WEST ENGLAND FOREST DISTRICT

Site of Special Scientific Interest

Management Plan for

AVON GORGE SSSI

Plan Period January 2016 – January 2026

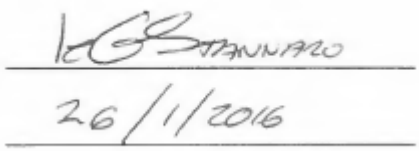
1. Agreement and Consent

District	West England Forest District
Name of SSSI	Avon Gorge SSSI
Compartment Numbers	5000, 5001, 5002, 5003
OS Grid reference	ST560564
Period of Plan	January 2016 – January 2026

Chris Westcott:
Land Management and Conservation Lead Adviser
Somerset, Avon and Wiltshire Area Team

Date: 20th January 2016

Forest Management Director
West England Forest District



Date: 26/1/2016
Kevin Stannard:

The signing of this plan by Natural England gives the necessary consent under Section 28 (6) of the Wildlife and Countryside Act (1981), as amended, for the management prescriptions detailed in this plan and to be undertaken without necessity to consult prior to each operation during the plan.

FC England will keep a written record of work carried out during the period of this plan.

2. SSSI Notification

County	Somerset
Site Name	Avon Gorge SSSI
District	West England Forest District
Status	Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981 as amended
Local Planning Authority	North Somerset County Council
National Grid Reference	ST560564
Area	38 hectares
Ordnance Survey Sheet	1:50,000: 172 1:10,000: ST 57 NW
Date Notified (Under 1981 Act)	1986

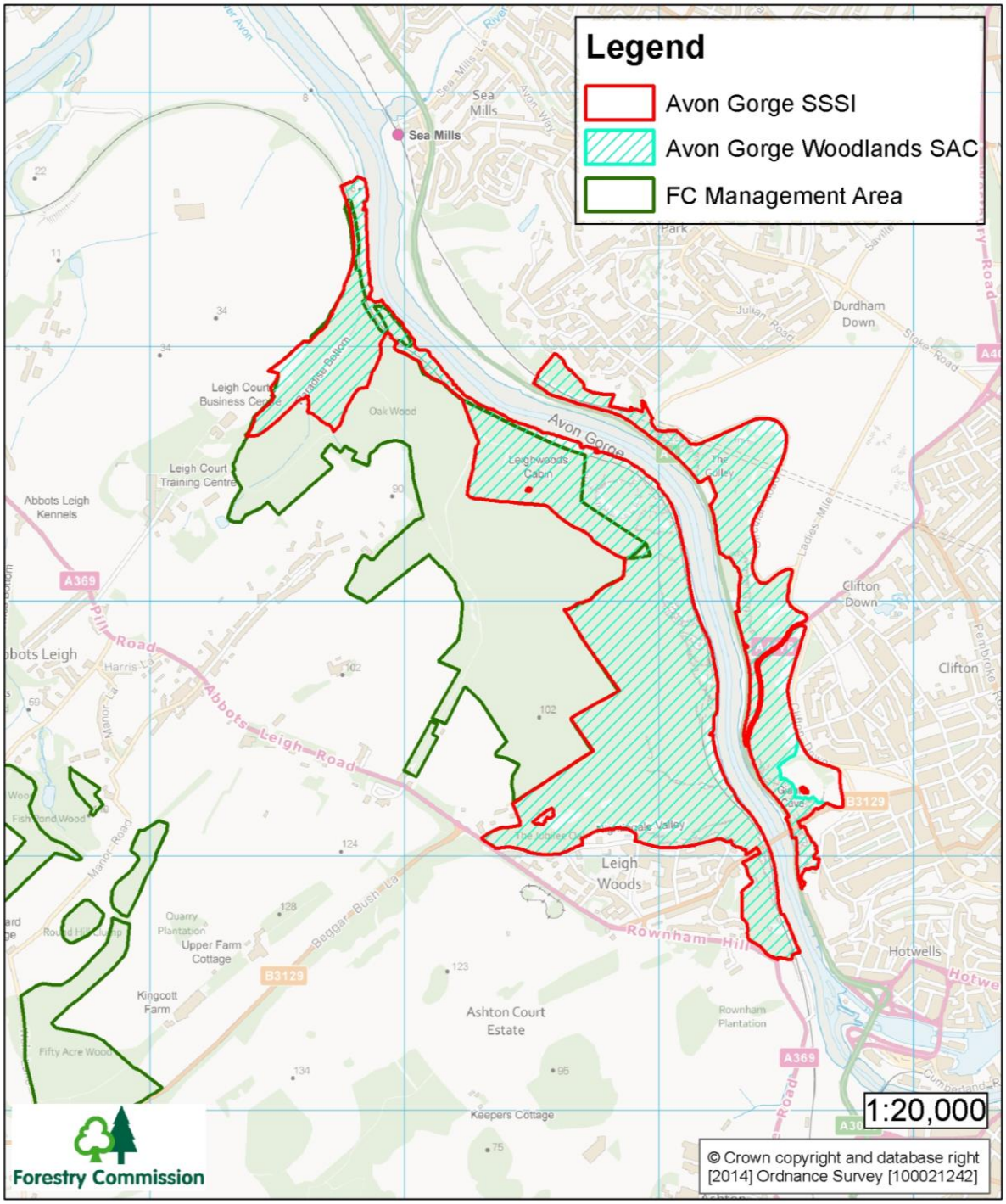
Unit 9 is in Favourable Condition, the remainder; units 7, 8 and 10 are in Unfavourable Recovering condition on the basis of the previous agreed SSSI management plan.

3. List of Potentially Damaging Operations

Ref. No.	Type of Operation
1	Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
2	Changes in the grazing regime, including type of stock or intensity or seasonal pattern of grazing and cessation of grazing.
3	The introduction of stock feeding and changes in stock feeding practice.
4	The introduction of mowing or other methods of cutting vegetation and changes in the mowing or cutting regime, including cessation.
5	Application of manure, fertilisers and lime.
6	Application of pesticides, including herbicides (weed killers).
7	Dumping, spreading or discharge of any materials.
8	Burning.
9	The release into the site of any wild, feral or domestic animal, plant or seed.
10	The killing or removal of any wild animal*, other than pest control.
11	The destruction, displacement, removal or cutting of any plant or plant remains, including shrub, herb, dead or decaying wood, moss, lichen, fungus, leaf-mould and turf.
12	Changes in tree and/or woodland management including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.
13a	Drainage (including use of mole, tile, tunnel or other artificial drains)
13b	Modification of the structure of watercourses (eg. streams), including their banks and beds, as by re-alignment, re-grading or dredging
13c	Management of aquatic and bank vegetation
14	The changing of water levels and tables and water utilisation, including irrigation, storage and abstraction through boreholes.
15	Infilling of ditches, ponds, pools or marshes
16a	The introduction of or subsequent changes in freshwater fishery production and/or management, including sporting fishing and angling.
20	Extraction of minerals, including topsoil and subsoil.
21	Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
22	Storage of materials
23	Erection of permanent or temporary structures, or the undertaking of engineering Works, including drilling.
26	Use of vehicles likely to damage or disturb features of interest.
27	Recreational or other activities likely to damage the trees and epiphytic lichens.
28	Introduction of game management and changes in game management and hunting practice.

4. Location

Avon Gorge SSSI is located just south of Bristol City Centre, on the southern side of the River Avon (Map 1), National Grid Reference: ST560564. The majority of the SSSI is also designated as Avon Gorge Woodlands Special Area of Conservation (SAC).



Map No.1 Avon Gorge SSSI location

5. Summary Description

The Avon Gorge SSSI is an extensive area of protected land totally some 155 hectares and straddling the deep river-cut chasm of the Avon Gorge on the western edge of the City of Bristol. Encompassing a wide variety of habitats including mixed native ravine woodlands, calcareous grasslands and a number of quarries, the Avon Gorge SSSI provides home to a unique flora and flora including the world's greatest diversity of whitebeam trees (*Sorbus*).

A number of landowners including Bristol City Council, the Clifton Downs Charitable Trust, the National Trust, the Downs Committee and Network Rail are responsible for managing the SSSI. On the Bristol side, "A Management Plan for the Bristol Side of the Avon Gorge" has helped guide implementation of conservation works over the past five years.

The Forestry Commission manages 33 hectares (just over 20%) of the Avon Gorge SSSI at Leigh Woods. Situated on the North Somerset side of the Avon Gorge, Leigh Woods covers the flanking plateau high above the Gorge and spills down the steep slopes into the gorge itself. This part of the SSSI is dominated by mixed woodland with small areas of open habitat, rocky outcrops and a stream valley.

Avon Gorge SSSI is highly visible in the landscape and provides an impressive backdrop to the City of Bristol. It is becoming increasingly popular for a variety of outdoor activities including walking and mountain biking.

Due to its importance at the European level the majority of the Avon Gorge SSSI is also designated as Avon Gorge Woodland SAC for its *tilio-acerion* woodlands of slopes, screes and ravines, calcareous grassland and associated flora. The SSSI Management Plan will therefore need to be screened for appropriate assessment under regulation 48 of the 1994 Habitats regulations and habitats Directive.

6. Biological Information

The Avon Gorge was formed during the last ice age when the original river channel cut through a ridge of carboniferous limestone containing smaller pockets of old red Devonian sandstone.

It is the limestone that most heavily influences today's landscape, not only in the obvious and dramatic scenery of the Avon Gorge but also in the more subtle habitats and species that inhabit the area and justify its designation as a Special Area of Conservation.

The species-rich pockets of calcareous grassland and the quarries that provide nesting sites for peregrine falcons are both indicative of the limestone as are the *Tilio-Acerion* woodlands. These woodlands, some of the most diverse in the UK, cloak the slopes of the gorge.

Small-leaved lime (*Tilia cordata*) and ash (*Fraxinus excelsior*) are most highly represented with an understorey of field maple (*Acer campestre*), wych elm (*Ulmus glabra*), hazel (*Corylus avellana*), yew (*Taxus bacata*) and the occasional wild service tree (*Sorbus torminalis*) and hawthorn (*Cratageus monogyna*). Privet (*Ligustrum vulgare*), spindle (*Euonymus europaeus*), dogwood (*Cornus sanguinea*) are common components of the shrub layer.

The Avon Gorge has the greatest diversity of whitebeam trees (*Sorbus*) in the world – at least 21 different types or 'taxa' (species, subspecies, and hybrids), occur in the Gorge. Many of these plants are found no where else in the world because they evolved within the gorge. The Avon Gorge supports 27 nationally rare and scarce plants – making it one of the most important botanical sites in the UK. It is also home to a large number of nationally rare invertebrates. Rare horseshoe bats, peregrine falcons and ravens breed here too.

The more mineral rich areas support a range of ground flora including dog's mercury (*Mercurialis perennis*), enchanter's nightshade (*Circaea lutetiana*) and local species such as Solomon's seal (*Polygonatum biflorum*),wood spurge (*Euphorbia amygdaloides*) and wild madder (*Rubia peregrina*).

Where the geology changes, and the limestone gives rise to Devonian sandstone, as in the steeply sloping valley of Paradise Bottom, the woodland changes on the drier slopes to one much more heavily influenced by sessile oak (*Quercus petraea*), sweet chestnut (*Castanea sativa*) and birch (*Betula pubescens*).

Here the ground flora changes to one dominated by bluebell (*Hyacinthoides non-scripta*), male fern (*Dryopteris filix-mas*), wood sorrel (*Oxalis acetosalla*) and ivy (*Hedera helix*). Where the woodland canopy is sparser bracken (*Pteridium aquilinum*) and bramble (*Rubus fruticosus*) can often be found.

Moister zone wet woodland occurs at the bottom of Paradise Bottom alongside the brook and provides habitat for planted hybrid black poplars (*Populus serotina*) and grey willow (*Salix cinerea*) with a ground flora of ramsons (*Allium ursinum*) and opposite-leaved golden saxifrage (*Chrysosplenium oppositifolium*).

7. Site History, Ownership and Access

Alongside the important geological influences, past management practices have also helped shape the woodlands of today. Much of the woodland at Leigh Woods including SSSI units 8, 9 and 10 to the north of the SSSI is listed as a Grade II listed landscape on the Historic Parks and Gardens Register. Once part of the nearby Leigh Court Estate the gardens were designed by Humphrey Repton to create a picturesque setting for the house; the arboretum holds a variety of specimen trees including giant redwood and Fulham oak (Map 2).

Much of the native woodland was once managed as coppice with standards, as evidenced by the very old and more recent lime, oak and hazel coppice stools throughout Leigh Woods. During the Second World War large areas of native woodland were felled by the Forestry Commission and replanted with a variety of conifers in the 1950s.

Now approximately 50% of the Forestry Commission managed part of the SAC is classified as ancient semi-natural woodland (ASNW) or PAWS indicating that it has been continuously wooded since at least 1600 (Map 1). The remainder of the SSSI (mainly Paradise Bottom and the strip of woodland alongside the River Avon) is secondary woodland.

In 1953, the Coronation Avenue was planted to commemorate the Coronation of Queen Elizabeth II. The avenue follows the start of the nineteenth century carriage drive to Leigh Court and remnant copper beech still remain within the SSSI.

As part of the UK Woodland Assurance Scheme (UKWAS) large parts of the SSSI have, in the recent past, been managed as natural reserves. Natural reserves are areas of woodland where biodiversity is the prime objective. Natural Reserves should be managed by minimum intervention unless alternative management has a higher conservation or biodiversity value. In Leigh Woods, the natural reserves have been sited on steep slopes where the woodlands have remained largely undisturbed since coppicing ceased in the early 20th century (Map 3).

Vehicular access to the woodland plateau is good, however the steeper slopes leading down to the Avon River are difficult in terms of access and timber extraction potentially necessitating creation of new tracks within the SSSI. As always weather and ground conditions will also dictate when operations can take place.

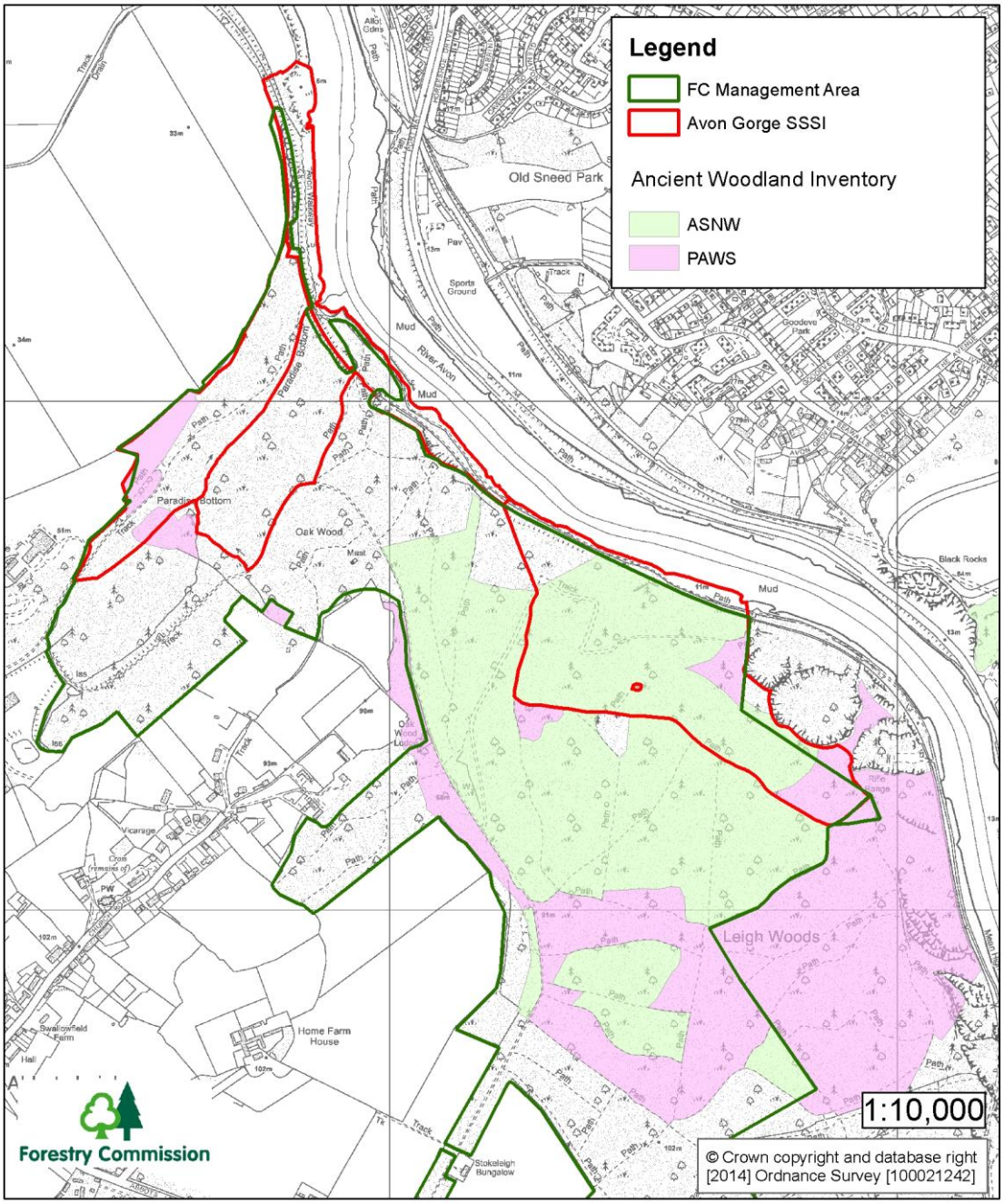
Forestry Commission land is bordered to the south by the Leigh Woods National Nature Reserve. This reserve, now managed by the National Trust, was historically part of the Ashton Court estate and managed as a sheep and cattle grazed mosaic of grassland, scrub and old pollards. The parish wall, which still stands, delineates the old ownership boundary between the Ashton Court Estate and the Abbot's Leigh Estate. To the north of the wall, coppice with standards was the dominant management tool as evidenced by the large number of old coppice stools scattered across the Forestry Commission managed part of the woodland.

The Portishead Railway freight line runs along the base of the Avon Gorge and through Leigh Woods. Network Rail have recently raised concerns over woody debris falling on the line and

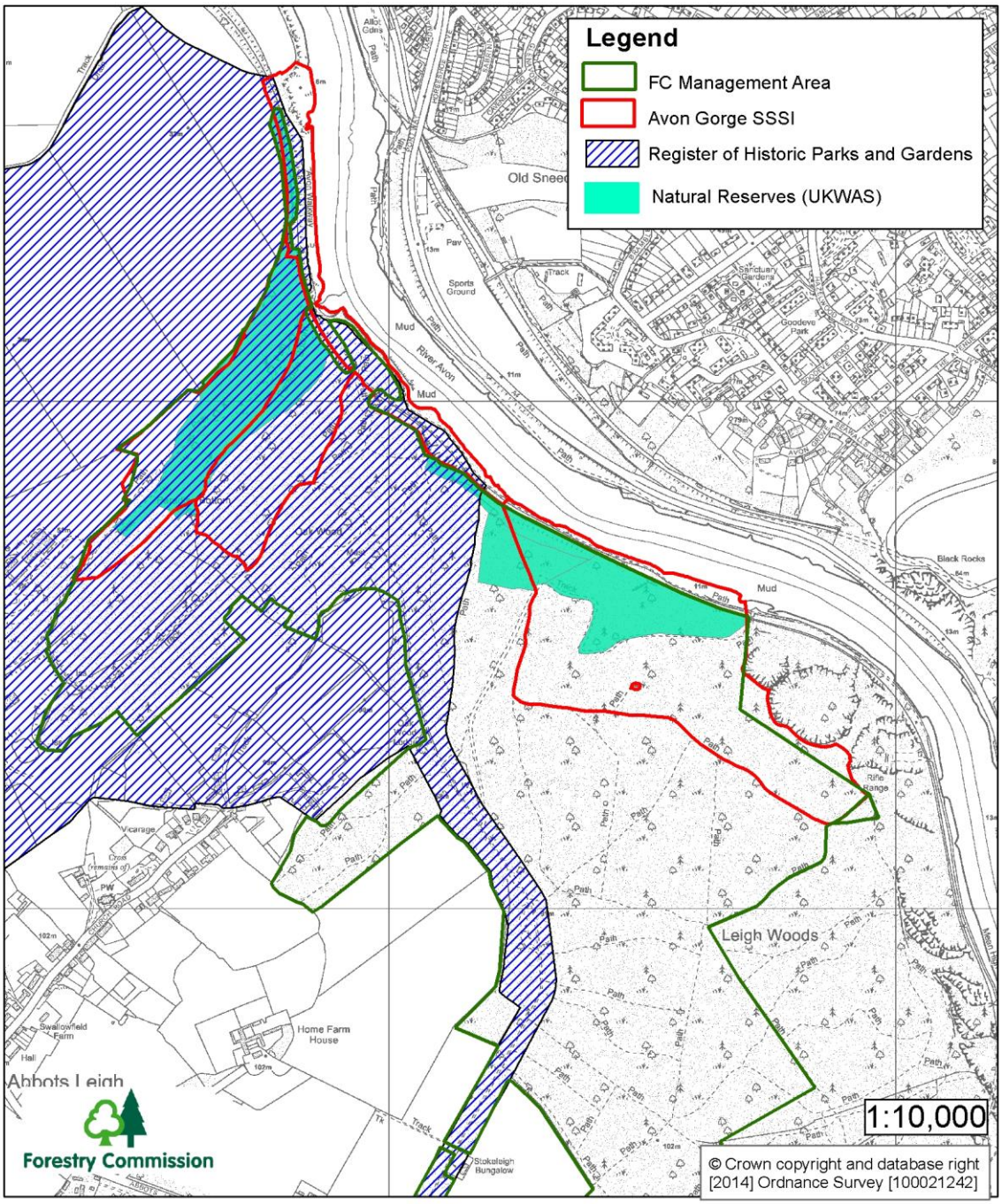
with discussions now taking place around reopening the line to passenger traffic the potential requirement for increased trackside tree management could increase. The Forestry Commission will ensure that the protection of the SSSI/SAC notified interest is at the forefront of decision making.

Leigh Woods is served by two main car parks and a series of way marked trails and off road cycle routes. Public use of the woodland is very high due to the close proximity to Bristol City Centre and the public right of way that leads along the side of the River Avon.

The whole of the Forestry Commission managed area within the Avon Gorge SSSI is managed on a freehold basis as part of the wider 150 hectare landholding within the Avon Gorge outside the designated area.



Map No.2 Avon Gorge SSSI Ancient Woodland Inventory



Map No.3 Avon Gorge SSSI Natural Reserves (UKWAS) and Historic Parks and Gardens

8. Important Evaluation Criteria

8.1 Diversity

Tilio-Acerion woodlands are some of the most diverse woodland types in the UK. Further ecological variability bought about by changes in geology, slope and aspect as well as historic influences on the site including the creation of the Leigh Court picturesque landscape and the management of Leigh Woods as coppice with standards have only added to this diversity. Future management works throughout the SSSI should continue to ensure that the ecological requirements of the most important habitats and species for which the site is designated are prioritised during forest operations.

8.2 Naturalness

Leigh Woods has been intensively managed as coppice with standards in the past; therefore much of the woodland is not natural in the purest sense of the word. However recent intervention in the form of conifer planting has been minimal in the recent past because of poor access, steeply sloping ground and lack of economic return. This lack of intervention has contributed to the development of ancient and native semi-natural woodlands with a good number of trees of special interest, natural gaps in the canopy and deadwood on the often steep and unstable ground.

8.3 Rarity

The inaccessibility of ravine woodlands has allowed them to escape development and encroachment. It is also the reason behind their relative rarity within the landscape. SAC designated *Tilio-Acerion* woodlands are not an extensive habitat type only existing as fragmentary stands where the right conditions prevail. The Avon Gorge woodlands are unique due to the high concentrations of small-leaved lime they support as well as a number of rare and endemic whitebeams.

8.4 Fragility

Tilio-Acerion woodlands lie on thin, steeply sloping soils overlying coarse screes and rocky slopes. They are fragile habitats, subject to erosion, windthrow and health and safety issues in terms of neighbouring land uses such as public rights of way and railway lines at the bases of slopes.

8.5 Intrinsic Appeal

This area has enormous intrinsic appeal being easily accessible from Bristol, supporting an interesting and varied topography and incorporating stunning views over the Avon Gorge and the Clifton Suspension bridge. The woodland attracts a large number of people for a range of activities including walking and mountain biking.

9. Conservation Objectives and Management Aims

9.1 Conservation Objective

Maintain the designated woodland habitats in unfavourable recovering condition and carry out any necessary woodland management practices as required by Natural England to move or maintain the SSSI units into / in favourable condition.

The condition status of the SSSI is monitored by Natural England at regular intervals conforming to the reporting cycle for SSSI.

9.2 Management Aims

- Help Natural England meet the conservation objective for the SSSI with a long term aim of achieving Favourable condition on all units
- Maintain the extent of ancient semi-natural and broadleaf woodland throughout the SSSI
- Maintain and enhance the naturalness and diversity of the designated woodland
- Increase the age class and habitat diversity of woodland
- Maintain areas of undisturbed woodland in keeping with the nature of inaccessible gorge woodlands
- Manage and maintain associated important open space linked with *Tilio-Acerion* woodlands
- Provide recreational opportunities in keeping with designation as SSSI

10. Factors Influencing Management

10.1 Difficult Extraction

Most of the remaining conifer is located in the lower gorge, on the steep slopes above the railway line. Felling timber from these areas is both difficult and uneconomical due to the requirement for new extraction tracks and associated costs. The railway line runs along the base of the site and is in regular use, necessitating the requirement for working time windows or line closure to ensure operations can be carried out safely.

10.2 High Public Access

Leigh Woods receives intense public use from dog walker, runners, and mountain bikers meaning that extra vigilance is required during forest operations to ensure they are carried out safely.

The use of existing mountain bike routes (in and outside of the SSSI/SAC) and the use and volume of 'downhill' riding and the building of trails and jumps is agreed to be causing damage to the SSSI in certain areas and needs to be monitored. Practical measures such as destroying jumps and encouraging use of other less sensitive areas outside of the SSSI must continue to be taken to prevent further damage within the SSSI.

Public pressure also makes deer management through culling difficult - it is therefore necessary to protect newly coppiced woodlands and plantings from deer browse using fencing.

10.3 Landscape Impacts

Leigh Woods is highly prominent from the Bristol Portway and some residential areas on the Bristol side of the Avon Gorge. Removing the conifer components of the SSSI, especially when the conifer is blocky in nature and present on steep ground will have landscape impacts.

11. Agreed Habitat Management by Unit

11.1 To the South (SSSI Unit 7)

This 17.8 hectare SSSI unit to the south east of Leigh Woods extends across the plateau above the Avon Gorge, adjoins the top of the limestone quarries and extends down the steep sides of the gorge to the railway line. This area of the SSSI is ancient semi-natural woodland underlain by limestone leading to a woodland unit rich in diversity and interest.

The woodland on the plateau above the gorge consists of a mixture of high forest and smaller areas of derelict coppice. The high forest is fairly continuous and consists of small leaved lime, ash, sessile oak, sweet chestnut, beech and sycamore with a discontinuous understorey of hazel, yew, holly, beech and young regenerating ash. A number of substantial old trees are also present within the SSSI helping to diversify the age class structure.

Alongside the high forest are small beech plantations and areas of derelict coppice comprised of mixtures of sycamore, small-leaved lime, hazel and wych elm with oak standards. Much of the coppice is even-aged with limited natural regeneration or ground flora. One coupe, 0.25 hectares in size, will be cut during the plan period (Map 4) to regenerate the coppice and further diversify the age class structure. The coppice will be managed on a 10-15 year rotation with marketable material extracted for firewood and brash retained on site in discrete piles.

Temporary deer fencing will be required until the coppice becomes properly established. Non-natives tree species currently make up some 8% of the unit. This is above the 5% threshold for favourable condition and the main reason for the unit being assessed in 2010 as unfavourable recovering condition.

Non-native conifer is scattered throughout the unit as well as in small, discrete blocks on the steeper, more inaccessible slopes. Lawson's cypress (*Chamaecyparis lawsoniana*), Japanese larch (*Larix kaempferi*), western hemlock (*Tsuga heterophylla*), Norway spruce (*Picea abies*)and Scot's pine (*Pinus sylvestris*), both mature and naturally regenerating are the main conifer species to be found both within and on the boundary of the SSSI.

To progress the SSSI towards favourable conservation status, the removal of more significant areas of conifer will be a priority for this SSSI plan period. Steep slopes, poor access and the railway line make conifer removal a significant operation. A small length of new track and platform will be required on the SSSI boundary to allow access for an excavator mounted winch to allow the conifer to be extracted from the SSSI (Map 4). Line closure will be required to allow operations to proceed; this will be negotiated with Network Rail over the coming months. A more detailed assessment note of the impact of this operation and the required tree felling in order to complete this work will be provided once the job is planned during the first year.

Significant areas of temporary open space will be created with the removal of the conifer - natural regeneration is the favoured option for restoring the site back to native woodland. If after two years natural regeneration is not successful or is not resulting in sufficient variety, supplementary restocking with a variety of native tree species in tree guards will take place. The sites will be regularly monitored by the beat forester to check how the site is progressing in terms of species regeneration, species diversity and impact from deer.

A number of individual conifers are scattered throughout the unit. Extraction is not practical, they will therefore be cut to waste and retained on site stacked as habitat piles.

A small area of plantation beech is present on the plateau area. The beech, although within its native range, is rather even-aged in structure and similar to plantation woodland within the non-designated areas of Leigh Woods. The beech will be group thinned, retaining older beech trees and breaking up the more even-aged beech plantation. This should allow natural regeneration of native species to take place and begin the restoration of a more species rich woodland in keeping with the SSSI designation. Again, deer impacts will need to be monitored to ensure they are not having a detrimental effect on natural regeneration and if necessary supplementary replanting using tree guards may be required.

Sycamore and sweet chestnut have been perpetuated by past management practices and now make up a significant proportion of the non-native species. With the need for increased adaptability and diversification in light of climate change and new native tree diseases, a more tolerant approach to these "honorary" natives will be required in the future. Rather than eradicating them, the aim should be to prevent them from becoming dominant. During forestry operations, opportunities to remove prolifically seeding sycamore should be taken wherever possible.

Buddleia (*Buddleja davidii*), cotoneaster (*Cotoneaster horizontalis*), holm oak (*Quercus ilex*), discrete areas of laurel (*Prunus laurocerus*) and rhododendron (*Rhododendron ponticum*) will be chemically treated with the objective of removing them from the SSSI.

In the northern part of the unit where the land descends steeply down to the Avon Gorge and runs along the top of the limestone quarries, the limestone influences are more accentuated and the typical *Tilio-Acerion* woodland for which the site is designated become more apparent. Small leaved lime, field maple, wild service tree (*Sorbus torminalis*), privet, hazel, hawthorn, spindle (*Euonymus europaeus*), wayfaring tree (*Viburnum lantana*) and dogwood (*Cornus sanguinea*) can be found.

The rocky outcrops are the primary habitat of the many rare whitebeams to be found within the Avon Gorge. These species thrive in light, open conditions. Whitebeams will be GPS recorded and marked using tape. Contractors will be made aware of their location prior to forestry operations commencing.

Also of note on the lower slopes of the SSSI are the ancient lime coppice stools which border the southern boundary of the railway line. Many of these trees can be regarded as 'Trees of Special Interest' and are an important feature of the Avon Gorge SAC. They will be recorded on the Conservation Extension to ensure they are taken into account during forestry operations. Expert advice will help guide halo thinning or coppicing of the most vulnerable small leaved lime coppice stools during the plan period.

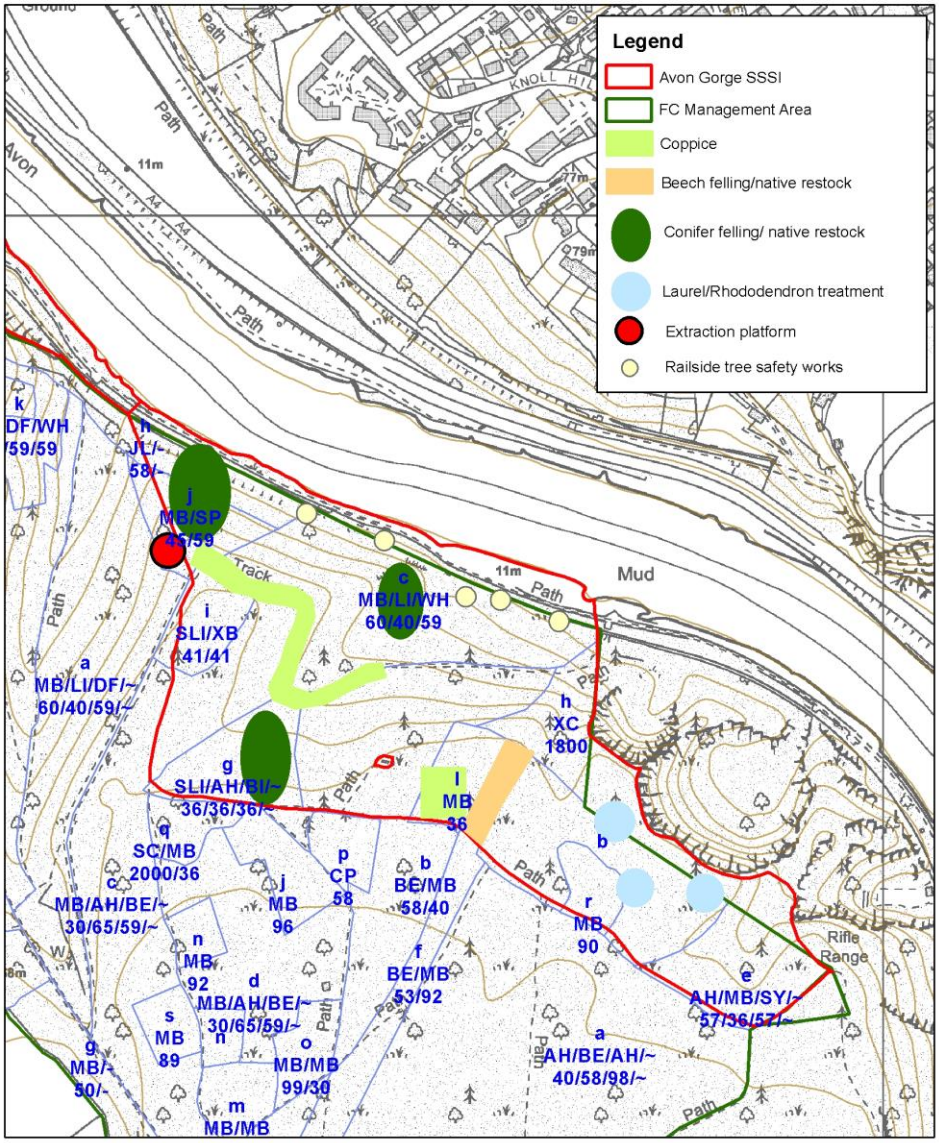
Many examples of such trees can be found along the northern boundary of the railway line. Network Rail has approached the Forestry Commission over the issue of woody debris falling onto the line. The Forestry Commission has a legal obligation to manage boundary trees that pose a health and safety risk. However many of the trees are important old lime coppice stools for which the site has been SAC designated. Trees will be considered on an individual basis and those agreed to be presenting the highest risk will be re-coppiced or reduced in height. Ensuring this is sensitively completed will be a priority.

Due to the steep slopes, close proximity to the railway line and the SAC designation, this operation is a major undertaking requiring tree surgeons, temporary line closure and a Habitat Regulations Assessment due to the impact the operations could have upon the SAC designated *Tilio-Acerion* woodland. Negotiations with Network Rail are currently ongoing and should take into account the possibility of extraction via rail.

Open space is fairly limited within the unit and opportunities to open up rides by coppicing vegetation within a 5m boundary should be taken wherever possible. The ride which runs to the south of sub-compartment 5002c is becoming encroached by derelict coppice and as a result is becoming increasingly shaded and waterlogged. Coppicing derelict coppice to a minimum of 5m from either side of the ride will result in important edge habitat being created for the benefit of a number of species. Marketable material will be extracted; brash will be retained on site and piled in discrete piles within the woodland edge.

Large parts of unit 7 are recorded as a Natural Reserve in accordance with UK Woodland Assurance Scheme certification (UKWAS) (Map 3). Natural Reserves are areas of woodland where biodiversity is the prime objective and should be managed by minimum intervention unless alternative management has a higher conservation or biodiversity value. Removing the conifer within these areas as proposed above is in accordance with this policy. Once operations have been completed and woodland has established, Natural Reserves should be maintained as undisturbed woodland in keeping with the nature of steep gorge woodlands.

To help achieve SSSI deadwood targets of a minimum of 3 fallen lying trees >20 cm diameter per ha and 4 trees per ha allowed to die standing, large felled intact trunks should be left on site as well as standing deadwood by ring-barking or stem injecting suitable trees which will not pose any threat in terms of health and safety / public access issues.



Forestry Commission

Forestry Commission woodlands have been certified in accordance with the rules of the Forest Stewardship Council.

Map No.4, SSSI Unit 7: Management 2014-2024

11.2 Paradise Bottom (SSSI Units 8 and 9)

Paradise Bottom is an area of secondary woodland, lying to the north of the Avon Gorge SSSI. The Paradise Bottom brook which runs along the base of the valley into the Avon Gorge is the boundary between the two units. Paradise Bottom is underlain by Early Devonian sandstones which have allowed the development of slightly more acidic soils than in Unit 7. In addition, each of the units in Paradise Bottom has a slightly different character bought about by subtle changes in aspect, topography and past management practices within the valley.

The eastern side of Paradise Bottom (unit 8, unfavourable recovering condition) is dominated by overstood sessile oak and sweet chestnut coppice with a number of ancient small leaved lime coppice stools, birch (*Betula pubescens*), ash, hazel, yew and sycamore.

There are significantly more conifers present in unit 8 than in unit 9 and the reason behind the current condition assessment of unfavourable recovering. Japanese Larch, Japanese red cedar (*Cryptomeria japonica*) and western red cedar (*Thuja plicata*) can be found along the eastern boundary of the unit and adjacent to the railway line in the north.

The majority of the conifer will be removed within the first two of years of the SSSI plan. The felling of the area of conifer near the railway line will create a significant glade which will monitored for two years for natural regeneration and then depending on the outcome, restocked with a variety of site native species including small-leaved lime, wych elm and wild cherry (*Prunus avium*) in tubes to protect them from deer browse. The railway line lies adjacent to this area and line closure will be required to ensure that operations can be carried out safely.

Red Oak (*Quercus robur*) is present to the south of the unit, adjacent to the new coppice coupe. Red oak is considered by Natural England to be detrimental to the SSSI and will be felled and stump treated to prevent regeneration. Native minor species present within the crop will be retained and the area will be monitored for natural regeneration and restocked with native species if necessary. The fences will be removed from the recently coppiced coupe once the coppice is properly established and the coppice will be re-cut on a 10-15 year rotation.

At the base of the valley, surrounding the stream valley, wet woodland comprised of hybrid black poplars (*Populus serotina*) and willow (*Salix*. species) thrive in the wet, flushed conditions. This area will be managed as minimum intervention.

The western edge of Leigh Woods (unit 9, favourable condition) is comprised of large old small-leaved lime coppice and ash with sessile oak and an understorey of hazel, wych elm, holly, hawthorn and field maple. This area is currently managed as a Natural Reserve.

To help achieve deadwood targets large felled intact trunks should be left on site as well as standing deadwood by ring-barking or stem injecting suitable trees which will not pose any threat in terms of health and safety / public access issues.

This unit has a history of coppice management as indicated by a large number of overstood coppice stools. Significant natural regeneration of ash and small-leaved lime indicates that this area would respond well to further coppice management with the aim of encouraging further regeneration and diversifying the age class structure. The young ash and small-leaved lime within one small (0.25ha) coppice coupe will be cut over the course of the ten-year management plan. To ensure successful regeneration the coupes will be protected by deer fencing which will be removed once the coppice is established. The aim will be for the coppice coupes to be cut on a 10-15 year rotation. Most of the material will be removed for firewood; smaller material will be retained on site as habitat piles.

Non-native species with regenerating Norway spruce and sycamore occur in small numbers at discrete locations throughout the unit. This will be felled within the first two years of the SSSI plan.

Significant laurel *(Laurus nobilis)* and rhododendron (*Rhododendron ponticum*) can be found throughout Paradise Bottom. Mature laurel at the northern end of Unit 9 shows the impacts laurel can have if it is left unmanaged and removing it is a priority for the 10 year plan. Efforts to reduce these species will commence in unit 8, with a trial programme of glyphosate stem injection before operations within the other affected units commence.

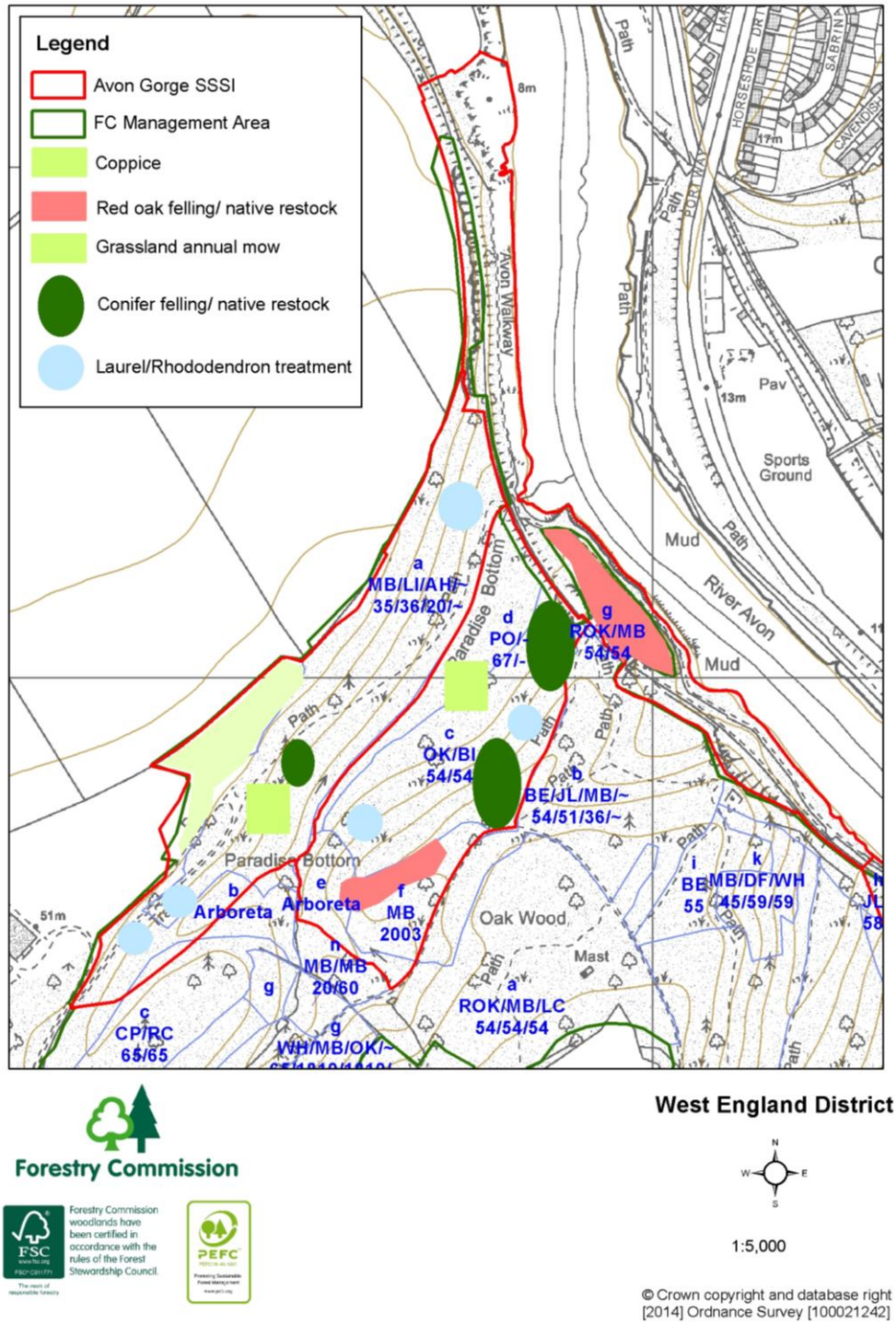
In addition to the woodland components, there is approximately one hectare of neutral grassland on the northern edge of the SSSI. In the recent past efforts were made to restore the yew avenue leading north from Leigh Court. Significant bramble growth is now obscuring the avenue and some of the trees have died. This area will be managed into the future as open grassland, with an annual mow in late summer. Where resources allow, cut and collect mowing will allow the production of hay.

11.3 North Eastern Edge (SSSI Units 10)

The Forestry Commission manages approximately 1 hectare of the 5 hectare unit which consists of a strip to the south of railway line and small area to north located between the railway line and the River Avon (unfavourable recovering condition).

The area is similar in character to unit 9 however it is dominated by mature red oak with an understorey of ash, small-leaved lime, beech and hazel. The presence of red oak is the reason for the unit being classified as unfavourable recovering condition. The red oak will be felled in one operation and monitored for two years before restocking with a mixture of native species including small-leaved lime, cherry and oak. Close proximity to the railway line will require temporary line closure before work can proceed.

To help achieve SSSI deadwood targets of a minimum of 3 fallen lying trees >20 cm diameter per ha and 4 trees per ha allowed to die standing, large felled intact trunks should be left on site as well as standing deadwood by ring-barking or stem injecting suitable trees which will not pose any threat in terms of health and safety / public access issues.



Map No.5, SSSI Units 8, 9 & 10: Management 2014-2024

12. Agreed Habitat Management by Unit

Year 1	2015-2016	Year 6	2020-2021
Year 2	2016-2017	Year 7	2021-2022
Year 3	2017-2018	Year 8	2022-2023
Year 4	2018-2019	Year 9	2023-2024
Year 5	2019-2020	Year10	2024-2025

To the South - SSSI Unit 7 - See Map 4

Management Prescriptions for the period 2014-2024		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	Create extraction route and extraction platform on the boundary of unit 7 to allow extraction of conifer from steeply sloping part of the unit		◆								
2	Fell and extract conifer from two areas on lower slopes of SSSI unit, Autumn 2015		◆								
3	Monitor natural regeneration of areas for two years and if necessary restock with a range of site native species including small leaved lime, ash, cherry and field maple				◆						
4	Group thin area of plantation beech on the plateau, favouring younger individuals and ensuring remaining broadleaves are not impacted by the operations		◆								
5	Monitor natural regeneration of areas for two years and if necessary restock with a range of site native species including small leaved lime, ash, cherry and field maple				◆						

6	Cut one 0.25 ha coppice coupe in the derelict coppice area on plateau, deer fence and manage beyond plan period on a 10-15 year rotation.				◆						
7	Explore with N.R to coppice/reduce individual trees thought to potentially pose a threat to the railway line (once HRA has been completed and temporary line closure negotiated).	◆	◆								
8	Coppice 5m width of derelict coppice alongside ride to north of sub-compartment 5002c and manage beyond plan period on a 10 year rotation.	◆									
9	Fell any prolifically seeding SC and SYC to prevent them from becoming dominant within the SSSI	◆			◆			◆			◆
10	Record whitebeams and other 'Trees of Special Interest' on the conservation extension and ensure contractors are made aware of during forestry operations	◆					◆				
11	Chemically treat laurel, rhododendron, holm oak, buddleia, cotoneaster present throughout the unit and bordering the quarries	◆			◆			◆			◆
12	Continue to monitor and manage deer numbers on site	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
13	Monitor PAWS/thinning sites for levels of natural regeneration, species composition and deer impacts			◆	◆	◆	◆	◆	◆	◆	◆
14	To help achieve SSSI deadwood targets large felled intact trunks /standing deadwood should be left on site and more deadwood created through ring-barking or stem injecting suitable trees			◆			◆			◆	

Paradise Bottom (SSSI Units 8 and 9) - See Map 5

Management Prescriptions for the period 2014-2024		1	2	3	4	5	6	7	8	9	10
1	Chemically treat laurel, rhododendron holm oak, buddleia and cotoneaster throughout Paradise Bottom, starting with Unit 8.	◆		◆		◆		◆		◆	
2	Fell Japanese Red Cedar and Western Red Cedar on eastern boundary of SSSI unit 8		◆								
3	Fell Japanese Larch and other conifer to the south and near to the railway line – mini clearfell		◆								
4	Monitor and if necessary restock with a range of site native species including SLL, Wych Elm in tubes.				◆						
5	Fell and stump all red oak and monitor results of treatment, if necessary carry out follow up treatment		◆		◆						
6	Coppice two 0.25 ha coupes in unit 8 and 9, favouring smaller diameter ash and SLL, fence and manage on a 10-year rotation beyond plan period.			◆				◆			
7	Remove fence from recent coppice coupe and manage on 10-15 year rotation from last coppice date			◆							
8	Maintain grassland area as open space through late summer mow. Cut and collect for hay as and when resources allow.	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
9	Continue to monitor and manage deer numbers on site	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
10	Record whitebeams and other 'Trees of Special Interest' on the conservation extension and ensure contractors are made aware of during forestry operations	◆					◆				
11	Monitor PAWS/thinning sites for levels of natural regeneration, species composition and deer impacts			◆	◆	◆	◆	◆	◆	◆	◆

12	To help achieve SSSI deadwood targets large felled intact trunks /standing deadwood should be left on site and more deadwood created through ring-barking or stem injecting suitable trees			◆			◆			◆	

North Eastern Edge (SSSI Units 10) - See Map 5

Management Prescriptions for the period 2014-2024		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	Chemically treat laurel, rhododendron holm oak, buddleia and cotoneaster throughout Paradise Bottom, starting with Unit 8.	◆		◆		◆		◆		◆	
2	Fell and stump all red oak and monitor results of treatment, if necessary carry out follow up treatment		◆		◆						
3	Continue to monitor and manage deer numbers on site	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
4	To help achieve SSSI deadwood targets large felled intact trunks /standing deadwood should be left on site and more deadwood created through ring-barking or stem injecting suitable trees			◆			◆			◆	

13. Record of Management

Operation	Signed	Date

14. Bibliography

Natural England SSSI Condition Assessment, 2010

A Management Plan for the Bristol Side of the Avon Gorge, 2010-2015, Avon Gorge and Downs Wildlife Project.