvet grass, sweet vernal grass and bracken. A large section of woodland is fenced off by agreement, and left for sheep to shelter and graze within; here the canopy is very open and the woodland ground flora sparse, although meadow plants are also present. The trees present on the upper parts of the slope are very widely scattered, and aging.</p> <p>The aim within this compartment is to retain as much canopy cover of the predominantly ashwood and associated communities, whilst providing the access rights for the neighbouring farmer to graze, water and shelter animals. 20% of this stock access area can be brought into fencing at any one time (see Deeds) so in 2002 small area to the north was fenced in to allow the woodland to encouraging the development of a naturally regenerating understorey and maintaining and enhancing the uneven aged structure. The long term aim is to fence in a different 20% of stock access area every 10-20 years (ideally when the fence is getting to the end of its life span) to rotate grazing and allow a section of the woodland to regenerate and to maintain the continuity of the woodland cover.</p>							

1d	1.00	Norway spruce	1940	PAWS restoration	No/poor vehicular access within the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Ancient Semi Natural Woodland, Informal Public Access	Ancient Semi Natural Woodland, National Park, Planted Ancient Woodland Site, Site of Special Scientific Interest, Special Area of Conservation
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Sub-cpt 1d is a small, open spruce plantation where there is approximately 30-50 Norway spruce, 15 or so scrubby larch and mixed broadleaves birch, rowan, alder & hawthorn. The Norway spruce are tall specimens. The cpt is very steep with two levels; most of the trees are established adjacent to the river at the bottom where all the Norway spruce are located. The cpt then steeply rises to level off slightly towards cpt1f where there is a group of larch. Generally through the cpt there is good dappled light. Vegetation within the cpt is varied and similar to neighbouring cpts and includes tufted hair-grass, tall oat-grass, wood sedge and water avens. Regeneration of mixed broadleaves is occurring occasionally throughout.

The aim within this compartment in the long term is to restore and conserve the predominantly native broadleaved ash and alder wood. The typical native, ancient woodland understorey and ground vegetation will be monitored to ensure that they are not affected by the non-native Norway spruce and larch which will be allowed to remain until they naturally senesce. The compartment continue to have mixed species and an uneven aged structure. It is vital the wood is kept stock proof to prevent grazing of regeneration and the rich variety of notable plant species. To achieve this the Woodland Trust boundary to the east will be maintained and kept secure.

1e	4.86	Open ground	1940	Wood pasture	Gullies/Deep Valleys/Uneven/Rocky ground, No/poor vehicular access within the site, Very steep slope/cliff/quarry/mine shafts/sink holes etc	Ancient Semi Natural Woodland, Informal Public Access	Ancient Semi Natural Woodland, National Park, Site of Special Scientific Interest, Special Area of Conservation
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This sub-cpt at the head of the gorge takes in the steep cliff edges to the River Irthing to the west and the waterfall known as Crammel Linn to the north. The rock ledges and shady crevices support several species of fern, are rich in bryophytes with lichens covering drier areas. Grasses and sedges are abundant. Rowan and hawthorn are frequent and yew is seen clinging to the cliff edges. The aim within this compartment is to protect the rock ledge and crevice communities through minimum intervention and in the long term promote natural regeneration particularly through the extension of the woodland habitat to the east. It is vital the wood is kept stock proof to prevent grazing of regeneration and the rich variety of notable plant species. To achieve this the Woodland Trust boundary to the east will be maintained and kept secure.

1f	13.29	Birch (downy/silver)	2004	Wood establishment		Ancient Semi Natural Woodland, Informal Public Access	National Park
<p>This sub-cpt is bounded by Cpt 1e to the west and a neighbouring conifer plantation to the east. This sub-compartment was planted with over 14,000 native species in winter 2003/4; including 25% downy birch (<i>Betula pubescens</i>), 20% silver birch (<i>Betula pendula</i>), 13% alder (<i>Alnus glutinosa</i>), 12% rowan (<i>Sorbus acuparia</i>), 12% sessile oak (<i>Quercus petraea</i>), 12% goat willow (<i>Salix caprea</i>), 10% hawthorn (<i>Crataegus monogyna</i>), 6% ash (<i>Fraxinus excelsior</i>) and 2% hazel (<i>Corylus avellana</i>). Ground flushes on underlying limestone were left unplanted and include species such as quaking grass, meadow sweet, limestone bedstraw and bird's foot trefoil (classified as a CG10 community). Other more wide spread species in the vegetation include wavy hair-grass, sweet vernal grass, velvet grass, rushes and sedges. Most of the compartment was mounded then enclosed in a deer fence and the trees planted in it also protected with vole guards. The remainder of the planting was protected in 1.2m shelters. A fire occurred in the southern end of the deer fenced area in 2009/10, but the young trees survived, although scorched. The melted vole guards were removed.</p> <p>The aim within this compartment is to promote the establishment of native species to in the long term buffer and increase the core area of native ashwood present in the adjacent gorge. The process has been started with the tree planting, and will continue with natural regeneration, which will be monitored. In addition, non-native regeneration will be controlled where necessary and open limestone flushes highlighted in the survey (2003) kept open. Native trees planted in P2004 mimic the structure and composition of the natural ash and alder woodland following the landform, soil composition and existing vegetation and protecting the open flushes. To achieve success this it is vital the trees are protected from deer, sheep and rabbit damage to achieve sufficient density and survival until fully established. Entrances and signs will be maintained into the compartment.</p>							

Appendix 2: Harvesting operations (20 years)

Forecast Year	Cpt	Operation Type	Work Area (ha)	Estimated vol/ha	Estimated total vol.
2019	1d	Thin	0.50	20	10
2022	1a	Thin	0.50	20	10
2029	1d	Thin	0.50	20	10
2032	1a	Thin	0.50	20	10

GLOSSARY

Ancient Woodland

Ancient woods are defined as those where there has been continuous woodland cover since at least 1600 AD. In Scotland ancient woods are defined strictly as sites shown as semi-natural woodland on the ‘Roy’ maps (a military survey carried out in 1750 AD, which is the best source of historical map evidence) and as woodland all subsequent maps. However, they have been combined with long-established woods of semi-natural origin (originating from between 1750 and 1860) into a single category of Ancient Semi-Natural Woodland to take account of uncertainties in their identification. Ancient woods include Ancient Semi-Natural Woodland and plantations on Ancient Woodland Sites (see below). May support many species that are only found in ancient woodland.

Ancient Semi - Natural Woodland

Stands in ancient woods defined as those consisting predominantly of native trees and shrubs that have not obviously been planted, which have arisen from natural regeneration or coppice regrowth.

Ancient Woodland Site

Stands in ancient woods that have been converted to plantations, of coniferous, broadleaved or mixed species, usually for timber production, including plantations of native species planted so closely together that any semi-natural elements of the understorey have been suppressed.

Beating Up

Replacing any newly planted trees that have died in the first few years after planting.

Broadleaf

A tree having broad leaves (such as oak) rather than needles found on conifers (such as Scots pine).

Canopy

The uppermost layer of vegetation in a woodland, or the upper foliage and branches of an individual tree.

Clearfell

Felling of all trees within a defined area.

Compartment

Permanent management division of a woodland, usually defined on site by permanent features such as roads. See Sub-compartments.

Conifer

A tree having needles, rather than broadleaves, and typically bearing cones.

Continuous Cover forestry

A term used for managing woods to ensure that there are groups or individual trees of different ages scattered over the whole wood and that some mature tree cover is always maintained. Management is by repeated thinning and no large areas are ever completely felled all at once.

Coppice

Trees which are cut back to ground levels at regular intervals (3-25 years).

Exotic (non-native) Species

Species originating from other countries (or other parts of the UK) that have been introduced by humans, deliberately or accidentally.

Field Layer

Layer of small, non-woody herbaceous plants such as bluebells.

Group Fell

The felling of a small group of trees, often to promote natural regeneration or allow planting.

Long Term Retention

Discrete groups of trees (or in some cases single trees) that are retained significantly past their economic felling age. Operations may still be carried out within them and thinning is often necessary to maintain stability.

Minimum Intervention

Areas where no operations (such as thinning) will take place other than to protect public safety or possibly to control invasive exotic species.

Mixed Woodland

Woodland made up of broadleaved and coniferous trees.

National vegetation classification (NVC)

A classification scheme that allows an area of vegetation to be assigned to the standardised type that best matches the combination of plant species that it contains. All woodlands in the UK can be described as being one of 18 main woodland types (W1 - W18), which principally reflect soil and climatic conditions. For example, Upland Oakwoods are type W11, and normally occur on well drained infertile soils in the cooler and wetter north and west of Britain. Each main type can be subdivided into numerous subtypes. Most real woods contain more than one type or sub-type and inevitably some woods are intermediate in character and can't be properly described by any sub type.

Native Species

Species that arrived in Britain without human assistance.

Natural Regeneration

Naturally grown trees from seeds falling from mature trees. Also regeneration from coppicing and suckering.

Origin & Provenance

The provenance of a tree or seed is the place where seed was collected to grow the tree or plant. The origin is the geographical location within the natural range of a species from where seeds/tree originally derives. Thus an acorn collected from a Turkey oak in Edinburgh would have an Edinburgh provenance and a southern European origin.

Re-Stocking

Re-planting an area of woodland, after it has been felled.

Shrub Layer

Formed by woody plants 1-10m tall.

Silviculture

The growing and care of trees in woodlands.

Stand

Trees of one type or species, grouped together within a woodland.

Sub-Compartment

Temporary management division of a compartment, which may change between management plan periods.

Thinning

The felling of a proportion of individual trees within a given area. The remaining trees grow to fill in the space created.

Tubex or Grow or Tuley Tubes

Tubes placed over newly planted trees or natural regeneration that promote growth and provide protection from animals such as rabbits and deer.

Weeding

The control of vegetation immediately around newly planted trees or natural regeneration to promote tree growth until they become established. Either by hand cutting or with carefully selected weed killers such as glyphosate.

Windblow/Windthrow

Trees or groups of trees blown over (usually uprooted) by strong winds and gales.