

2014-2033

Beeccraigs Forest Plan



West Lothian Council

NETs, Land & Countryside

May 2014 amended February 2015



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A. Introduction

The 272ha Beebraigs Forest is part of Beebraigs Country Park. The forest is an integral part of the Country Park, forming the landscape and environment in which the estimated 0.4million visitors per annum enjoy the many recreational activities on offer.

This plan only covers the mainly forested part of Beebraigs Country Park. There are a further 77ha of farmed land on its north-eastern side which is used as an Animal Attraction, raising red deer, Highland cattle and Belted Galloway cattle. Further information on this and other visitor facilities will be included in the Beebraigs Country Park Management Plan.

The forest, although predominantly coniferous, is diverse in species and age class, including large mature conifers dating back to the original planting in the 1920s. It is intended that the forest continues to be managed with public access and enjoyment as the primary objective and that the diversity of structure and species is maintained or increased where possible.

The biodiversity of the forest is to be enhanced by gradually restructuring parts of the forest to create more open ground and semi-natural woodland, particularly adjacent to watercourses. As part of the management of the forest, timber will be produced from felling and thinning, the income from which will contribute to the costs of felling and extraction and the subsequent access restoration, replanting and maintenance as required.

Part A – Description of Forest

A.1 Property Details

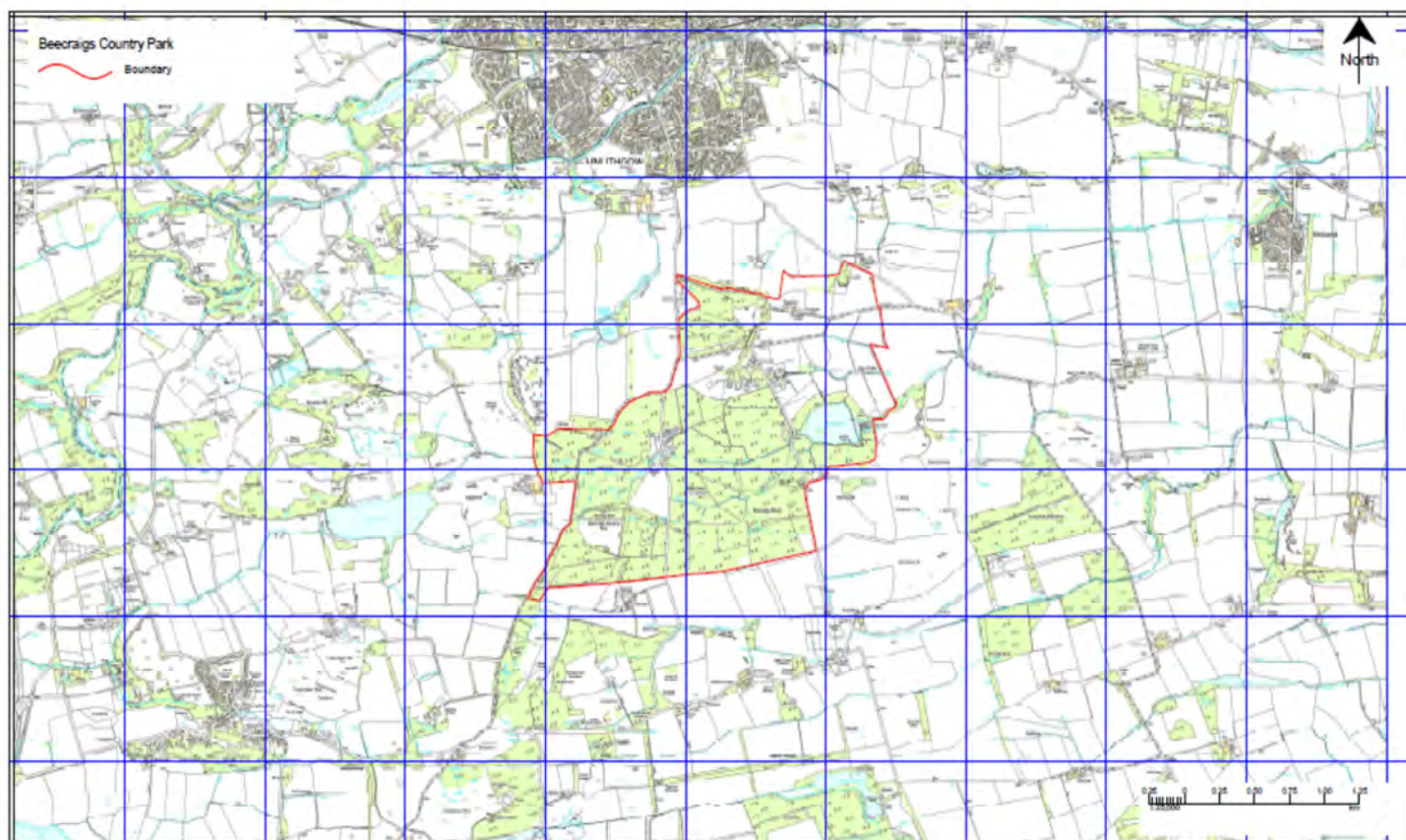
Applicant	<p>Mrs Eirwen Hopwood Countryside Manager</p> <p><i>on behalf of</i> West Lothian Council Operational Services NETs, Land & Countryside Services The Visitor Centre Beeccraigs Country Park Nr Linlithgow EH49 6PL</p> <p>Tel 01506 844516 Fax 01506 846256 e-mail eirwen.hopwood@westlothian.gov.uk</p>
Owner	West Lothian Council
BRN	145594
Main Location Code	842 0023
Main Contact	<p>Jane Begg Forestry Officer</p> <p>West Lothian Council Operational Services NETs, Land & Countryside Services The Visitor Centre Beeccraigs Country Park Nr Linlithgow EH49 6PL</p> <p>Tel 01506 844516 Mobile 07798 584356 e-mail jane.begg@westlothian.gov.uk</p>
Payee	West Lothian Council Notification to be sent to Forestry Officer above

A.2 Location and Background

Beeccraigs Country Park, lies within the Bathgate Hills Area of Great Landscape Value approximately 2 miles south of Linlithgow and 3 miles north of Bathgate.

Location Map- 1:50,000 OS map (see also Appendix 1)

Beeccraigs Country Park



Beeccraigs Country Park – Location Map

SRDP Ref.RDC_RP/4133553/842/0023/4407534/S/002
22/11/12

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The grid references of the main access points are as follows:-

Beeccraigs Visitor Centre (east side of Country Park)	NT 006 746
Balvormie car park (centre of forest)	NS 998 741
Cockleroy car park (west side of forest)	NS 993 742
Lochside car park	NT 006 742
Hillhouse Wood	NT 002 747

Beeccraigs Country Park is one of three Country Parks owned by West Lothian Council and managed by the NETs, Land and Countryside Services section of Operational Services to provide accessible countryside for the public to enjoy informal/formal recreation and educational activities.

Approximately 77% of the Country Park is covered with predominantly coniferous forest. The remainder is managed as permanent and semi-permanent grassland on which red deer and Scottish native breed cattle are kept and reared as an Animal Attraction. The eastern part of Beeccraigs Forest was converted from farmland to forestry as part of the catchment protection for Beeccraigs Loch, which was constructed as a reservoir in the early 1900s to provide a clean water supply for the town of Linlithgow. Beeccraigs Loch is now run as a trout fishery and is one of the numerous leisure activities provided within the Country Park.

Summary of Felling and Thinning included within this Plan

Clearfelling 20 years	49.79
Thinning 10 years	121.98

Existing Grant Schemes and Felling Licences

Scheme	Reference
Felling Licence	CB290272 expires 24/10/15
SRDP Longterm Forest Plan Preparation	RDC_RP/4133553/842/0023/4407534/S/004

A.3 Stakeholder Engagement

Public consultation is carried out prior to major changes to the Park such as the installation of the expanded play area and the preparation of this Longterm Forest Plan. Information on changes to the Park, as well as information on operations being undertaken, is provided in key locations around the site.

A.3.1 Consultation and Scoping Report 2011 and 2013

A number of ways have been used to gather information from stakeholders to inform this plan. These are as follows:-

Customer Consultation Schedule				
Customer Group	Survey Method	Frequency	Responsible Officer	Feedback method
Country Park Users	Paper based surveys captured at time of service use to evaluate customer experience and satisfaction with the service provided and how the service could be improved in the future. In 2011-12 some specific questions regarding the forest were added to the questionnaire.	Annual	Ranger Service	Via, Beeccraigs Country Park Visitor Centre and on Site. Reported internally through the Public Performance Indicator (NLCS212_6a.7) Beeccraigs Website

Caravan and Campsite Users	Paper based surveys captured at time of service use to evaluate customer experience and satisfaction with the service provided and how the service could be improved in the future.	Annual	Ranger Services Manager	Via, Beeccraigs Country Park Visitor Centre and on Site. Reported internally through the Public Performance Indicator (NLCS212_6a.7) Beeccraigs Website
Beeccraigs Sawmill Customers	Paper based surveys captured at time of service use to evaluate customer experience and satisfaction with the service provided and how the service could be improved in the future.	Annual	Facilities Manager	Via, Beeccraigs Country Park Visitor Centre and Sawmill. Reported internally through the Public Performance Indicator (NLCS212_6a.7) Beeccraigs Website
Country Park Users	Drop-in session within the Park. Verbal and written comments collected	Autumn 2011	Ranger Service & Forestry Officer	Via, Beeccraigs Country Park Visitor Centre and on Site
Country Park Users and neighbours	Evening Public Meeting- publicised through posters, local media (newspapers, Facebook, website) and specific invitations	Autumn 2011	Ranger Service & Forestry Officer	Via, Beeccraigs Country Park Visitor Centre and on Site
Countryside Staff	Informal workshops	Autumn 2011	Forestry Officer	Internal
Council Staff, Forestry Commission Scotland, relevant staff from other agencies	Formal Scoping Meeting	Autumn 2011	Forestry Officer	Scoping report submitted to FCS
Country Park Users and neighbours	Two informal walks to update interested parties	Summer 2013	Forestry Officer	Via, survey returned at the end of the walks

A number of automatic visitor counters have been installed in the main car parks and on main paths to monitor the number of vehicles, horses, bikes and walkers using the Park. The Ranger Service currently maintain the counters, download the data and calibrate the counters to give an annual report on the level of use of the Country Park by the Ranger Service.

The key issues raised and information gathered are detailed in the Scoping Report 2011 and are summarised below:-

- Future structure of the forest – people “like it the way it is” or would like more diversity including more native woodland
- Water quality including the source of a private water supply
- Management of the forest as a Country Park and also producing timber
- Suggestions for improvements to facilities for the public – insufficient parking, muddy paths, lack of signage, lack of a café, facilities for mountain biking, better disabled access, more benches and seating areas
- Management access onto minor public roads
- Management of historical features

Most of the comments made by the public questioned during the customer surveys and at the “drop-in” event related to the recreational facilities on the site. Since the initial workshops and meetings in 2011 much has already been done to improve these. Some people have commented that they preferred the un-surfaced paths but, with increasing use and a series of very wet years, causing very muddy conditions, most of the responses to the recent path work carried out has been favourable.

There were many comments requesting better toilets and a café or new visitor centre. There were requests for a better path to link the Park through Hillhouse to the path to Linlithgow, which has now been constructed, and also a desire for paths to link with towns and settlements to the south. As a result of increasing use of the Park for mountain biking and as highlighted in the consultation, a new mountain bike trails have been developed. Many of the “Friends of Beecraigs” group have provided voluntary assistance with its construction. The 2011 consultation also highlighted possible demand for a cycling skills area and further consultation has subsequently been carried out for provision of a proposed pump track and skills area (in the location formerly used by Go Ape) with over 100 responses from the Clarion Youth Cycling Club who already use the Park and nearly 400 responses from an online survey showing clear demand for such a facility.

A.3.2 Additional Consultation 2013

Since the Scoping Report was written in Autumn 2011 the forest has suffered badly from windblow during the severe gale of 3rd January 2012 and again in January 2014. This required some changes to the original proposals but the overall principles have remained the same. A draft Long-term Forest Plan was submitted to Forestry Commission Scotland in March 2013. They requested that further consultation be carried out in order to more clearly understand the public’s response to different silvicultural regimes. Two guided walks were held in September 2013 during which the proposed outline plan was discussed on the ground and the attendees asked to complete a questionnaire.

Future Structure of the Forest

On the additional guided walks the fact that people like the forest “the way it is” was confirmed by most of the participants. They appreciate the wooded environment and in particular where there are large trees and you can see into the woodland. It was explained that forests and trees do not stay the same but have to be managed as they grow and will eventually need to be felled and

replaced. The severe storm in January 2012, which resulted in windthrow in many parts of the Park, followed by further damage in January 2014 has brought it home to the regular Park users that pro-active management is required. Most of those who attended the guided walks in 2013 felt that the clear up operation, except for one area awaiting improved management access, had been carried out with a minimum amount of disturbance to people using the Park. The majority of people surveyed or spoken to understand that work is necessary but highlighted the need for good advance information and the need for clear route diversions.

It was noted that children enjoy adventuring into the conifer plantations where they can explore and make dens under the trees, and the rangers use many of these areas for Forest School, pioneering and orienteering activities.

Some people expressed a desire to see more native broadleaved woodland but even they did not want the whole forest to be broadleaved. The public like the avenues of old Beech trees which unfortunately are now in decline and it was explained that some had to be removed for tree safety reasons adjacent to the car park or main paths. Most people like the fact that the forest, although mainly conifer, is quite diverse with a mixture of ages and species and have stated that they would like to see even more variety.

Different silvicultural regimes were explained on the guided walks and at the public meeting and drop-in sessions with the aid of photographs. The proposal to manage much of the forest under a continuous cover forestry regime as opposed to clearfelling and replanting, where this is feasible, was discussed and those consulted agreed with this approach.

The proposal to gradually improve the riparian zones along the main burns and other watercourses was explained and any improvement of these would be appreciated by those who fish on the Loch.

Productive Forestry

Most of the public appreciate that the timber from the forest is used to produce income to help in the management of the forest and other Country Park facilities. They would like this to be done as efficiently as possible.

Archaeology and Historical Features

West of Scotland Archaeology were unable to attend the formal scoping meeting but provided information verbally and have since commented on a felling licence submitted for the most urgent areas partly affected by windblow. They have highlighted the importance of prehistoric remains discovered as part of excavations carried out as part of the planning application for a proposed new visitor centre in the Old Turnip Field location, just north of the forest at the caravan and camping site. Most of the forest area has already been disturbed by previous ploughing and subsequent tree growth. However, there is a need to be vigilant during any forestry operations and report anything revealed by upturned rootplates or similar.

They also commented on other historical features remaining from the forest's former agricultural use. The old, mainly tumbled drystone dykes had been surveyed some years ago and an historical

map had been prepared by a local resident. These can be used to inform future repairs and interpretation.

A.4 Long Term Vision and Management Objectives

The long term vision is to manage the forest as an attractive, varied and safe landscape for the residents of West Lothian and visitors to enjoy using the access and other facilities provided in the Country Park and, that by taking part in outdoor activities, they will be healthier and happier. It will also be a valued resource for informal / formal education, training and work experience.

Countryside Section's strategic statement guides its future direction and development:

"To provide a better quality of life for those living in and visiting West Lothian by encouraging greater participation in formal and informal recreational and educational activities, within a safe environment ideally situated to serve the growing population of West Lothian.

To manage sustainable land holdings and to seek to achieve greater appreciation and enjoyment of West Lothian's countryside, by nurturing lifelong learning and healthy lifestyles for all."

The forestry management objectives are:-

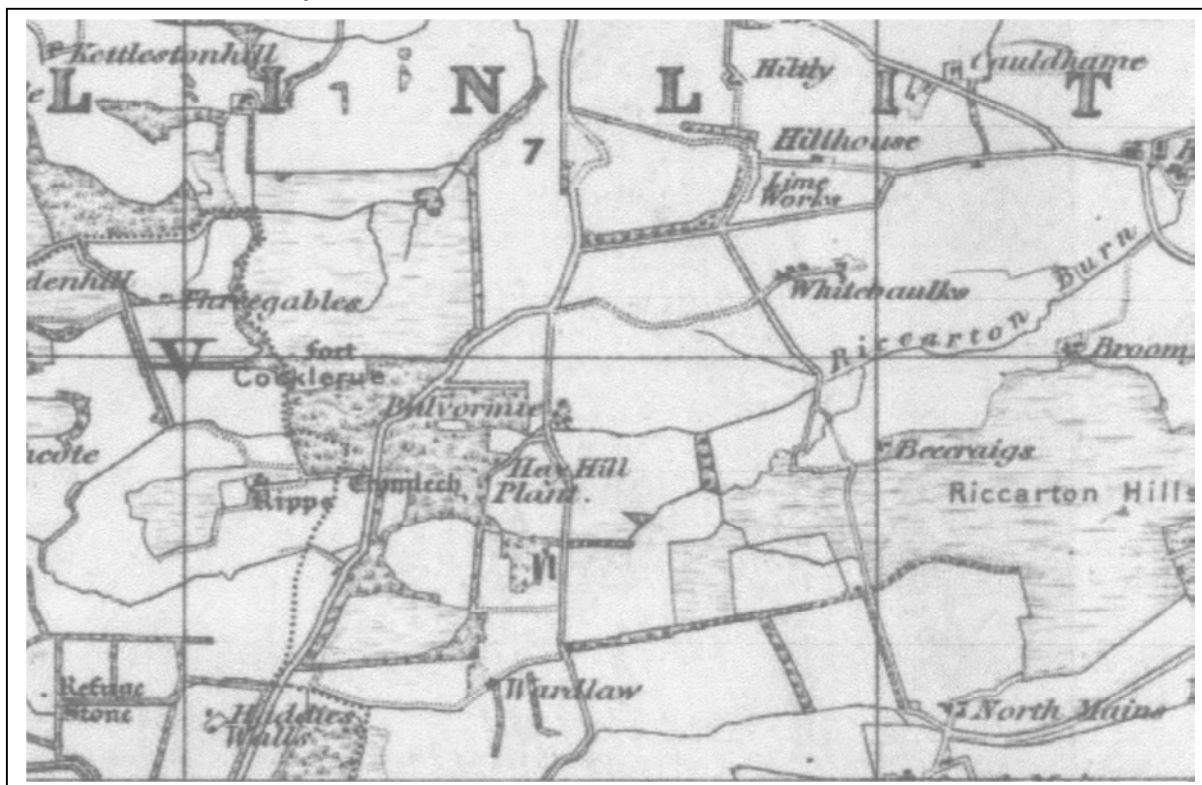
- To manage the forest in a sustainable manner to continue providing the Country Park facility for generations to come.
- To enhance the landscape for the enjoyment of visitors including the retention of big trees where possible.
- To safeguard and enhance the biodiversity and historical features.
- To produce timber and other wood products which can provide income to help support the management of the forest and other facilities .
- To continue to provide a wide variety of facilities for all ages and abilities to participate in outdoor activities to the benefit of their physical and mental well-being.
- To continue to use the forest and its facilities to provide learning through environmental education and volunteering opportunities.
- To involve the users of the Country Park in its management through the "Friends of Beeccraigs", engaging with other groups and individuals, and customer consultation.

A.5 Site and Species Description

A.5.1 A Brief History of the Country Park

The area of the Country Park was formerly comprised of three tenant farms - Whitebaulks and Balvormie (which were owned by Champfleurie Estate) and Beebraigs (which belonged to the Duke of Hamilton). The area was used for rough grazing on the north facing slopes and arable crops on the south facing aspects. Trees were found in shelterbelts, hedgerows and on the slopes of Cockleroy Hill. Maps dating to 1855 show woodland established on the western side of the Park as well as the Hillhouse shelterbelt.

1855 1st edition OS Map



The former farms were bought by the South East Scotland Water Board to protect Beebraigs Loch. The Loch was built during the First World War as a reservoir to supply the residents of Linlithgow with a fresh water supply, by damming Riccarton Burn and lining it with puddled clay and stone pitching. The watershed to the Loch was planted from 1922 with coniferous trees to provide protection from pollution, flash flooding and sediment run-off from surrounding farmland with the area being managed by West Lothian County Council (WLCC) and South East of Scotland Water Board.

The first major gale in 1968 caused massive devastation to the south and west sides of the Park. These areas were replanted and further tree planting was carried out on former agricultural land up until 1973 for timber and watershed protection purposes.

When the reservoir was decommissioned in 1974, due to the commissioning of the water supply from Loch Lomond, the old filtration beds were converted into a trout farm and WLCC leased 659

acres of the reservoir and its environs. In 1975 West Lothian District Council designated the reservoir and woodlands as a Country Park.

The land at Hillhouse to the north of the existing Country Park was originally part of the farmed area used for silage cutting. Part of this land was planted as mixed woodland in the late 1990's. The remaining land was and still is used for grazing and silage for the Animal Attraction.

The storm of January 1995 caused another wave of storm damaged timber on the western side of the Park. This was exacerbated by many areas of woodland not having had time to close canopy after a major commercial thinning carried out in 1993 and the lack of maintenance of the forest drainage system. Numerous other storms have hit the Country Park and this has seriously hampered the ability of Park staff to take proactive woodland management operations. Clearance of storm damaged timber was expensive and slow.

A small working sawmill was present on site when the area was taken over by WLDC, which used thinnings and windblown timber for estate use and this has continued. In 2006 the Sawmill was modernised and the old saws replaced. In 2011 the roof collapsed under the weight of the snow but it has since been replaced and is fully operational.

Management of the woodland *per se* was never prioritized but in 1995 the woodlands were entered into a 5 year Woodland Grant Scheme. Operations included in the Plan of Operations included increasing the percentage of broadleaf trees.

The forest again suffered badly from severe gales in January 2012 and January 2014 with 26 individual stands of the forest being blown down, many of which affected popular facilities of the Country Park including the Go Ape high wire course.

A.5.2 Landscape and Topography

The 272ha Beeccraigs Forest sits within the undulating Bathgate Hills at an altitude of between 150m and 260m above sea level. The landscape of the Bathgate Hills is a varied one, supporting mixed arable and livestock farming, interspersed with areas of planted forest and semi-natural woodlands and avenues of over-mature trees along roadsides. Beeccraigs Forest is the largest of the forest areas but, due to the nature of the topography, it sits partially hidden within the hills and, although visible from a wide area, is not unduly obtrusive in the landscape. It is crossed by a number of country roads including the busy Linlithgow–Bathgate road and so the landscape along this road in particular is important.

With the exception of the Hillhouse Wood, through which there is a fairly steep climb up from Linlithgow, much of the forest is relatively flat making it an ideal location for the public of all ages and abilities to walk without difficulty.

A.5.3 Water

Most of the natural burns and main forest ditches flow in an easterly direction towards Beeccraigs Loch. This is now managed by the Council as a rainbow trout fishery. Water drains from the western side of the Park into the Lochcote Reservoir below Kipps Farm. There is a pond adjacent to

Balvornie Meadow which was the original millpond of the Balvornie Farm. It was excavated some years ago and a pond liner fitted and now is a great wildlife pond, used by the Rangers for pond dipping activities. A small, new off-burn pond has been created close to the Lochside car park.

There are some fairly large areas of wetland particularly in the western part of the Park towards Cockleroy and east of the Linlithgow-Bathgate road. These were drained and planted with conifers in the past but gradually nature has taken over, with drains becoming filled in and the areas developing as Birch/Willow wet woodland. These areas and smaller pools and ditches provide a habitat for amphibians.

A.5.4 Geology and Soils

The underlying geology is mainly basalt with areas of tuff, quartz dolerite sills and a seam of limestone. There are the remains of a number of former limestone quarries and interconnected caves and rock fissures, stretching from lower Hillhouse up to the northern end of Whitebalks Road and connecting to old quarry pits within the forest.

The soils are fertile, moist brown earths to gleys over shattered rock with a rooting depth of 300-600mm, except at Hillhouse and the western part of the Park where ridges of rock come close to the surface.

The John Hutton Institute (JHI) soil map shows the majority of the forest is overlain with poorly drained, non-calcareous gleys of the Rowanhill soil series and association. These normally have a restricted rooting depth of 200-300mm. However, more detailed on-site investigation has shown that most of these areas are more freely drained with a rooting depth of >300mm. The presence of limestone in places gives rise to more base rich soils and associated vegetation. The soils are inherently low in readily soluble phosphorous. There are smaller areas of more freely drained, brown forest soils of the Darleith association and gleys of the Caprington series with deeper rooting depths.

A.5.5 Climate and Exposure

The climate of this part of Scotland is cool and moist and is affected by its proximity to the east coast and the Forth Valley through which wind tends to be funnelled. The Country Park has an average annual rainfall of 949mm, minimum temperature of 5.4°C and maximum temperature of 12.9°C (*Falkirk Climate Station, 1981-2010, Met Office, 2014*). It is predicted that the climate in this part of the country is likely to experience drier summers and windier conditions which will affect the future choice of tree species.

Beecraigs Forest lies within the Bathgate Hills and as such is fairly exposed to winds from the west. However, due to the undulating topography this varies across the site from the most exposed areas on the western side to lower lying and more sheltered locations to the east.

The combination of altitude, location in the UK, exposure and soil types was used to establish the Windthrow Hazard Class (WHC) across the forest. This varies from WHC 5 in the west to WHC 2 in the most sheltered areas. Due to deeper rooting depths than indicated on the JHI soil maps the trees are likely to be more windfirm than estimated from the WHC.

A.5.6 Wildlife

Beeccraigs has many mammalian species including fox, roe deer, stoat, weasel, rabbit and other small mammals as well as protected species including badger, bat and red squirrel. The badgers are monitored annually by the Ranger Service and prior to any operations which might affect them. A small population of red squirrels is believed to still be present in the forest, having been part of a reintroduction and management project funded by SNH in the 1980s. The numbers of red squirrel in the Park today is uncertain but they are outnumbered by the larger, non-native, grey squirrel. The Country Park is home to several bat species including Pipistrelle (common and soprano), Brown Long-eared, Natterer and Daubenton in both summer roosts and winter hibernaculae using trees and the Hillhouse cave system as well as artificial boxes. These are monitored by the Lothian Bat Group and the Ranger Service. Maps showing badger sett and bat box locations are held on San server (Council storage server) and in the Beeccraigs Reference File.

There is evidence of significant grey squirrel damage to semi-mature broadleaved trees especially sycamore. Voles, rabbits and roe deer are the main cause of damage to young trees. SNH carried out a night survey in order to assess the presence of roe deer within the Park and from this and evidence on the ground it appears that the population is fairly low at present.

Despite the forest being predominantly conifer plantation a large number of woodland birds are present including woodcock, siskin and crossbill as well as summer visitors including wheatear, chiffchaff, willow warbler and blackcaps. Buzzard and kestrel are the most commonly seen raptors using the area although sparrow hawk, goshawk and merlin can be seen occasionally. There are good numbers of wildfowl found on the Loch all year round including greylag geese, golden eye, tufted and mallard duck, cormorants, grey heron, coot and little grebe.

There are high levels of diversity in terms of insect species and lower plant species in areas of both coniferous and deciduous woodland. Wild brown trout spawn in at least one of the burns flowing into Beeccraigs Loch and the pond at Balvormie attracts large numbers of amphibians and is a spawning ground for common frogs, toads and palmate newt as well as supporting a good range of dragonflies and damselflies.

A.5.7 Archaeology and Historical Features

There are no Scheduled Ancient Monuments within the Park. As part of the planning consent for a proposed new visitor centre in the Old Turnip Field adjacent to the north of Compartment 34, the area was investigated for archaeological remains in 2010. This revealed the presence of a significant prehistoric settlement in this location with remains of a timber circle, a ring ditch and a possible roundhouse. A small, deep ring ditch which may relate to a burial cairn which had subsequently been removed was also discovered. The findings were recorded and a report prepared by Headland Archaeology Ltd.

Cockleroy hill fort which lies on private farmland immediately to the north of Compartment 20 is a scheduled monument and popular local viewpoint. There is additional evidence for prehistoric occupation of the area around Kipps Farm adjacent to Compartment 19 in the form of records relating to the presence of funerary monuments. These include a feature identified as a Cromlech or the remains of a Druid's temple is shown on the 1st edition OS map (p13). Subsequent reporters

have suggested that this may represent the remains of a large glacial boulder which had shattered, there is a record of a cinerary urn having been found close to the site during the 19th century. Another report records the discovery of an urn to the north of Lochcote Reservoir.

Throughout the Country Park there are later historical features. These include the remains of the former Whitebaulks and Balvormie farms in the form of drystone dykes, ponds, avenues of old beech trees and the remains of buildings. Most of the former farmsteads were removed to create the car parks, play area at Balvormie, and the visitor centre and associated animal attraction at Whitebaulks. The ruined footings of Balvormie Cottage does still exist below the caravan site. There are also old quarry pits and caves at Hillhouse Compartment 35 and elsewhere in the forest Compartments 30, 14, 19 from which the limestone was burnt to create quicklime to fertilise the fields. The remains of limestone kilns are visible in Compartment 30. A large rectangular feature shown on the 1st edition OS map in Compartment 21 would appear to have been an artificial pond the boundaries of which can still roughly be identified on the ground but is now largely a valuable wetland area through which the canalised burn flows.

A.5.8 Management and Public Access to the Country Park

With over 400,000 visitors each year from West Lothian as well as much further afield, Beeccraigs Country Park is well used all year round. However, access to the Country Park is not ideal as there are four public roads crossing the Park, with the Linlithgow-Bathgate B road being the busiest (the other 3 are C roads). 5 car parks and an overflow area have been provided for the public. There are no public bus services serving or stopping near to the Park and all car parks can be filled to capacity at weekends and during the summer months, with cars parking on approach roads on particularly busy days.

The Country Park is well signed from the main approach roads with brown tourist signs. Recently, local directional signage off roadways to car parks and the different facilities was improved, assisting visitors in getting to their desired destination on this extensive site.

The narrow country roads are adequate for large timber lorries and low-loaders but not at times when the Park is busy with vehicles approaching or exiting the various car parks and the caravan and camping site. The forest is well served across most of its area by internal forest tracks which provide for management access and these are also well used by the public on foot, cycle or horse. Recently some of the access points have been widened to accommodate timber lorries and other large vehicles. A Timber Extraction route map is held in the Beeccraigs Reference File.

There are a number of non-vehicular access points around the boundary of the Park with the main one being from Linlithgow via a wide, surfaced, multi-user path running from Preston Road through Hillhouse Wood to the main body of the Country Park. Other rights of way cross the Park at various intervals but navigate across farmland upon exiting the Park, which can cause issues with dog walkers, cyclists and equestrian users. If opportunities arise for the wider green network to be enhanced these should be encouraged.

A.5.9 Public Access and Recreation

As well as a large number of pedestrian visitors, the Park also attracts many equestrian users, cyclists and those participating in other outdoor pursuits, including visitors staying longer term on the caravan and camping site. Most people who visit the Park make use of the extensive path network with a wide variety of path types available to suit all needs including approximately 7km of forest tracks, 6km of surfaced path and over 12km of un-surfaced path. The conditions of the paths vary significantly from excellent to very poor.

New mountain bike trails have recently opened and there are numerous other facilities provided within the forest environment as are shown on the copies of the Beeccraigs Country Park Maps (shown overleaf) which are available for the public to download from the website www.beeccraigs.com or as hardcopies from the Visitor Centre.

A.5.10 Ranger Service, Education and Community Involvement

The Ranger Service provides a wide range of educational activities to a variety of different groups and organisations, as well as the general public throughout the year. They use the Country Park to encourage people to discover and learn about a wide range of subjects including the different aspects of management within the Park, conservation, natural history, geography, geology and landscape, as well as to take part in projects, experience the outdoor environment through Forest Schools and volunteering with maintenance tasks. An annual programme of events also offers a wide range of opportunities to the public.

Groups of volunteers regularly carry out tasks within the Country Park. They may work directly with the Rangers or with other organisations such as the Lothian Conservation Volunteers, the Trust for Conservation Volunteers and New Caledonian Woodlands. Volunteering is open to everyone – all ages and abilities. There is a constituted and dedicated group of ‘Friends’ at Beeccraigs who support and get involved in the current and future planning for the Country Park. As representatives of those who use the Park, their input is valued in helping to decide where investment is required and to prioritise works.

Over the years, Countryside Section has participated regularly in work experience and employment /training schemes giving young people and those who have been out of work for some time the chance to gain experience in a wide variety of skills including Rangering, general maintenance, landscaping and forestry. A number of partnership organisations also use Beeccraigs Forest as a base for their own training courses and assessments in chainsaw operations, tree climbing and related tasks, with the site being used by over 100 trainees a year.

A.5.11 Neighbouring Land and Boundaries

Beeccraigs Country Park is surrounded by farmland that is owned by five different land owners. This surrounding land is primarily used for grazing (sheep and cattle) and for silage and crops. There is also an extensive area of young broadleaved woodland planted at to the south west of the Park.



Beebraigs Country Park

Car Park Opening Times

Summer
09:00 - 22:30
Winter
09:00 - dusk

Visitor Centre Opening Times

Summer
Monday - Thursday 09:00 - 17:00
Friday 09:00 - 16:30
Saturday & Sunday 09:00 - 17:00
Winter
Monday - Sunday 10:00 - 16:00

Scottish Outdoor Access Code: "You have the right to access providing you act responsibly"

At Beebraigs this means:

Be Aware - Be alert and respectful to other users. Keep your dog under control. Know who has right of way on which paths. The MTB Red Route is the only non-shared path in the Park, please use the alternative route provided.

Environment - Avoid causing damage to habitats by sticking to paths and tracks where possible. Avoid churning up wet and boggy ground by using alternative routes.

Wildlife - Take care not to disturb wildlife or damage vegetation. Keep your dog under control and don't let them chase/worry animals.

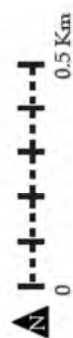
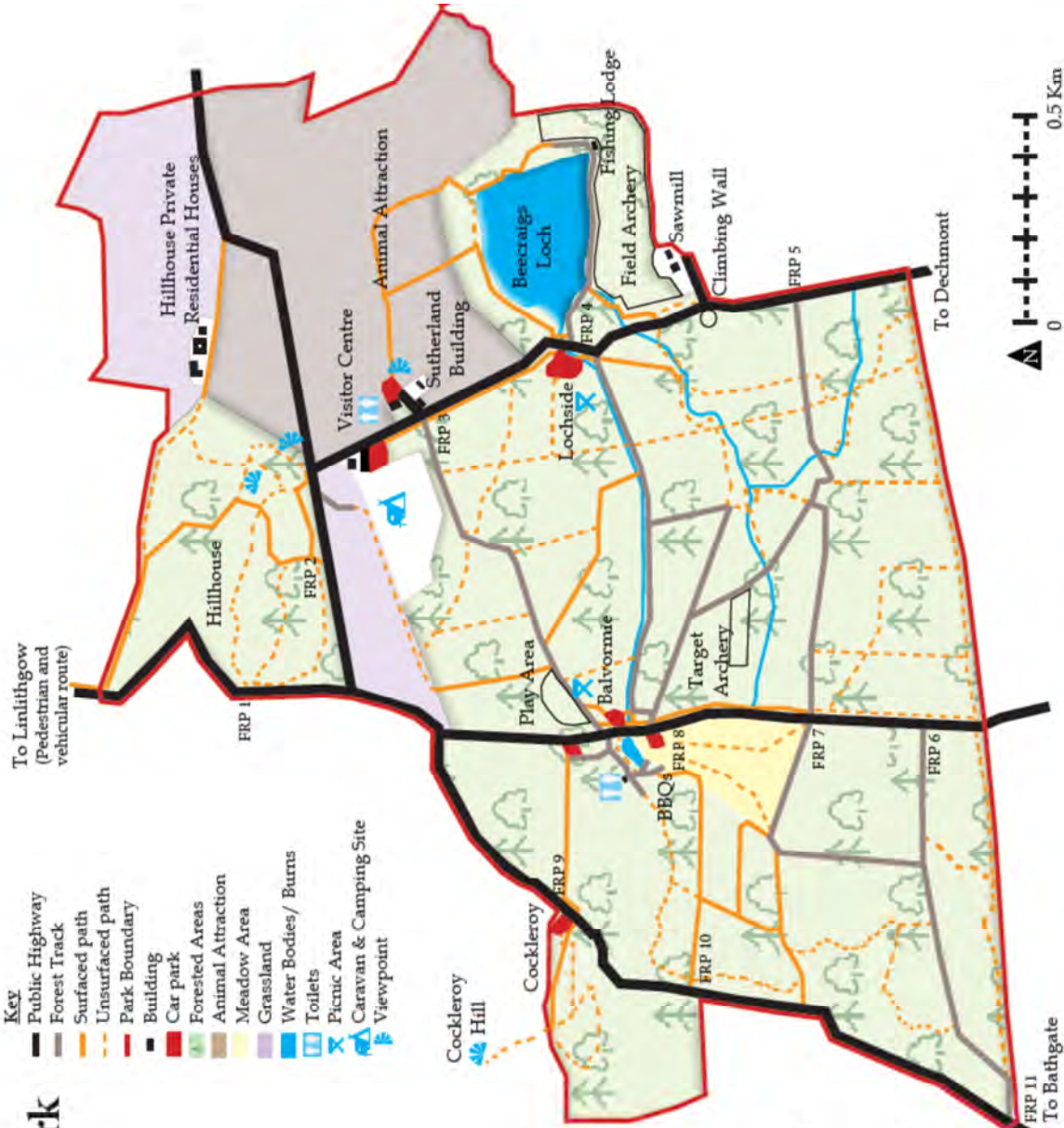
Farmland - Be aware when entering farmland (including the Animal Attraction). Don't allow dogs to approach, bark or chase livestock even through fences.

Animal Poo - Pick up after your dog no matter where it poops. You can put your bagged poo in any litter bin. Horse riders should kick dung off busy paths.

The Visitor Centre, Beebraigs Country Park, Nr. Linlithgow, EH49 6PL

01506 844516 mail@beebraigs.com www.beebraigs.com

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Mountain Bike Trails at Beebraigs Country Park

Key

- Green Route (Easy) 3.6km
- Blue Route (Moderate) 5.3km
- Red Route Loop 1 (Difficult) 3.6km
- Red Route Loop 2 (under construction)
- Black Route (Severe)
- Drop Zone
- Public Highway
- Multi-user Forest Track
- Multi-user Footpath
- Building
- Car Park

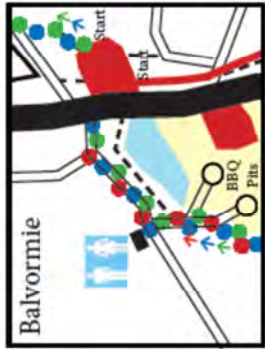
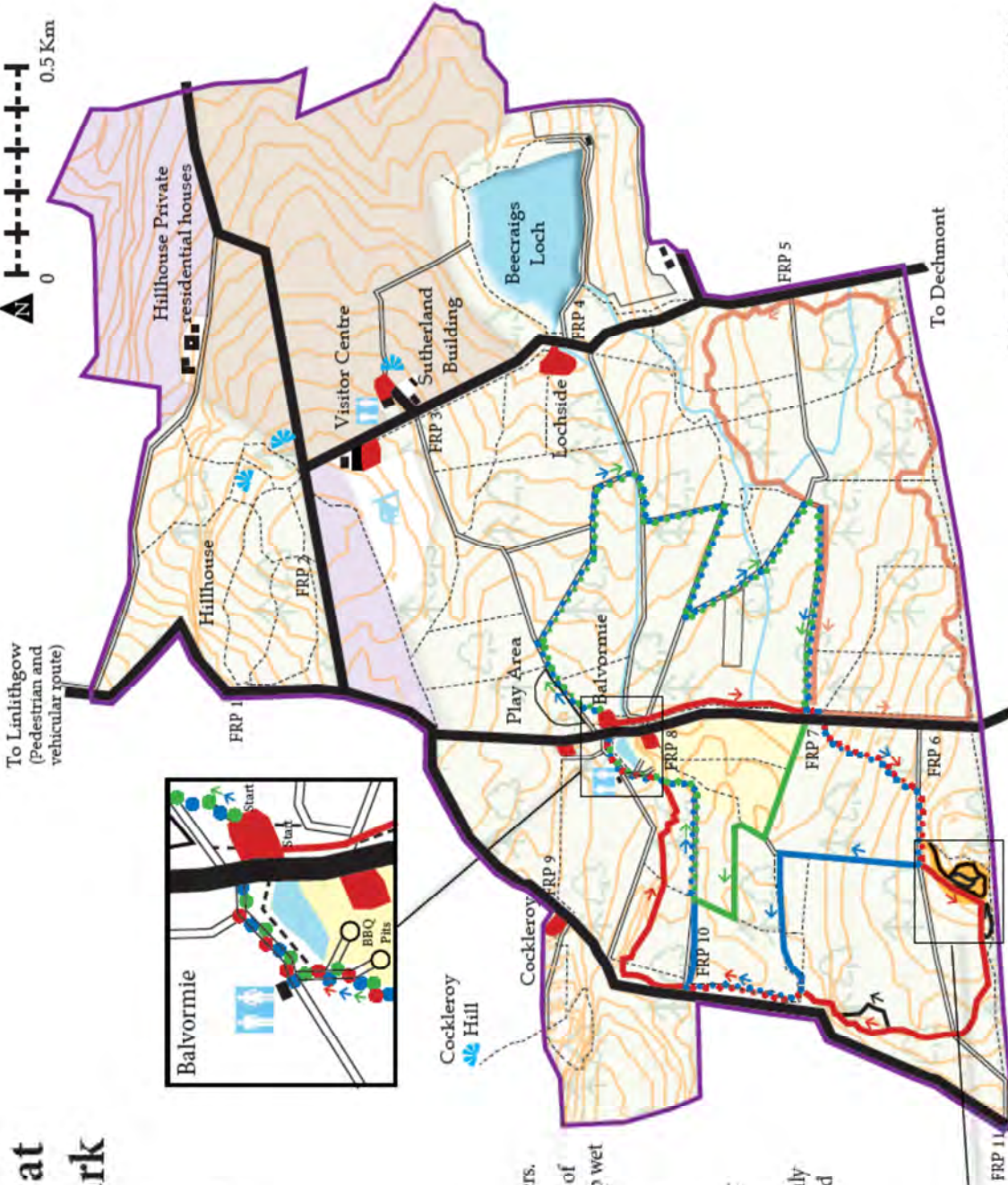
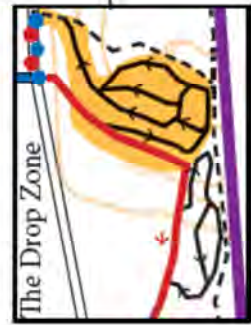
Be Aware - Be alert and respectful to other users.

Trail Erosion - Stay on the trail and be aware of the damage your riding has on it. Avoid churning up wet and boggy ground by using alternative trails.

Wildlife - Take care not to disturb wildlife or damage vegetation, stay on the trail.

Speed - Be in control. Do not alarm or endanger other users or their animals.

Give Way - Know who has right of way. The only trail mountain bikers have right of way on is the Red Route.



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This project was developed by West Lothian Council Countryside Section working in partnership with WLC Criminal Justice Team, CTC, Friends of Beebraigs and volunteers. It was partly funded by Scottish Government Payback Sports Facilities Fund.

A.5.12 Services and Wayleaves

There are numerous services running through the Country Park itself as well as some outside the Park's boundary, some of which are not shown on public utilities maps. All the known overhead and underground services together with other wayleaves for ethylene and gas pipelines have been mapped and can be found on Sanserver.

A.5.13 Forest Composition

Although not a very large forest area, due to its history, Beebraigs Forest is quite varied in species and age. The forest records were not accurate and up-to-date and so the entire forest was surveyed and the details of each sub compartment digitally mapped using Mapmaker and recorded on the Wood Plan database. The current species distribution across the forest can be seen on the Current Species Map and Age Distribution Map (see Appendix 2 and 3 respectively) and is summarised in the following tables.

Table 1 Current Species

Species	Abbreviation	Yield Class m ³ /ha/yr	Area (ha)	% cover
Scrub		N/A	1.77	0.7
Native mixed broadleaves	NMB	Estimated 4	11.68	4.9
Mixed broadleaves	MB	Estimated 6	13.87	5.8
Mixed broadleaves & conifers	MC/MB		7.48	3.1
Mixed conifers	MC	10-22 (av 16)	11.06	4.6
Scots pine	SP	6-12 (av 10)	50.25	21.1
Sitka spruce	SS	18-26 (av 22)	58.93	24.6
Sitka spruce / Scots pine	SS/SP		14.05	5.9
Norway spruce	NS	18-22 (av 20)	12.10	5.1
Japanese larch	JL	8-14 (av 10)	20.93	8.7
Open Ground	OG		37.17	15.5
			239.29	
Other Land e.g. Tracks, car parks, caravan park, wayleaves	OL		32.62	
Total Area Including Unplantable Land			271.91	

Table 2 Age Structure of the Forest

P year	-1850	1923-24	1931-41	1962-68	1970-81	1987-92	1995-2002	2005-10
Age	150+	90-95	73-83	46-52	33-44	22-27	12-19	<10
Area (ha)	7.60	17.72	17.00	12.80	56.88	48.31	33.14	6.51
%age	3.3	16.6	24.2	28.4	6.4	8.5	8.8	3.8

Other Land

Land designated as Other Land (OL) is that which cannot be planted (such as tracks, wayleaves, the reservoir, car parks and the hard surfaced or amenity landscaped parts of the caravan and camping

site) and will be excluded from the SRDP grant. Balvormie Meadow (6ha) in the middle of the forest has also been included as other land.

Open Ground

There are a number of areas of open ground (OG) including grass rides, grass picnic areas and grassland retained as important open ground habitat.

Windblown Areas

There are 9ha of windblown forest resulting from the 2012-14 gales and a further 17ha from earlier storms over the past 15 years where trees have blown. Most of these have been cleared but have not yet been replanted or naturally regenerated.

Broadleaved Woodland

Approximately 10% of the forest is broadleaved. This comprises small areas of mature trees planted as shelterbelts (see next paragraph). There are some larger areas which have regenerated naturally with birch and willow mainly on the western side of the forest extending to 14ha. The largest area of predominantly broadleaved woodland is Hillhouse Wood, planted 15-20 years ago. Here there are areas of mixed broadleaves including fruit trees which form an informal orchard and well used for educational activities by the Ranger Service. Some of the broadleaves were planted with a nurse crop of conifers a proportion of which were removed and sold on as Christmas trees as part of the Christmas activities. The remaining overgrown Christmas trees are in the process of being removed.

Old Shelterbelts, Woodland and Trees

The Roy maps of the site show no woodland across the site with the exception of scrub on the side of Cockleroy Hill including part of Compartment 19. The first edition OS map of 1855 (p 13) shows a mixed conifer and broadleaved woodland "Hay's Plantation" covering much of the far western side of the forest. This now comprises small areas of large Scots pine and beech which may originate from the original plantings with the majority of the area covered with younger Scots pine and spruce plantations and semi natural woodland. The site is shown on the Ancient Woodland Inventory as being Long Established Woodland of Plantation Origin (LEPO).¹

There is the bluebell carpeted, mature, broadleaved woodland, situated in Compartment 19 south of Cockleroy Hill, which may be a small remnant of Ancient woodland of semi-natural origin, too small to be recorded as such on the Ancient Woodland Inventory.

Conifer Plantations

P1923-24

These older parts of the forest are mainly Sitka spruce and Scots pine, planted in broad strips with small areas of Western hemlock and Silver fir. The stands have been progressively thinned and the spruce has developed into very large trees with deep crowns. They have been retained well beyond their normal commercial rotation length to provide majestic trees which are much appreciated by

¹ Maps filed in UKWAS file or can be viewed on SNH's website

the public. The Scots pine trees have grown slowly and are beginning to die back on the wetter areas. Beneath the more open pine and in gaps created by small patches of windblown trees, an under-storey of Sitka spruce, Western hemlock and broadleaves is emerging. This has been supplemented by planting of Norway spruce in places and is beginning to form quite a well-developed under-storey.

P1931-41

These slightly younger stands comprise mainly Scots pine with occasional strips of Sitka spruce, much of which have also been thinned in the past. Patches of mainly Sitka spruce and some naturally regenerated broadleaves are developing in the under-storey.

P1962-68

The central area of the Park was planted in the 1962-68 and is predominantly Sitka spruce with Norway spruce, Japanese larch and Scots pine. Thinning was carried out 20 years ago but since then has been delayed, leaving dense stands with little or no ground vegetation. Significant windblow has occurred to the south of Balvormie car park.

P1970-81

These comprise mainly Sitka spruce stands on the western side of the Country Park which were replanted in 1973 after suffering windblow in the "Great Gale" of 1968 and have been badly affected again by windblow in recent years.

P1987-92

These are mainly small replanted stands of Norway spruce and mixed conifers some of which have been first thinned.

Arboretum

A small area adjacent to the Lochside car park, within an area of larch, which has suffered from sporadic windblow, is in the process of being developed into a small arboretum, planted with a variety of conifer and broadleaved trees chosen for their seasonal colour.

A.5.14 Sawmill

The Country Park has a small sawmill producing mainly fencing material for use by the Council's Housing Department and in the Country Parks, as well as retailing to local contractors and the public. It uses approximately 800m³ sawlogs per annum.

Part B - Survey Data

Survey Information	Date	Data Location
JHI Soil map		Beebraigs reference file
Aerial photography	2012	WLC Sanserver
Badger setts & bat records	2013 updated annually	WLC Ranger Service, map on Sanserver
Compartment schedule	Sample plot data collected 2012 Mapping 2012-13	Sample plot data for volume estimation Forestry Officer's filing cabinet Sub-compartment details held on Wood Plan database with estimated felling volumes & work prescriptions. Downloaded onto excel spreadsheet kept with sub-compartment map layer on Sanserver
Access routes & furniture	2013	WLC Ranger Service & maps on Sanserver
Archaeology - Report by Headland Archaeology Ltd		Property Services
Historical Features		Map of drystone dykes Map of historical features Management Plan reference file
Public Consultation	2011	Meridio – Forestry - Beebraigs - Management Plan
Night survey of roe deer by SNH	2013	Meridio – Forestry Beebraigs - Management Plan

Part C- Analysis of Information and Concept Development

C.1 Analysis of Information

C.1.1 Site Impact

Factor	Opportunity	Constraint
Soils	Fertile soils of rooting depth up to 60cm in parts of the forest suitable for reasonably wide range of conifer and broadleaf species.	Heavy clay with impeded surface drainage in depressions and flatter areas.
Drainage	Open ditches can gradually become vegetated to become more naturalised watercourses enhancing the landscape and biodiversity.	Old clay pipe agricultural drainage system under the forest has been impeded by road construction, windblow or collapse.
Windthrow	Parts of the forest are relatively sheltered, have good rooting depth and are relatively windfirm - Windthrow Hazard Class (WHC) 2-3. Even on areas of WHC 4 trees have grown beyond their terminal heights i.e. the height at which they are predicted to blow down. (Terminal heights for stands systematically thinned Sitka spruce are 28m for WHC 2 and 23.5m for WHC 3. However, many of the 1920s SS have reached top heights of 35-40m)	Other areas, to the west of the property, are more exposed and have wetter more poorly drained soils with WHC 4-5. Significant windthrow has taken place in the past. (Terminal height for WHC 4 is 18.5m and 15.5m for WHC 5) Tree safety in a well-used Country Park especially close to caravan & camping site, car parks, play area, public roads and main paths. Need to rapidly remove windblown trees affecting main paths and other facilities on a regular basis causes major disruption to the planned work programme.
Public Roads	Roads Department have agreed for the Countryside Section to create small passing places of well compacted crushed stone along the Balvormie Road.	Public roads through the Country Park are narrow and there are often traffic blockages particularly on the Whitebaulks Road in the centre of the Park. Access for timber lorries needs to avoid times when the Park is busy.
Existing Internal Tracks	Good network of internal forest tracks makes regular access to stands for thinning operations possible.	Some of the tracks are not configured for timber lorries. Access points onto the narrow public highways require larger bell-mouths.
High Pressure Gas & Ethylene Pipelines		No forest / other operations with heavy machinery are to be carried out which would damage these pipelines. INEOS is to be notified of any work to be carried out within 50m of them.
Services	Felling and thinning will allow for trees planted too close to 2 overhead electricity lines to be cleared.	Numerous underground services including sewerage, water and electricity run through the forest, which are susceptible to damage by windthrown trees or forestry machinery.
Archaeological Remains	Opportunity to interpret the prehistoric archaeological features in the context of the wider Bathgate Hills as part of Ranger led walks and educational visits, leaflets and other means. If and when staff time permits a bid for funding from the Heritage Lottery Fund for a Bathgate Hills Landscape Partnership Scheme could be pursued. This would enable further	Notable prehistoric remains were discovered in the Old Turnip Field within the Country Park. These were out with the forest but remains are likely to be present under the forested areas although may have been damaged by previous afforestation. As with normal restocking practice the stumps will not be removed and in the area adjacent to the previously identified

	archaeological survey, recording and interpretation to be carried.	below ground features mounding will not be carried out prior to planting.
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C.1.2 Landscape

Factor	Opportunity	Constraint
External Landscape	Most of the forest nestles into the undulating topography of the Bathgate Hills. Opportunity to re-design roadside edges as part of replanting.	Visible from surrounding roads and countryside in particular the Linlithgow to Bathgate Road. Some of the existing feature trees and overgrown hedges along roadsides, especially of beech, are in decline.
Internal Landscape	Most visitors enjoy the forest the way it is, particularly the large trees. There is opportunity to manage the more sheltered parts of the forest under Continuous Cover which allows more gradual change. Mixed species and mixed structure is beginning to develop within the 1920-50s plantations. See Concept development C.2 Some of the public have expressed a preference for more broadleaves and variety. Restructuring some areas will make this possible. New avenues can be planted adjacent to internal tracks.	On the western side of the Park fairly large areas have already blown down. These windblown and clearfelled areas, with brash, appear unsightly to visitors who have become accustomed to a tidy Park. Larch has been particularly prone to windblow reducing the percentage of this species which enhances the forest with its seasonal colour. Many of the 1960-70s plantations are under thinned and dark. Many of the beech avenue trees and other mature broadleaves around the Park are in decline and will require to be removed as they become unsafe.
Historical Features	Old agricultural features in the form of tumbled walls and old tree avenues on earth or part drystone wall dykes, remains of farm buildings, tracks, ponds, limestone quarries and kilns are of interest to the public with opportunity for interpretation. Opportunity to run drystone dyking training courses to rebuild some of the most prominent walls either to full or partial height or small stretches to make features at path entrances. Opportunity to reinstate earth banks damaged by windblown rootplates and replant with individual broadleaves to retain these characteristic features of the Park.	Potential for timber harvesting and access improvement work damaging these features. Some of the drystone dykes have been damaged by windblown trees. Some mountain bikers have been removing stone from old walls to create their own informal routes.
Open Ground – within the forest	There are two important areas of open ground within the forest. Balvormie Meadow allows open views across the western part of the forest and a wide vista from the Forth Estuary to the mountains beyond Stirling can be enjoyed from the elevated open area in Hillhouse. Restructuring the forest will allow for the creation of additional open space allowing more sunlight especially around recreational facilities.	Increase in annual maintenance of increased grassland.
Adjacent Farmland	The Council also owns open farmed land used as an Animal Attraction, with red deer and native Scottish breeds of cattle. In places the fields are exposed and would benefit from the planting of well landscaped small woods and individual trees.	Staff and other resources require to be prioritised and new planting will not be considered until such time as the restocking of recently felled or windblown woods at Beecraigs and other WLC Countryside sites have been established.

C.1.3 Water Quality

Factor	Opportunity	Constraint
Dense Conifers Shading Watercourses and Reservoir Margin	Restructuring adjacent to watercourses will allow more openspace with groups of native broadleaves to be planted in riparian zones.	Desire to retain large conifers where they create cathedral like stands e.g. on the south side of Beeccraigs Loch and up the burnside along the waymarked Red route.
Soil Erosion	Restructuring of riparian zones.	Soil erosion exacerbated by incidences of windblow which uproots the trees creating significant ground disturbance. Lack of brash to protect soil when thinning.
Forest Tracks and Paths	Opportunity to add silt traps or re-shape existing forest tracks running adjacent to watercourses to avoid silt and other contamination. Forest tracks and paths adjacent to burns and reservoirs allow these water features to enhance the visitor experience.	
Drainage	Felling allows access to reinstate surface water drainage system.	Clay soils which impede water percolation. In order to open up the former agricultural drainage system it has been and will be necessary to excavate much deeper ditches than would normally be required to capture surface water.
Private Water Supplies		Spring / underground rock fissures near caravan site connected to resident's private water supply at Hillhouse requires to be protected during forest operations.

C.1.4 Ecology

Factor	Opportunity	Constraint
Dense Sitka Spruce (SS) Plantations	Felling will allow restructuring to a greater variety of tree species and well located open ground, creating a greater variety of habitats. Retention of some dense areas of conifer forest will retain habitats for shade loving species such as forest fungi.	
More "Natural" Scots Pine Areas	Areas of mature Scots pine, although not native to the area nor particularly well suited to the soil types, has produced a more natural structure of forest with a good ground flora and some regeneration of SS and native broadleaves beneath the light canopy.	Some of the stands of Scots pine on wetter areas are in decline with very small crowns and dieback.
Woodland sites of Long Established Plantation Origin (LEPO)	Within the LEPO areas to the west of the forest there is the opportunity to maintain woodland conditions for as long as possible by including the more wind stable Scots pine areas as long term retention, thereby helping to maintain woodland ground flora and fauna. Within the LEPO area the small area of mature broadleaves 20f includes a west facing bank	The planted with spruce have already been severely wind damaged in the 2012 gales.

	carpeted with Wild Hyacinth (Bluebells) and has other ancient woodland indicator species. The adjacent conifer woodland has begun to windblow on this wet site and the planned felling gives the opportunity to convert this area to native woodland to buffer and extend the small possible Ancient Semi Natural Woodland area.	
Riparian Zones	Restructuring will allow for the creation of riparian zones of open ground and native shrubs and broadleaves. See C.2.7	Existing large mature conifers are important landscape features e.g. south side of Loch.
Open Ground	Restructuring will allow for an increase in well located open ground habitats. Opportunity to improve Balvormie Meadow, to prevent rank vegetation and scrub impacting on the locally rare neutral grassland, through seasonal cattle grazing. See C.2.8 Meadow management, particularly the butterfly orchid area, may be a popular project for volunteer engagement.	Replanting cleared forest areas will reduce the habitat for some species such as buzzards feeding on voles in the grassed over windblown areas. Public would require to be encouraged to use external paths during autumn grazing period.
Water Features	Balvormie pond is well used by the Ranger Service for pond dipping activities with schools and other groups. Small ponds may be developed in association with drainage improvement works.	
European Protected Species - Badgers	One large sett in a secure fenced area adjacent to the Loch is used for Ranger led badger watches. A hide was constructed in this area.	Numerous badger setts across the site. Forestry operations, particularly with large machines, can damage badger setts. Rabbit / deer net fences can obstruct the passage of badgers from their setts to foraging areas.
European Protected Species - Bats	The Ranger Service has installed bat boxes and conduct evening bat walks using bat detectors.	Many of the old bat boxes are in a poor condition and those unoccupied are being removed. Bats are protected and their roosts must not be disturbed by tree operations.
Birds	A wide variety of bird species are present within the forest, farmland and reservoir which are of value in themselves and also enhance the enjoyment of visitors to the Park, especially keen ornithologists. Opportunity to educate the public regarding control of dogs and breeding birds and other wildlife.	Disturbance of breeding birds by forest and other operations is to be avoided. Disturbance to birds and other wildlife by the public and their dogs.
Veteran Trees	Maintain old mature broadleaves, which have veteran characteristics and provide an important habitat for bats, birds, invertebrates and fungi. The size and knarled appearance of these old trees is appreciated by visitors.	Increased risk to public safety where these trees are heavily infected with decay, fungi or structural weaknesses are close to public roads, car parks and main paths. In places the dense conifers are overshadowing and hastening their demise.
Deadwood	In areas of mature forest there is a good range of both standing and fallen deadwood which provides a good habitat for invertebrates, birds, fungi, etc.	Close to main paths piles of brash may appear unsightly and can increase the fire risk.

	When felling and thinning, a proportion of standing dead trees can be left and some large logs left as lying deadwood in addition to heaps of brash.	
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C.1.5 Herbivore

Factor	Opportunity	Constraint
Roe Deer	The opening up of the dense plantations with little ground vegetation will improve the habitat for Roe deer, a keystone woodland species. Sightings of wild Roe deer in addition to the Red deer raised in the Animal Attraction are enjoyed by the public. Population currently low enough to allow regeneration of Sitka spruce and Birch.	Roe deer in high numbers can cause unacceptable levels of damage to young trees. The high cost of protecting trees with individual guards, often results in poorly formed trees. The cost of fencing is also high and obstructs public access. If the population increases to a level which prevents natural regeneration or if road collisions become a problem it will have to be reduced. Shooting within the Country Park can only be carried out at dawn and with the highest regard to public safety and sensitivities.
Rabbits		Rabbits are present in parts of the Park and can cause major damage to young trees. The fox population appears to be quite low and so there is little natural control other than birds of prey.
Grey Squirrels	Grey squirrels, originally from America, are present around the Country Park and sightings of them are enjoyed by the visitors. Rare sightings of the red squirrel are valued by visitors.	The current size of population of the native Red squirrels, translocated to the Country Park about 20 years ago, is currently unknown but expected to be low. Grey squirrel population in the Park is sufficiently high to have damaged semi-mature broadleaved trees and is likely to have an impact on the proposed increased broadleaves on the site.

C.1.6 Climate Change and Disease

Factor	Opportunity	Constraint
Climate Change	It is predicted that the climate will become warmer and drier in this part of Scotland. This will allow more tender species to grow. The estimated rate of change is such that would allow at least one more rotation of Sitka spruce the most easily grown and well used timber species.	
Increase in Storm Events	A forest with more diverse structure is likely to be more storm resistant in future.	It is predicted that the weather will become stormier.
Increase in Tree Diseases	Requirement to diversify the species composition of the forest to make it more resilient to the effects of climate change will also lead to a more diverse landscape.	Species available to plant is reduced. In particular much of the site would be suitable for Ash planting, which is not being recommended until Chalara resistant strains are available. <i>Phytophthora ramorum</i> and Red band needle

		blight is affecting larch and pine respectively elsewhere in the UK and is likely to reach this site in the future.
Existing Disease		<i>Heterobasidion annosum</i> is affecting some of the spruce in particular Norway spruce.

C.1.7 Public Access and Enjoyment (See also Concept Development C.2.6, C.2.11 & C.2.12)

Factor	Opportunity	Constraint
400k Visitors /Annum	A large number of people enjoy the Country Park’s facilities. Many of them also enjoy seeing forestry operations and there is the opportunity to interpret these.	Public access requires to be prevented close to tree felling & extraction and maintenance work with machinery. Main forest tracks are well used by the public. In order to maintain public safety, diversions required to be created or a banksman present. Increased requirement for tree safety surveys and remedial work.
Volunteering	Increased variety of tasks including tree planting, small tree thinning, tree shelter maintenance available on the site.	

C.1.8 Education

Factor	Opportunity	Constraint
Pro-active Forest Management	Easy to access site for demonstration of forestry activities to school children and students on courses e.g. those on Countryside Management courses at SRUC Oatridge.	
Restructuring	There is the opportunity to engage volunteers / students in the monitoring of the change in species, such as butterflies and moths, in areas restructured from dense conifer to open grassland / broadleaved woodland.	

C.1.9 Timber & Forest Products

Factor	Opportunity	Constraint
Timber Production	Income from timber production contributes to maintaining the Country Parks and other sites.	Harvesting operations in a very busy Country Park.
Delayed Thinning & Felling	The lack of felling and restructuring felling over the past 20 years means that a large quantity of timber requires to be felled within the next 5 years.	The income from timber will peak over the first 5 years of the Plan and then reduce in the longer term. To be cost effective, most of the larger areas will require felling and extraction using harvesters and forwarders. These and the lorries used to uplift the timber will cause damage to the paths and tracks. These tracks are also well used to the public, who are unused to them being muddy. The nature of the soils and the lack of brash as above make any timber work difficult and the increased scale of operations will result in more

		muddy conditions.
Restructuring	The development of the woodfuel market can provide a future use for thinnings from broadleaved areas, for which there used to be a limited market.	The percentage of highly productive Sitka spruce will be reduced in the restructured forest resulting in lower future timber yields and income.

C.1.10 Social

Factor	Opportunity	Constraint
Employment	Many of the staff employed on the site are local as are some of the contractors.	Some staff and contractors from outwith the area.
Training	When there are suitable areas available the forest has been used for chainsaw training courses.	
Work Experience	WLC participates in employment schemes for long-term unemployed (usually 6 month contracts of work experience and training). School pupils regularly join the Ranger Service for short work placements.	
Volunteering	Numerous volunteer groups and individuals use the site either for activities led by the Rangers or self-led.	

C.2 Concept Development

C.2.1 Age Structure of the Forest and Sustainable Woodland Management

The forest comprises mainly of mature conifer plantations with many of the stands now well past the age at which they would be felled if this was being managed as a purely commercial forest. In order to maintain woodland cover for the future, the forest now requires to be regenerated with the older trees being felled to allow young ones to grow up.

As the trees grow taller they become more susceptible to being blown over and over recent years the forest has suffered from significant windthrow, particularly on its exposed western side. Approximately 11% of forest cover has blown down over the past 10-15 years with little replanting done leaving large open areas, except in Compartment 17 where naturally regenerated birch and willow with Sitka spruce has become well established. In order to manage the forest in a sustainable manner there is a requirement to ensure that these windblown areas are regenerated or replanted.

C.2.2 Landscape and Use as a Country Park

The main objective for the management of the forest is as a Country Park, providing a very well used recreational resource for the residents of West Lothian and visitors to the area. The mature woodland environment, in particular the very large trees, is appreciated by the public and creates a screen between the many tracks, paths and facilities around the forest, thereby accommodating many people without feeling crowded.

Most of the public have intimated that they “like the forest the way it is” and by inference they would prefer that there are no dramatic changes to its landscape and a gradual approach to renewing the forest should be adopted, wherever possible. This gradual change can be achieved through adopting a Continuous Cover Forestry regime which involves gradual thinning of or creating space gaps within the over-storey of the woodland to allow sufficient light for young trees to regenerate naturally or be planted and grow up beneath. This is already occurring within the areas planted in the 1920s around Beeccraigs Loch and in some of the older Scots pine areas.

As well as maintaining the wooded landscape, Continuous Cover Forestry also maintains shelter and habitat for wildlife and can help protect forest soils from erosion and, wherever site conditions allow, will be used in preference to the more drastic clearfell and replanting regime.

C.2.3 Timber Production

Timber from the forest contributes to the management of the forest and other Country Park facilities and a balance between this requirement and the main use of the Park for recreation and enjoyment needs to be achieved.

The small Council sawmill at the Country Park uses approximately 800m³ sawlogs per annum. The operations now required to maintain and renew the forest will, for a period of years, produce more sawlogs than are required by the sawmill and these and the small roundwood (used for pulp, chipboard, fencing and biomass) will be sold. The latter may include to suppliers of the Energy Supply Company (ESCo) appointed to install and run the woodfuel boilers currently being considered for a number of Council buildings in West Lothian.

The intention is to have the forest covered by Forestry Stewardship Council (FSC) certification, under the UK Woodland Assurance Scheme (UKWAS), and likewise FSC Chain of Custody for the timber processed through the sawmill. It is a Scottish Government requirement that timber and wood products purchased or used by public authorities is from sustainably managed sources, usually verified by FSC certification.

In high use areas, harvesting work using big machines, which can be viewed from a distance, or horse logging, where visitors can interact with the operative and horse, provide additional interest in the Park. It also provides the opportunity to explain to the public the value of timber and wood products as a sustainable resource.

C.2.4 Risk of Future Windthrow

A constraint to retaining mature trees and adopting the continuous cover approach is the risk of windthrow. The likelihood of trees being blown over is determined by a number of factors including location in the country, elevation, exposure and soil type. These can be used to determine the Windthrow Hazard Class (WHC) which gives a broad-brush indication of the vulnerability to windthrow. This varies from WHC 5 in the west to WHC 2 in more sheltered eastern areas.

From experience elsewhere Continuous Cover Forest management is only likely to be successful in areas of WHC up to 3 and lower part of 4². This largely correlates with the incidence of windthrow across the site to date, with the exception of severe tornado-like storms such as that of January 2014 which punched gaps in the forest canopy even in the more sheltered parts of the Park.

The Windthrow Hazard classification (WHC), together with knowledge of the site, including localised drainage and the structure of the individual stands (species planted and type of thinning undertaken), has been used to establish those areas which are deemed to be suitable for management under Continuous Cover Forestry as shown in Appendix 4 Continuous Cover Forestry Map.

C.2.5 Silvicultural Regimes

C.2.5.1 Continuous Cover Forestry

The area identified as suitable for management under Continuous Cover Forestry (CCF) can be divided into four zones as follows,

- 1) Mature woodland of >80 year old Sitka spruce and Scots pine with an under-storey which has become fairly well developed through a combination of natural regeneration of mainly Sitka spruce and Western hemlock with birch and sycamore and under-planting of Norway spruce. WHC 2-3 areas.
- 2) Mature Scots pine woodland >70years with patches of naturally regenerated mainly Sitka spruce and Birch. WHC 4 area but the Scots pine with their smaller crowns and deeper rooting tend to be more windfirm than the spruces. Patches of mainly Sitka spruce and birch have begun to develop in the under-storey.
- 3) Mature woodland of >40 year old Sitka spruce, Norway spruce and Japanese larch which has had at least one thinning with only occasional patches of regeneration in small windblown gaps. WHC 2-3.
- 4) Young pole stage mixed conifers and broadleaves <20 years old. WHC 2-3.

Zones 1) and 2) are already developing into Continuous Cover Forestry and the over-storey requires to be gradually removed through selective thinning and the stocking level of the under-storey increased. In zone 3) the stands are to go through a phase of transformation from an even-aged plantation to one of mixed size structure through progressive selective thinning. Zone 4) requires to be thinned early, favouring the broadleaves, to allow well crowned trees to develop which may be transformed from an even aged plantation to a more diverse structure in future.

² FIN Transforming Even-aged Conifer Stands to Continuous Cover Management Bill Mason and Gary Kerr Forest Research June 2001

C.2.5.2 Clearfelling and Replanting

Out with the areas suitable for Continuous Cover Forestry most of the stands will be felled and replanted, prior to them blowing down. Many of the spruce stands on the western side of the Park have already suffered from windthrow and will need to be felled within the first 5 year period.

Within the Continuous Cover Forestry zones there are small areas where the species are unsuitable and/or drainage is poor which will also be clearfelled and replanted or regenerated. See Appendix 5 Clearfelling Map.

C.2.5.3 Longterm Retention

West Lothian's Local Biodiversity Action Plan found that 14% of the Council area is woodland and of this 60% of this is coniferous with only 5% Ancient Semi-Natural Woodland (ASNW). With this in mind it is of particular importance that areas of broadleaves, especially the old tree avenues and shelterbelts are retained as long as it is safe to do so. The area of mature native broadleaved and sycamore woodland with bluebell ground flora, adjacent to Kipps Farm is also to be retained.

The Scots pine areas on the exposed far western side of the Park, out with the area deemed suitable for Continuous Cover Forestry, have remained windfirm despite the recent severe gales except for a few pockets of windthrow. The stands in these exposed locations will not be thinned but, being a much valued feature of this part of the Park, will be retained as long as possible. As gaps are formed through windblow they will be regenerated either naturally or through planting. See Appendix 6 Longterm Retention Map.

C.2.5.4 Recreation Zones and Roadsides

The longterm aim is to reduce tree safety issues across the Park while maintaining the attractive woodland environment and shelter provided by tree cover. Wherever possible, potentially hazardous trees will be dealt as part of silvicultural operations making this more cost effective.

Particular care requires to be taken with regards to tree safety adjacent to the most highly used areas including the caravan and camping site, car parks, play area, fishing lodge, archery range, public toilets, adjacent to the most well used paths and along the public roads. In these zones even one or two windblown trees can cause significant damage, disruption and potential harm to Country Park users.

It is proposed that stands of trees adjacent to high use areas, already significantly affected by windthrow, will be clear-felled within the first year of the plan. The clear-felled areas in the recreational zones or alongside roads are to be replanted with graded edges, with open space, then smaller trees in front of the taller forest trees. The existing avenues of open grown, more windfirm broadleaved trees are to be retained to help act as a windbreak and new avenues are to be planted both as a landscape feature and a windbreak.

In the areas to be managed under Continuous Cover Forestry the sudden removal of large, more windfirm edge trees would result in windblow and so here the stands are to be gradually thinned out. As more light allows the under-storey to develop this is to be progressively thinned to ensure that well rooted, deep crowned trees and hence more windfirm trees grow up in the under-storey.

The area around the caravan and camping site would have been considered suitable for conversion to Continuous Cover Forestry. However, due to its 24 hour use, the exposed location at the top of the hill and the damage which would be caused by even a single tree falling on a tent or caravan, it is proposed that this area is clearfelled and re-landscaped with mixed woodland and more open space. In the short term this will mean that the site will be more exposed to wind and more visible but, in the longer term, will provide a more windfirm woodland environment and also allow more sunlight in to the bays. See Appendix 7 Recreation Zones Map.

C.2.5.5 Riparian Zones

When the forest was originally planted the current design standards to safeguard water quality and biodiversity were not in place and many of the conifer stands have been planted right up to watercourses. It is proposed that in the clearfell areas, trees will be felled back from watercourses and as part of the replanting will be left as open ground with groups of shrubs and trees. In the Continuous Cover Forestry zones the trees are to be gradually thinned to allow more light to reach the forest floor to allow the development of ground vegetation.

Some of the small burns were historically piped as part of field drainage systems put in when the land was farmed. Where clear-felling or thinning allows access, these main drainage pipes are to be removed and the open burns re-established within a riparian zone, as above.

A small new off-burn pond has been created in Compartment 33 and the reinstatement of an historic pond will be investigated once the windblow in Compartment 21 is cleared. See Appendix 8 Riparian Zones Map.

C.2.6 Open Ground Habitats

The main area of open ground within the forest is the neutral grassland of Balvormie Meadow (with a population of Greater butterfly orchids) and this is to be maintained. This grassland has become less diverse, with more rank species coming through in recent years, as well as scattered Hawthorn, resulting from lack of management. The meadow is to be surveyed in June 2014 to determine the most appropriate, longterm management proposals for the site.

C.2.7 Future Species

Currently the forest is mainly coniferous, although it is diverse in species and age structure. The responses to the various consultations showed that there was a desire for more broadleaved woodland and greater variety of woodland on the site but not to the exclusion of conifers. The intention is to re-structure the forest to include a higher proportion of broadleaved trees and more designed open ground.

C.2.7.1 Choice of Species for Replanting Clearfelled and Windblown Areas

The area adjacent to the mature broadleaved woodland near Kipps Farm is to be replanted with native broadleaves to help buffer one of the most natural woodland areas in the Park.

The biodiversity of the riparian areas is to be improved through leaving open ground with increased ground vegetation, to help filter sediment, and planted groups of native shrubs and trees.

The central area of the Park, most frequented by the public, will be replanted with mixed broadleaves and conifers to provide for year round interest.

The far western parts of Park and in more inaccessible areas along the southern boundary, the replanting will be of mainly native broadleaved species suited to the site conditions.

Timber from the forest contributes to the management of the forest and other Country Park facilities and a balance between this requirement and the main use of the Park for recreation and enjoyment needs to be achieved. The most productive areas of the forest are those where pure stands of the fast growing Sitka spruce can be clearfelled. It is intended that two of the larger areas of cleared windblow on the western side of the Park, away from the “honeypot” areas and where the Continuous Cover Forestry regime is unlikely to be successful, will be replanted with Sitka spruce to be felled prior to the onset of windthrow in about 35-40 years.

A small area (1.75ha in Compartment 25) is to be planted with Norway spruce and firs to provide a few hundred Christmas trees a year to complement the annual Christmas tree sales in the Country Park. This will be managed in a less intensive manner than more commercial Christmas trees plantations in line with UKWAS requirements. A selection of coloured willows will also be planted in this area, the wands from which can be used for basket making/willow sculpture making activities by the Ranger Service.

See Appendix 9 Restocking Concept Map and Appendix 10 Replanting or Natural Regeneration of Felled and Windblown Areas.

C.2.7.2 Regeneration of Continuous Cover Forestry Areas

An advantage of Continuous Cover Forestry is that some or all of the next generation of woodland can be achieved through natural regeneration rather than planting, provided this is of the desired species and stocking density.

The timber quality of the Sitka spruce on the site is good for Central Scotland and according to ESC predictions will continue to be suited to the site for another rotation. If grown in a variety of size classes and with other species, Sitka spruce can be an attractive part of the mixed woodland and so its natural regeneration will be encouraged. Natural regeneration of broadleaves on the site is generally restricted to Birch, Willow, Sycamore, Ash and some Beech. This will be supplemented by planting of Oak and Silver birch on drier areas with Downy birch and Alder in riparian zones and wetter depressions.

Scots pine is not very well suited to the heavy soils and Larch has tended to be affected by the wind in its early stages resulting in “swept” boles. They may in future be affected by diseases currently spreading within the UK. However, these are both attractive conifer species much appreciated by the public and will be planted in small quantities along with small areas other conifer and broadleaved species to add seasonal colour to the woods.

The aim is to create a fairly open structured forest but with some areas of more closely grown trees to produce straight stems of reasonable timber quality. The percentage of Sitka spruce should not

be allowed to exceed 70% of each compartment. The groups of introduced broadleaves and conifers are to be of a reasonable size (0.2ha) and not too diverse within each area of the forest, to avoid over-complicating future timber harvesting.

C.2.7.3 Future Species Distribution

The distribution of future species shown in the table below is that of the over-storey after 20 years. A greater percentage of broadleaved species will also be developing in the under-storey of those areas being thinned under the Continuous Cover Forestry regime. See Appendix 11 Future Species Map.

Species	Abbreviation	Current		Future - 2034	
		Area (ha)	%	Area (ha)	%
Sitka spruce	SS	58.93	24.6	36.61	15.4
Scots pine	SP	50.25	21.1	49.80	21.0
Sitka spruce / Scots pine	SS/SP	14.05	5.9	13.73	5.8
Japanese larch	JL	20.93	8.7	14.42	6.1
Norway spruce	NS	12.10	5.1	4.30	1.8
Mixed conifers	MC	11.06	4.6	9.29	3.9
Total conifers		167.32	70%	128.25	54%
Mixed broadleaves & conifers	MB/MC	7.48	3.1	23.90	10.1
Natural regeneration	NR			1.41	0.6
Natural regeneration & native mixed broadleaves	NR/NMB			21.60	9.1
Total mixed broadleaves & conifers		7.48	3.1%	46.91	19.8%
Mixed broadleaves	MB	13.87	5.8	14.60	6.2
Native mixed broadleaves	NMB	11.68	4.9	24.10	10.2
Total broadleaves		25.55	10.7%	38.70	16.4%
Scrub		1.77	0.7	1.77	0.7
Open ground (including cleared windblow)	OG	37.17	15.5	21.65	9.1
Other land	OL	32.62		34.73	

C.2.8 Public Access and Recreation

The concept is that the forest will continue to be used for a wide variety of informal outdoor recreation such as walking, running, cycling, mountain biking, horse riding and orienteering along a mixture of surfaced and unsurfaced tracks and paths through the woods. The path routes have been assessed by the Ranger Service and prioritised for upgrading and new route creation. As and when routes are upgraded, where possible steps and other obstructions will be removed and

routes re-aligned to make the main routes more accessible. A new surfaced path has been created through Hillhouse Wood to provide a key, all year round link to Linlithgow. The signage and waymarking of routes had become dilapidated over the years and is currently being upgraded.

In response to demand and to help ensure the safety of other Park users, a dedicated route for mountain bikers was constructed mainly in the less frequented parts of the Park. There has also been demand for a cycle skills loop and proposals for developing this and a small picnic area in Compartment 5 are being consulted on.

A small area for informal picnicking was created in the windblown area to the south of Balvormie car park. In addition, once the area to the south west of the Lochside car park (Compartment 32) is felled, consideration will be given to providing a small picnic area in the proposed designed open ground next to the burn.

A new timber stacking area has been created adjacent to the bus car park at Balvormie which will then be relandscaped as an extension to the car park.

Harvesting methods need to be tailored where possible to the particular parts of the Country Park. The planned tree felling will have an effect on some of the facilities currently available within the Park and, as the structure of the forest changes, it may be advisable to relocate some of the outdoor activities.

C.2.9 Interpretation

There is the opportunity to interpret the site in a number of different ways from interpretation panels along the trails to events and guided walks. During major forest operations the intention is that the Ranger Service will put up temporary information and interpretation on site. They will also advise members of the public on their patrols and may use forestry activities as a feature on educational visits.

Part D – Management Proposals

D.1 Silvicultural Policy

As described in the Concept Development, wherever site and plantation conditions allow the forest is to be managed under a Continuous Cover Forestry regime. In the more exposed areas the remaining existing conifer plantations will be clearfelled and replanted. The more windfirm, Scots pine on the western side of the site along with the old shelterbelts will be retained as long as possible, with any windblown gaps being regenerated or replanted. Except in the most exposed areas, the younger plantations are to be thinned.

D.2 Prescriptions

A detailed schedule of operations is given together with volume estimates, in the sub compartment data base held within Woodplan and for the first 10 years is given on the Forestry Commission Scotland production forecast template. The allowable tolerances are given in Appendix 14.

D.2.1 Management of Longterm Retention Areas

A total of 17ha of old avenues, shelterbelts and woodland areas are to be retained except for tree or branch removal for safety reasons. The mature Sitka spruce stands along the southern shore of Beeccraigs Loch and adjacent to the track at Compartment 12 are to be lightly thinned and retained as long as possible.

Those trees within falling distance of public roads, well used internal paths and other popular public areas will be monitored and made safe in accordance with the West Lothian Council Countryside Section Tree Safety Policy. This includes that, where appropriate, rather than felling hazardous trees, individual branches will be pruned or their crowns will be removed to create monoliths. These can then continue to provide a habitat for saproxylic invertebrates, fungi and birds such as woodpeckers. As gaps occur, these will be replanted if natural regeneration does not take place.

D.2.2 Management of Continuous Cover Forestry Areas

The areas to be thinned have been divided into four types according to the age of the stand and the development of the under-storey and are shown on In Appendix 10 Thinning Map and the Thinning Schedule D.2.4. These are to be thinned and the under-storey established, as described in the prescriptions below.

D.2.2.1 1923-24 SS/SP Plantations

Thinning

These are to be lightly thinned to remove a few trees/ha of the larger Sitka spruce, remove suppressed and damaged Scots pine and release clumps of trees in the under-storey at approximately 5 yearly intervals. These operations require to be carried out with great care not to cause root and crown damage to the remaining mature trees and where possible to the emerging under-storey. The aim will be to gradually remove most of the over-storey Sitka spruce and about 50% of the Scots pine over the 20 year period. Where the stocking density of the under-storey trees is too dense these are to be thinned. The thinning will be uneven across the stands opening groups of already damaged / declining pine and retaining better clumps.

Natural Regeneration and Enrichment Planting

It is expected that natural regeneration of Sitka spruce, Western hemlock and broadleaves will continue to occur. Patience is required with Continuous Cover Forestry and the establishment of natural regeneration may take a decade or more to establish. Planting will also be done to diversify the woodland and ensure that gaps of >0.25 created by any windblow are filled by the end of a 15 year period. Here the opportunity to diversify the woodland will be taken by planting groups of at least 20 trees of the same species at <2m spacing in the middle of the gap. Species choice will be as indicated in the Concept Development, Section C.2.7.2. Norway spruce is currently doing well in the understorey next to Beecraigs Loch and this will be included in plantings elsewhere.

D.2.2.2 1931-41 SP/SS Plantations**Thinning**

The Scots pine is to be selectively thinned removing approximately 15% of the volume at approximately 5 year intervals to favour those with well-developed crowns and to open up the canopy on the leeward side of the Sitka spruce. The exposed southern edge is only to be very lightly thinned.

Natural Regeneration and Enrichment Planting

As D.2.2.1 above.

D.2.2.3 1962-68 SS/NS/JL/SP Plantations**Thinning**

These areas lie in the core of the Park, between the Balvormie play area and the loch, are predominantly pure Sitka spruce with smaller areas of Norway spruce. These have already been thinned in the past but most not for around 20 years. The intention is to gradually thin these out and extend any gaps created by windblow to create a more open structure. This should allow for natural regeneration or planting and the conversion of these areas in the longterm to continuous cover forestry (CCF). Wind damage may result in this taking the form of a series of patches of younger trees within the older plantation. Due to the many years of delayed thinning it is too late to adopt the normal practices for converting even aged stands to CCF. The initial thinning is to be a light low thinning of 10-20% volume to remove sub-dominant trees which are whipping and damaging the crowns of the better crowned and stronger rooted trees. The existing racks will be used and where possible additional brush brought in to prevent root damage. If successful, further selective thinning will be carried out on approximately a 5 yearly basis.

There are also plantations of Japanese larch with scattered Scots and Lodgepole pine and other species of this age class, some with patches of Sitka spruce regeneration, seeded from adjacent stands. Many of these Larch areas have been affected by sporadic windblow the clearance of which, together with a light thinning of adjacent stands was carried out in 2012-13. Further light selective thinning, favouring those trees with well-developed crowns, will be undertaken to create a widely spaced over-storey, under which spruce regeneration can establish or groups of other species can be planted.

Natural Regeneration and Enrichment Planting

As D.2.2.1 above.

See Appendix 12 Thinning Map.

D.2.2.4 Thinning of Younger Plantations

Most of the younger plantations are within Hillhouse Wood. Here broadleaves were planted within a matrix of conifers and are now becoming suppressed and an early thinning / cleaning of the conifers to release the broadleaves has been started by volunteers.

In order to progress this work at a faster rate it is likely that mechanical harvesting will be required with line thinning and a light selective thinning between the felled rows to remove any particularly poor trees. This will be required earlier than suggested in the Forestry management tables as many of these areas were planted for Christmas trees at 1 or 1.5m spacing. In most instances a double row will have to be removed to enable machine access due to the close spacing. The distance between rows will depend on the machinery used. In conifer / broadleaved mixtures the broadleaves are to be favoured provided they are of reasonable form and not already irretrievably suppressed. Likewise the naturally regenerated broadleaved stands where stocking density is too high these are to be cleaned or thinned early.

D.2.3 Thinning Schedule

Thinning Schedule for 1st 10 Years						
Compt	Area (ha)	Species	Age	Yr 1-5	Yr 6-10	Comments
Young Plantations p1983-2007						
4	0.77	MC/MB	22		Thinning	
5	1.72	SS	21	Thinning	Thinning	
10	1.57	MC	24	Thinning	Thinning	
14	1.08	NS	25	Thinning		
15	2.01	NS	25	Thinning		
16	7.13	NMB	7		Thinning	Respace naturally regenerated Bi & Willow
18	0.34	NMB	10		Thinning	Remove remaining SP from wet birch woodland
22	1.77	MC	12		Thinning	1st thin densely planted stand
23	0.41	SP	11		Thinning	Respace SP copse on meadow
24	0.32	NMB	14		Thinning	
25	0.32	DF	15		Thinning	
25	0.05	NMB	14		Thinning	
34	0.19	SP	31	Thinning		Light thinning of remaining trees when caravan site felled
34	0.36	SS/SP	12		Thinning	
35	0.21	MB	15		Thinning	
35	6.54	MB/MC	15	Thinning		Thin conifers to release broadleaves @ Hillhouse
35	3.35	MC	15	Thinning		Thin densely planted conifers @ Hillhouse
35	1.06	NMB	15		Thinning	
35	1.53	SP	15	Thinning		Thin densely planted conifers
	30.73					

Middle Aged Plantations p1962-68							
1	2.50	MB	36	Thinning	Thinning	Light thin of Sycamore Middle aged, previously thinned but overstocked plantations. Gradually thin to favour better crowned trees by removing damaging sub-dominants and expand windblown gaps with aim of transforming even aged plantations to CCF.	
7	1.90	JL	48	Thinning	Thinning		
7	1.55	NS	48	Thinning	Thinning		
7	0.42	SS	48	Thinning	Thinning		
28	2.20	JL	48	Thinning	Thinning		
28	0.63	NS	48	Thinning	Thinning		
28	4.52	SS	48	Thinning	Thinning		
29	1.65	JL	47	Thinning	Thinning		
29	0.53	SS	47	Thinning	Thinning		
30	0.85	JL	47	Thinning	Thinning		
30	2.90	SS	47	Thinning	Thinning		
31	2.44	NS	45	Thinning	Thinning		
31	7.31	SS	45	Thinning	Thinning		
32	2.02	JL	45	Thinning	Thinning		
32	0.15	MC	45	Thinning	Thinning		
33	3.55	JL	45	Thinning	Thinning		
33	0.32	NS	45	Thinning	Thinning		
34	0.21	NS	45	Thinning	Thinning		
	35.65						

Mature mainly Scots pine Plantations p1931-41						
1	0.61	SP	74	Thinning	Thinning	Thin to favour well buttressed & crowned trees and to release any patches of regeneration
1	1.97	SS/SP	74	Thinning	Thinning	
5	1.51	SP	77	Thinning	Thinning	
5	0.88	SS	77	Thinning	Thinning	
5	2.49	SS/SP	77	Thinning	Thinning	
6	1.79	SP	78	Thinning	Thinning	
6	4.12	SS	78	Thinning	Thinning	
7	2.52	SP	81	Thinning	Thinning	
7	1.29	SS	78	Thinning	Thinning	
8	1.95	SP	76	Thinning	Thinning	
9	1.15	SP	76	Thinning	Thinning	
9	4.41	SP	76	Thinning	Thinning	
10	2.72	SP	71	Thinning	Thinning	
11	4.36	SP	73	Thinning	Thinning	
12	1.63	SP	74	Thinning	Thinning	
13	0.83	JL	74	Thinning	Thinning	
13	0.86	SS	74	Thinning	Thinning	
14	1.42	JL	72	Thinning	Thinning	
14	1.90	SP	72	Thinning	Thinning	
	38.41					

Mature Sitka spruce & Scots pine Plantations p1923-24						
2	4.83	SS/SP	89	Thinning	Thinning	Gradually remove occasional very large SS to release regeneration and under-planting and thin suppressed SP in between
3	2.37	SS/SP	89	Thinning	Thinning	
4	0.46	SS	89	Thinning	Thinning	
4	1.71	SS/SP	89	Thinning	Thinning	
14	4.12	SP	88	Thinning	Thinning	
15	3.70	SP	88	Thinning	Thinning	
	17.19					

D.2.4 Clearfelling and Replanting

Areas to be Clearfelled and Replanted are shown on the Clearfelling Map (Appendix 5) and Restocking Concept Map (Appendix 9).

D.2.4.1 Clearfelling and Windblow Clearance

The majority of the areas identified for clearfelling include stands already compromised by windthrow and are to be felled within the next 1-2 years. In addition, a number of individual trees have blown down in Compartment 34 around the caravan and camping site and the majority of this will also be felled.

Other areas which are considered unsuitable for Continuous Cover Forestry will be clearfelled as they mature and prior to the onset of significant windthrow.

D.2.4.2 Replanting

Replanting will be according to the future species choice given in the Concept Development section and as given in the Felling and Replanting Schedule given below and shown on the Felling and Restocking Maps (see Appendix 5 and 9).

D.2.4.3 Felling and Replanting Schedule

Felling and Replanting Schedule			
Compartment	Area (ha)	Species	Replanting / regeneration of cleared areas
Cleared Windblow			
5	0.05	OG	OG
6	0.18	OG	NR
6	0.39	OG	OG
7	0.36	OG	NR
7	0.13	OG	OG
8	0.66	OG	NR
11	1.16	OG	NMB
13	0.42	OG	OG
13	5.60	OG	SS
15	0.18	OG	OG
17	0.91	OG	NR/NMB
17	0.57	OG	OG
19	0.47	OG	NMB
21	2.03	OG	NR/NMB
22	0.30	OG	OG

22	0.29	OG	OL
22	3.49	OG	SS
24	1.82	OG	MB/MC
25	0.39	OG	OG
25	1.43	OG	OL - Christmas trees
26	1.27	OG	MB/MC
26	0.50	OG	OG
27	0.53	OG	OG
28	0.09	OG	MB/MC
28	0.21	OG	NR
29	0.47	OG	NR/NMB
30	1.59	OG	MB/MC
32	0.36	OG	NMB
33	0.50	OG	MB/MC
	26.35		
Felling Yr 1-5			
7	0.61	JL	OG
12	0.54	SS	NMB
12	3.04	SS	NR/NMB
13	0.45	SP	OG
13	1.81	SS	SS
17	1.36	SS	NR/NMB
18	0.22	SS	NR/NMB
18	0.17	SS	OG
19	4.26	SS	NMB
20	0.78	SS	NMB
21	1.18	JL	NR/NMB
21	2.04	SS	NR/NMB
21	1.57	SS	OG
22	0.13	MC	NMB
22	0.60	NS	SS
22	0.60	SS	NMB
22	0.32	SS/SP	NMB
24	0.23	SS	NMB
26	0.18	SS	MB
26	1.74	SS	MB/MC
26	0.28	SS	NMB
27	0.18	NS	OG
27	0.45	SS	MB
29	0.16	JL	MB
30	0.57	SS	MB/MC
30	0.17	SS	NMB
30	0.24	SS	OG
31	0.79	JL	OG
32	0.10	MC	OG
32	0.63	NS	OG
33	1.00	SS	MB/MC
33	0.38	SS	OG
34	0.63	JL	MB/MC
34	0.93	JL	OG
34	0.06	MB	OG
34	2.34	SS	MB/MC

34	0.83	SS	OG
35	0.17	MB/MC	OG
	31.74		
Felling Yr 6-10			
26	0.51	JL	MB/MC
26	0.24	JL	NMB
26	0.18	SS	MB/MC
26	0.27	SS	NMB
27	1.22	NS	NMB
27	2.93	SS	MB/MC
	5.35		
Felling Yr 11-015			
8	1.22	SS	NR/NMB
9	1.13	SS	NR/NMB
10	0.96	MC	OG
10	1.39	NS	NR/NMB
11	1.04	SS	NR/NMB
14	1.08	NS	NR/NMB
14	2.28	SS	NR/NMB
15	2.01	NS	NR/NMB
	11.11		
Felling Yr 16-20			
8	0.90	MC	NR/NMB
8	0.69	NS	NR/NMB
	1.59		

It is expected that natural regeneration will also emerge in areas on the leeward side of mature trees and this will be accepted as part of the future stand, provided it does not conflict with the design concept e.g. Sitka spruce emerging in riparian zones.

It is intended that, within 2-3 years of clearfelling and windblow clearance, the areas will be replanted. This will leave some areas appearing untidy and covered in woody debris for a period. Where felling takes place close to main facilities or in small parts of the forest well used for outdoor activities, the brush will be cleared or mulched but in other areas it will only be cleared sufficiently to allow for planting.

D.2.5 Forest Operations

The guidelines in the UK Forestry Standard including Forests and Water, Soil, People, Biodiversity, Climate Change, Landscape and Historic Environment are to be followed in all operations.

D.2.5.1 Felling and Extraction

Harvesting operations are to be planned well in advance except where windblow requires the swift clearance of paths and other facilities. This planning is to take account of the various site constraints such as the number and type of visitors using the particular part of the Park, public recreation infra-structure, machine and lorry accessibility, services, presence of protected species

and other wildlife features and the presence of historical features. Where not already surveyed or where update surveys are required to determine current status eg for badger / bat licences this will be carried out as part of the planning process and shown on felling maps with protection measures detailed in the harvesting specifications or job lines.

Thinning operations are to be carried out during Autumn and Winter to avoid the busiest times of year but are to avoid very wet conditions. In young plantations only the racks are to be marked but in older plantations all the trees to be removed are to be marked and a timber volume estimate made prior to felling. It will be more important to mark the thinnings responding to the canopy and conditions on the ground than sticking strictly to a prescribed thinning percentage.

In the most sensitive areas, with the largest trees, the felling will require a combination of motor manual and mechanical. The harvester will be used to position the logs or a winch used to extract them to widely spaced racks along which the timber will be forwarded. These are to be kept well brushed in order to keep root damage to a minimum. In other areas the felling will be mainly by harvester with forwarder extraction along existing racks to loading points along the tracks. In order to avoid main paths the occasional new section of rack may have to be cut on the leeward side of the plantation. All the frame trees will be marked and initially those trees to be removed will also be marked until the harvester operatives are able to make their own selection.

The bellmouth of the management access at Compartment 6 is to be extended to allow timber lorry access. This may be combined with creation of an improved accessibility path to the Lochside car park.

Suitable areas may be thinned as part of chainsaw courses and be extracted using the Council's agri-based forwarder provided that this does not impact on progress in undertaking timely operations.

During harvesting and extraction operations the public are to be excluded from sections of the Park or a banksman must be present during operations such as stacking and uplifting timber from along the tracks. The Forestry Officer will work with the Ranger Service to provide adequate explanatory signage and alternative routes during forestry operations.

D.2.5.2 Site Restoration

Much of the brash produced from the clearfell and thinning operations will be used in the racks to prevent soil damage during forwarder extraction. Where large amounts of brash remain in areas of old windblow this will be mulched. The larger clearfell and previously windblown areas are to be mechanically mounded and drainage ditches reinstated prior to planting. Elsewhere planting is to be directly into the existing plough lines. In high amenity areas, such as around the caravan and camping site, the brash will be mulched or the brash removed.

After felling and thinning operations, the drainage, where impeded, is to be improved and repairs made to adjacent paths and tracks. Unsuitable drains, where possible, will be reconfigured to meet current Forest and Water Guidelines.

D.2.5.3 Planting

Within the native woodland area in Compartment 19 and riparian zones, the broadleaves are to be planted at 3m spacing. The larger areas of Sitka spruce (Compartments 13 and 22) are to be planted at 2m spacing and the Christmas tree area (Compartment 25) will be planted at 1.5 m spacing. Both conifers and broadleaves planted in the mixed woodland areas are to be planted at 2m spacing.

D.2.5.4 Tree Protection

Sitka spruce and Birch are currently able to regenerate without deer or rabbit protection in most areas of the forest. The rabbit population in some areas of the Park (particularly Compartments 28, 34 and 35) is high and young trees will have to be protected. The Roe deer population is currently fairly low but would have to be reduced to a very low level to prevent browsing of newly planted broadleaves and the more palatable conifers, therefore where these are to be planted protection will be required. A new wire netting deer and rabbit proof fence has been erected around part of Compartment 25 proposed for Christmas trees. Elsewhere, larger planting areas will be protected with temporary plastic netting deer fences, where this does not adversely affect public access. In smaller areas and where protection from rabbits is also required tree shelters will be used. Should the Roe deer population increase to the extent that natural regeneration is not becoming established then the population will be reduced by controlled shooting, which would be done in liaison with neighbouring landowners.

Grey squirrels are badly affecting the semi-mature broadleaves and control may have to be considered when the increased areas of young broadleaves reach 10-20 years.

Most of the areas to be replanted with conifers have lain fallow for a few years and therefore weevil populations are unlikely to be damaging. The newly planted trees are to be monitored and only sprayed with pesticide if weevil damage starts to occur. Cut stumps are to be treated with urea to help reduce *Heterobasidion annosum* infection.

D.2.5.5 Weeding / Cleaning

The trees replanted on mounded areas should not require weeding during their first season. However, it is expected that brambles and grasses will invade some of the sites quite quickly and spot herbicide weeding is to be carried out with Glyphosate (reference Countryside Forestry Practice Guidelines). Where brambles, rosebay willow herb and other dense vegetation become established the planted rows are to be cleared with a weeding hook or brushcutter. Weeding is to continue on an annual basis until the trees are well established and at least 30cm above the surrounding vegetation.

Within the Christmas tree area the trees are to be weeded more regularly to keep them free of vegetation which may damage their form.

D.2.5.6 Replacement Planting

The replanted areas will be surveyed annually to assess tree mortality and if greater than 5% the area will be beaten up (trees replaced) until the area is fully established.

D.2.6 Safeguarding Biodiversity

While managing the forest and other facilities the numerous habitats are to be safeguarded and, where possible, enhanced. Particular care will be taken to protect European protected species. The locations of bat boxes and badger setts have been mapped but this map will not be put in the public domain.

Bats

There are a variety of bats present in the Country Park roosting in trees and other natural features, bat boxes and in the cave system in Hillhouse. Bats are protected and their roosts must not be disturbed by tree operations. The bat boxes and cave system within the Park are surveyed annually, dilapidated boxes are to be removed and the others rationalised to areas where they will provide the most benefit. Assessments/ surveys of trees with the potential for bat roosts will be carried out prior to felling/pruning work. Most tree work will be carried out during the winter when most bat species in Scotland hibernate in caves and old buildings but bat licences are to be applied for where required.

Badgers

There is a large population of badgers within the forest and also on adjoining land. Forestry operations are to be carried such that they do not damage setts and a badger licences will be applied to from SNH. The badger setts are annually surveyed by the Ranger Service and prior to felling operations will be marked to form a protection zone of 20m from the active setts. New paths /tracks and other construction work require a separate licence and are to be kept at least 30m from active badger setts. The amount of fencing around new planting will be kept to a minimum and if fence lines impede on badger 'runs', the fence will include badger gates.

Red Squirrels

A small number of Red squirrels were released into the Park in 1997. In recent years sightings have been few and the population of greys may have increased. Some Red squirrels may still exist therefore trees to be felled will be checked and any dreys found will be investigated before felling commences.

Birds

Many birds nest within the forest so where possible felling and pruning work will be carried out with the breeding season, i.e. September–March, which coincides with the busiest time for visitors.

Riparian habitats are to be improved through the forest by restructuring above and with the addition of small ponds in appropriate locations. The open ground areas are to be maintained.

Deadwood

When felling, a number of trees are to be topped and left as standing deadwood where it is safe to do so. This is happening naturally around some of the edges of the windblown areas. Some large logs are to be left as fallen deadwood in addition to heaps of brash, in areas of low fire risk, as habitats for invertebrates, fungi and birds, such as wrens. Where trees require treatment following safety surveys, the crown is to be removed to leave a monolith of standing deadwood, where

appropriate. Likewise some of the large branches resulting from tree surgery are to be placed into the forest away from the paths and left to decay.

D.2.7 Safeguarding Historic Features

Old features, such as tumbled drystone dykes, will be protected whilst harvesting and other forestry work is carried out. Where it is necessary to gain access normally the feature will be heavily brashed to protect it with the brash being removed at the end of the operation. Where it is necessary to make a gap eg for a new path this is to be done at an agreed pre-determined location and here the ends of the tumbled walls will be rebuilt to make a feature of them. As and when resources allow those drystone dykes in better repair and those along roadside are to be rebuilt.

Old tree avenues on earth banks are to have the trees replaced as individual fail or have to be removed for safety reasons. Where they have windblown and the bank is damaged this will be repaired to as near to the original formation as possible.

In suitable locations trees planted over features such as old quarries, lime kilns and ruins will be removed and these features better revealed.

In clearfell areas replanting will be kept back from old walls and other features and when adjacent drainage work is being carried out they will be re-exposed to make them visible. Some of the path routes run close to historical features which could be interpreted for visitors.

Operatives will be instructed to stop work and report any artefacts or features they may uncover during forest or other operations in the forest.

D.2.8 Safeguarding against Fire

A copy of the fire plan is kept at the Visitor Centre and identifies the access points (Forest Rendezvous Points), particular hazards to fire-fighting (e.g. electricity cables, fuel tanks, water sources) and a list of emergency contact numbers.

The grass in areas adjacent to the formal BBQ sites and picnic areas is to be kept short especially during dry Springs. A 2m strip along the main forest tracks and paths is to be kept clear of brash. Fire Rendezvous Point signs located at mainforest entrances are to be maintained to aid communication in the event of a fire or other emergency. Fire beaters are kept at the Sutherland Building and the Sawmill.

A meeting is to be held with the local Fire Service to update them on changes within the forest as young forests with more ground vegetation and brash are more combustible. A more detailed fire plan is then to be drawn up and agreed with the local Fire Service and one of the Council's Health and Safety Officers.

D.2.9 Protection of Services

Operatives will be made aware when working near to services and CAT trained operatives will assess and mark distances before works can begin.

D.2.10 Monitoring Establishment within the Continuous Cover Forestry Area

A monitoring regime will be set up within the Continuous Cover Forestry areas based on FCIN Monitoring the Transformation of Even-aged Stands to Continuous Cover Management 2002, G. Kerr, B. Mason, R. Boswell & A. Pommering. The emphasis will be on achieving a wooded site with an attractive appearance to the public and less on timber quality, which requires a higher tree stocking density.

D.2.11 Tree Health

The forest will be monitored for any outbreaks of disease through regular inspection by the Forestry Officer and Ranger Service based at the site.

Appendices

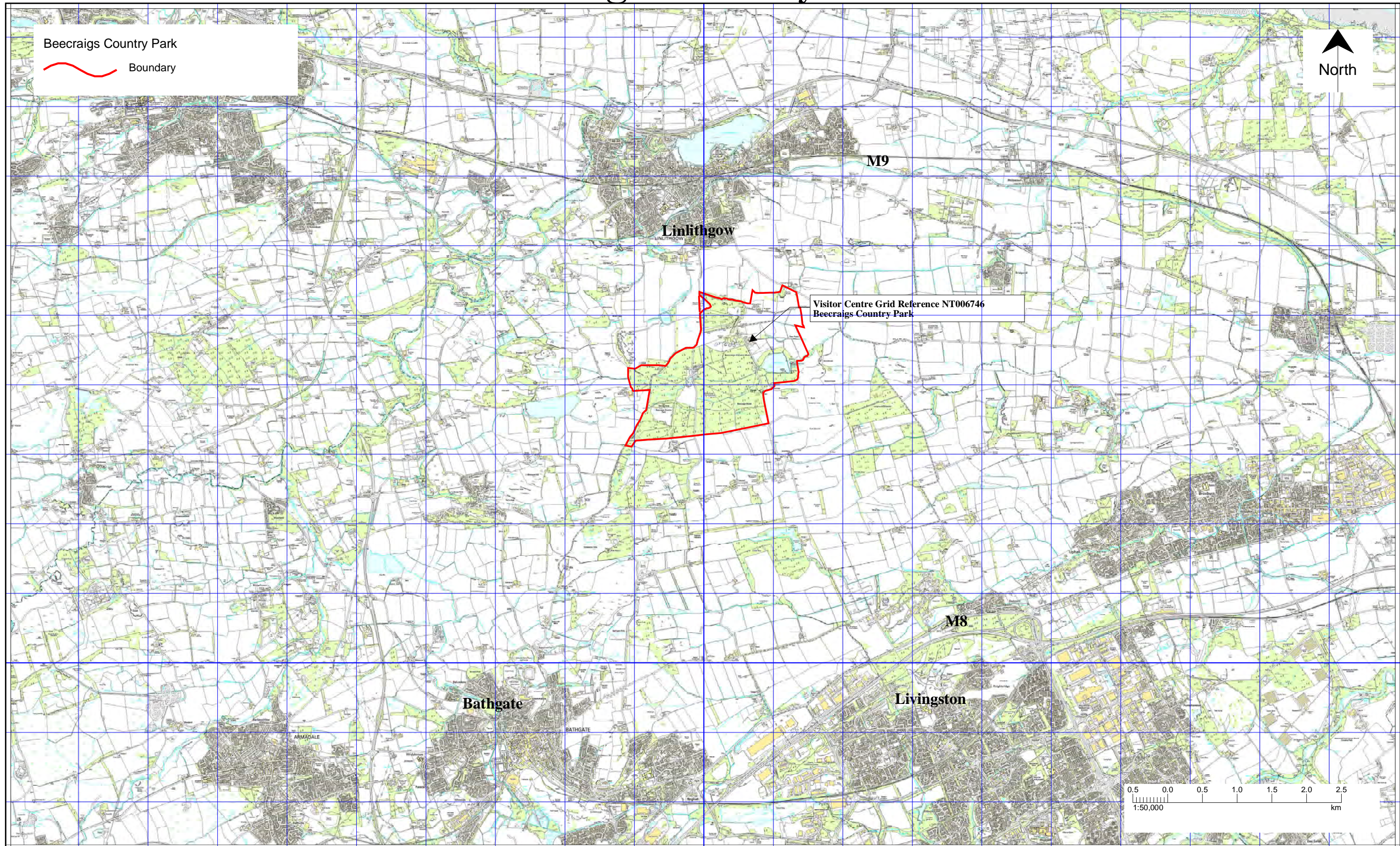
Appendix 13 Glossary of Abbreviations

Abbreviation	Species
AH	Ash
AR	Alder
ASP	Aspen
BE	Beech
BCH	Bird Cherry
DBI/SBI	Downy Birch/Silver Birch
DF	Douglas Fir
EL	European Larch
EM	Elm
GF	Grand Fir
GWL	Goat Willow
HAW	Hawthorn
HBM	Hornbeam
JL	Japanese Larch
LP	Lodgepole Pine
MB	Mixed Broadleaves
MC	Mixed Conifer
NMB	Native Broadleaves
NMF	Nordmann Fir
NOM	Norway Maple
NR	Natural Regeneration
NS	Norway Spruce
OK	Oak
RC	Western Red Cedar
ROW	Rowan
SP	Scots Pine
SS	Sitka Spruce
SY	Sycamore
WCH	Wild Cherry
WH	Western Hemlock
XC/XF/XP	Other Conifer/Fir/Pine
Other Abbr.	
OL	Other Land
OG	Open Ground
ASNW	Ancient Semi Natural Woodland
CCF	Continuous Cover Forestry
LEPO	Long Established Plantation Origin
LISS	Less Intensive Silvicultural System
WHC	Windthrow Hazard Class
LBAP	Local Biodiversity Action Plan

Appendix 14 Tolerance Table

	Adjustment to felling period	Adjustment to felling coupe boundaries	Timing of restocking	Changes to species	Changes to road lines	Designed open ground
FC approval normally required	Fell date can be moved within 5 year period. Where separation or other constraints are met	1.0ha or 10% of coupe area – whichever is less	Up to 2 planting seasons after felling	Change within species group e.g. evergreen conifers or broadleaves		Location of temporary open ground e.g. deer glades if still within overall open ground design Increase by 0.5ha or 5% of area – whichever is less
Approval by exchange of letters and map		1.0ha to 5ha or 10% of coupe area – whichever is less			Additional felling of trees not agreed in plan Departures of >60m in either direction from centre line of road	Increase of 0.5ha to 2ha or 10% whichever is less Any reduction in open ground
Approval by formal plan amendment may be required	Felling delayed into second year or later 5 year period Advance felling unto current or 2 nd 5 year period	>5ha or 10% of coupe area	Over 2 planting seasons after felling	Change from specified native species Change between species group		More than 2ha or 10% Any reduction in open ground in sensitive areas Colonisation of open areas agreed as critical

Beeccraigs Country Park

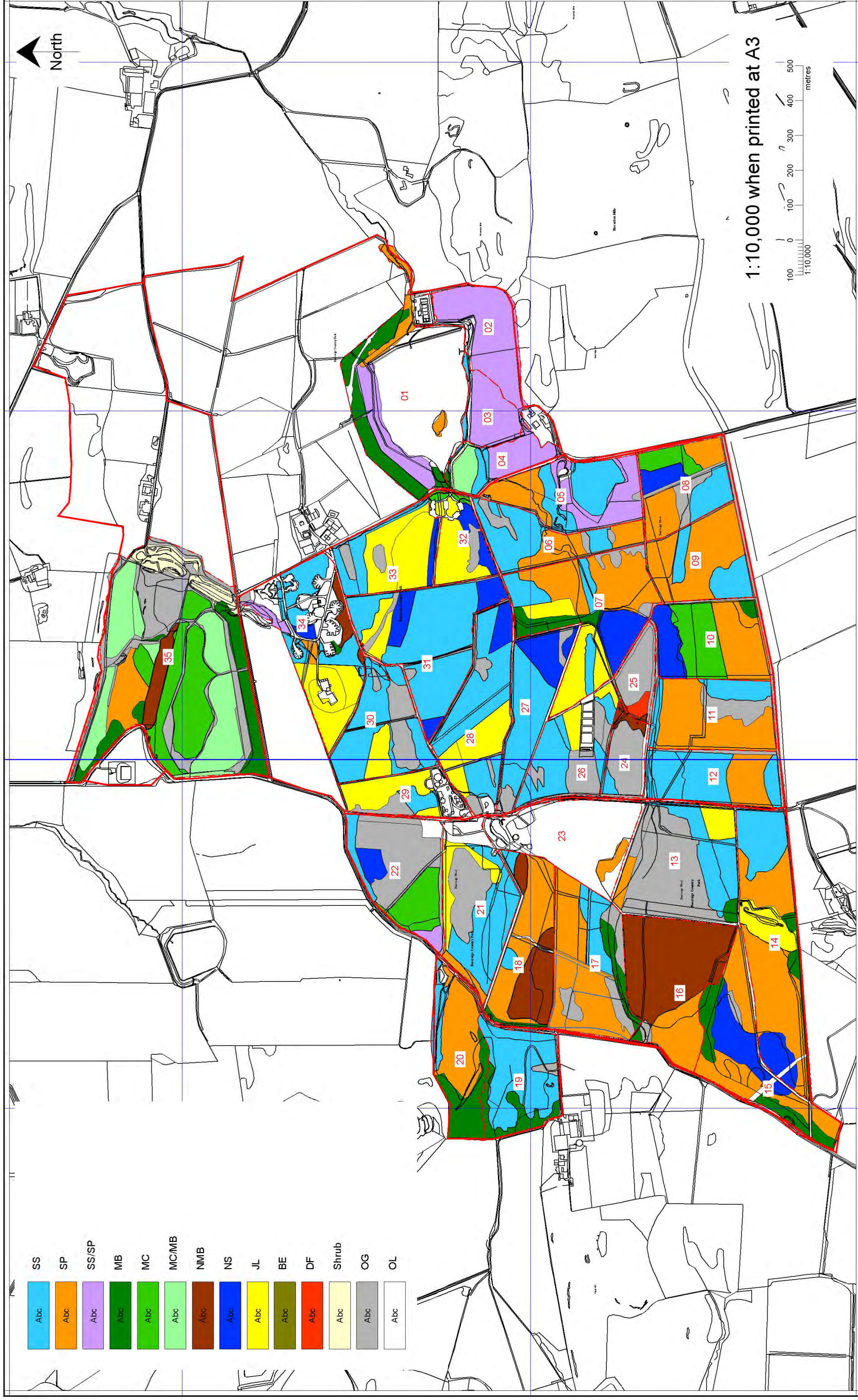


Beeccraigs Country Park – Location Map

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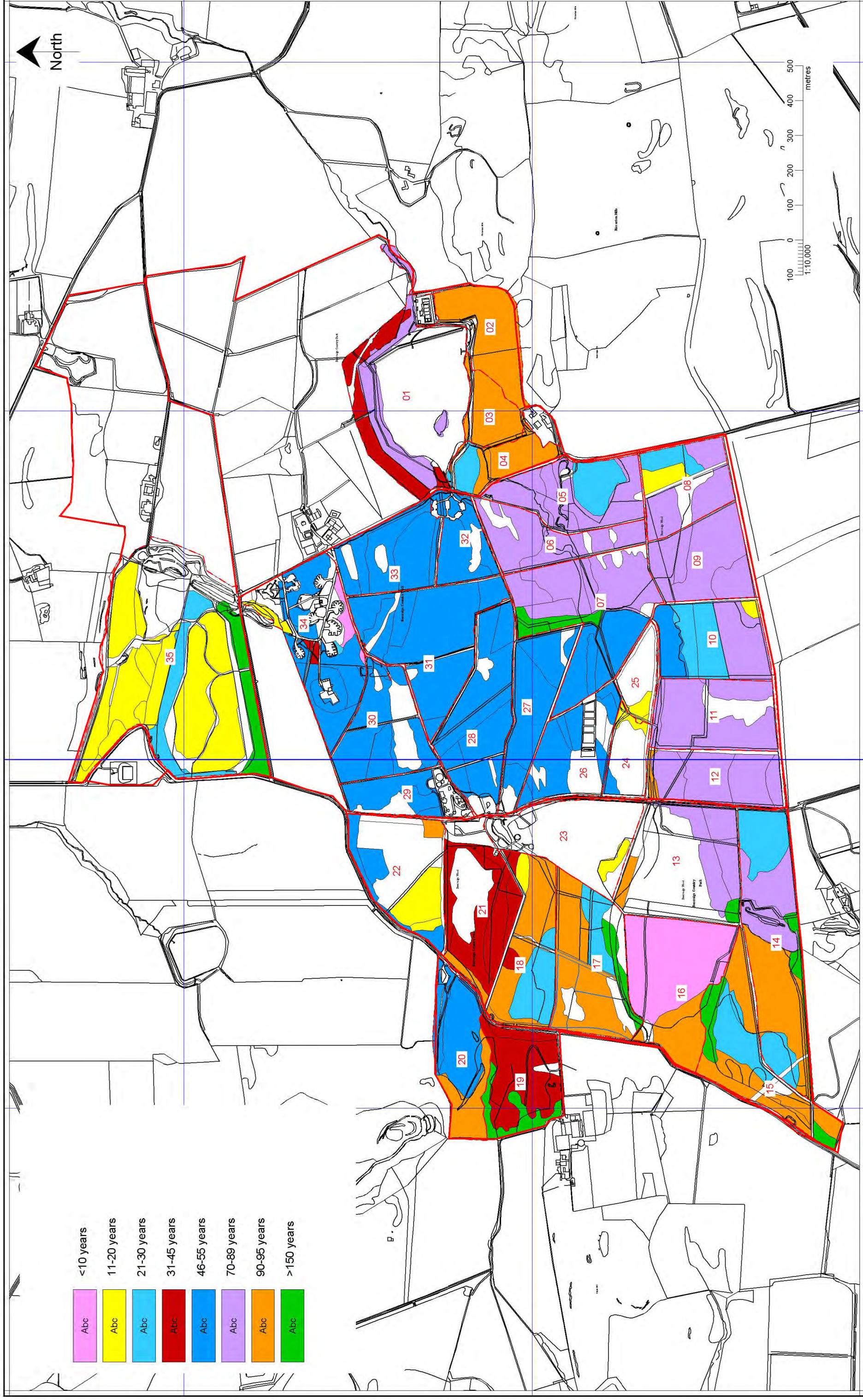


Current Species

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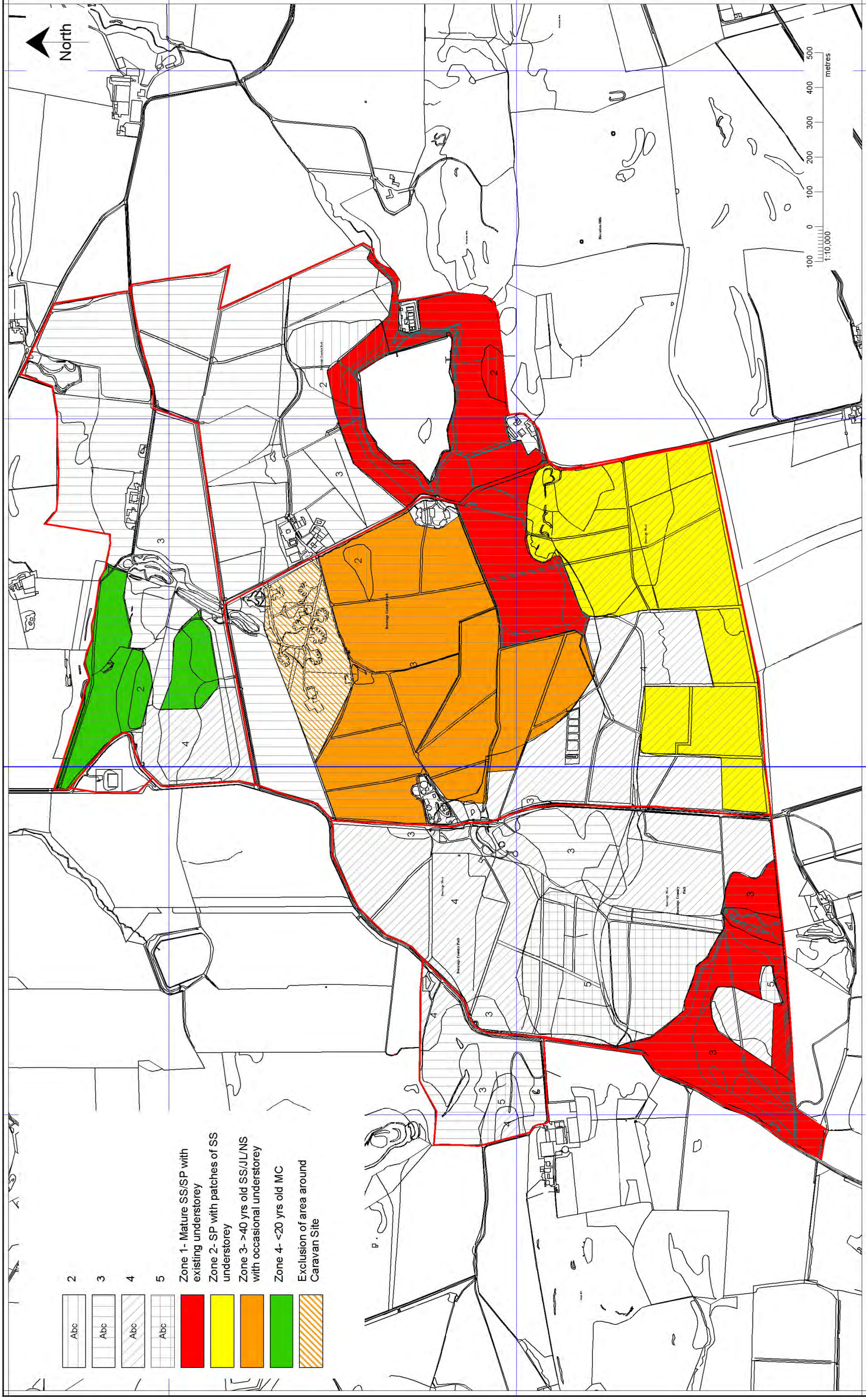


Becraigs Country Park Long Term Forest Plan 2013-34

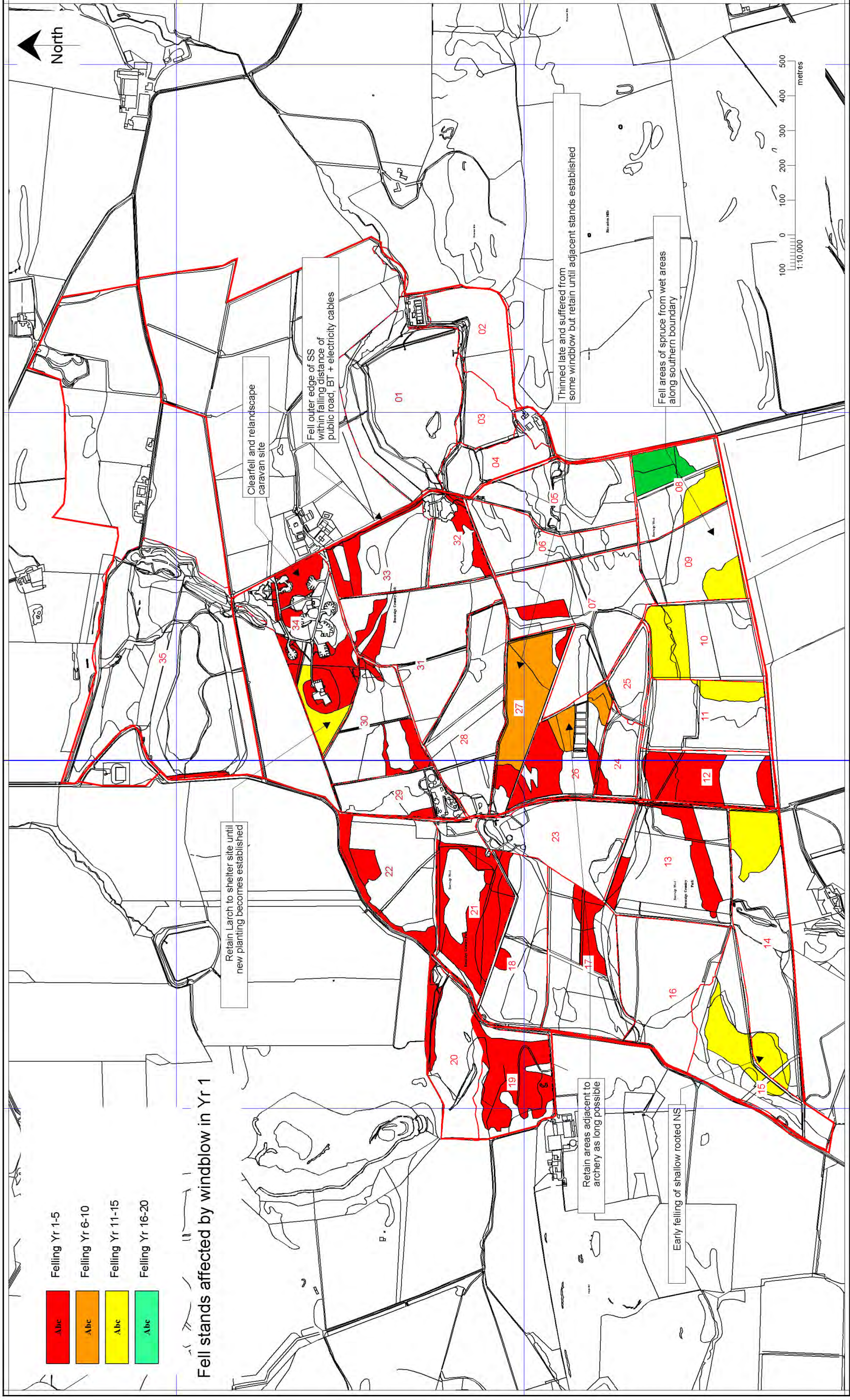


Age Distribution

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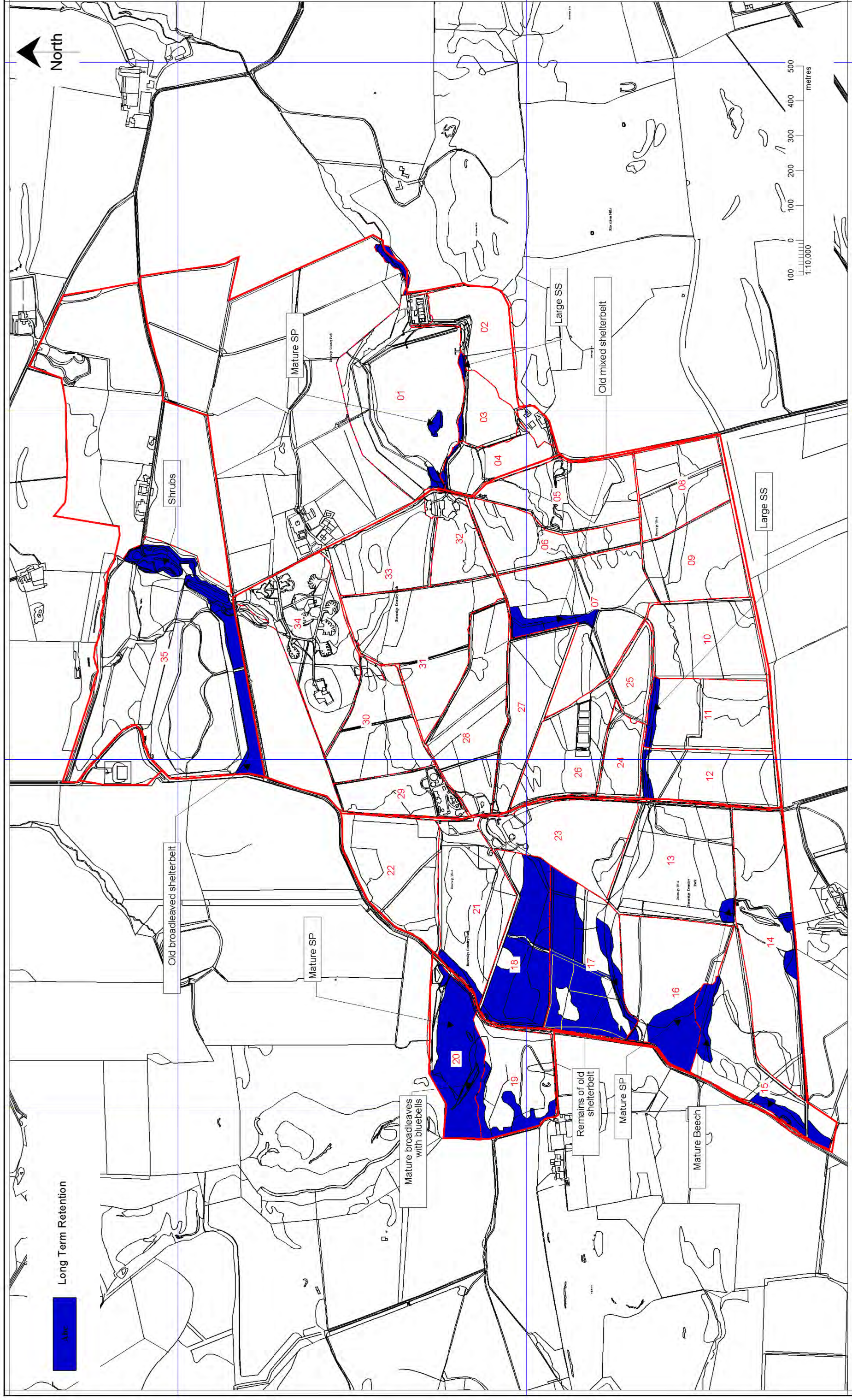
Beecraigs Country Park Long Term Forest Plan 2013-34



Felling

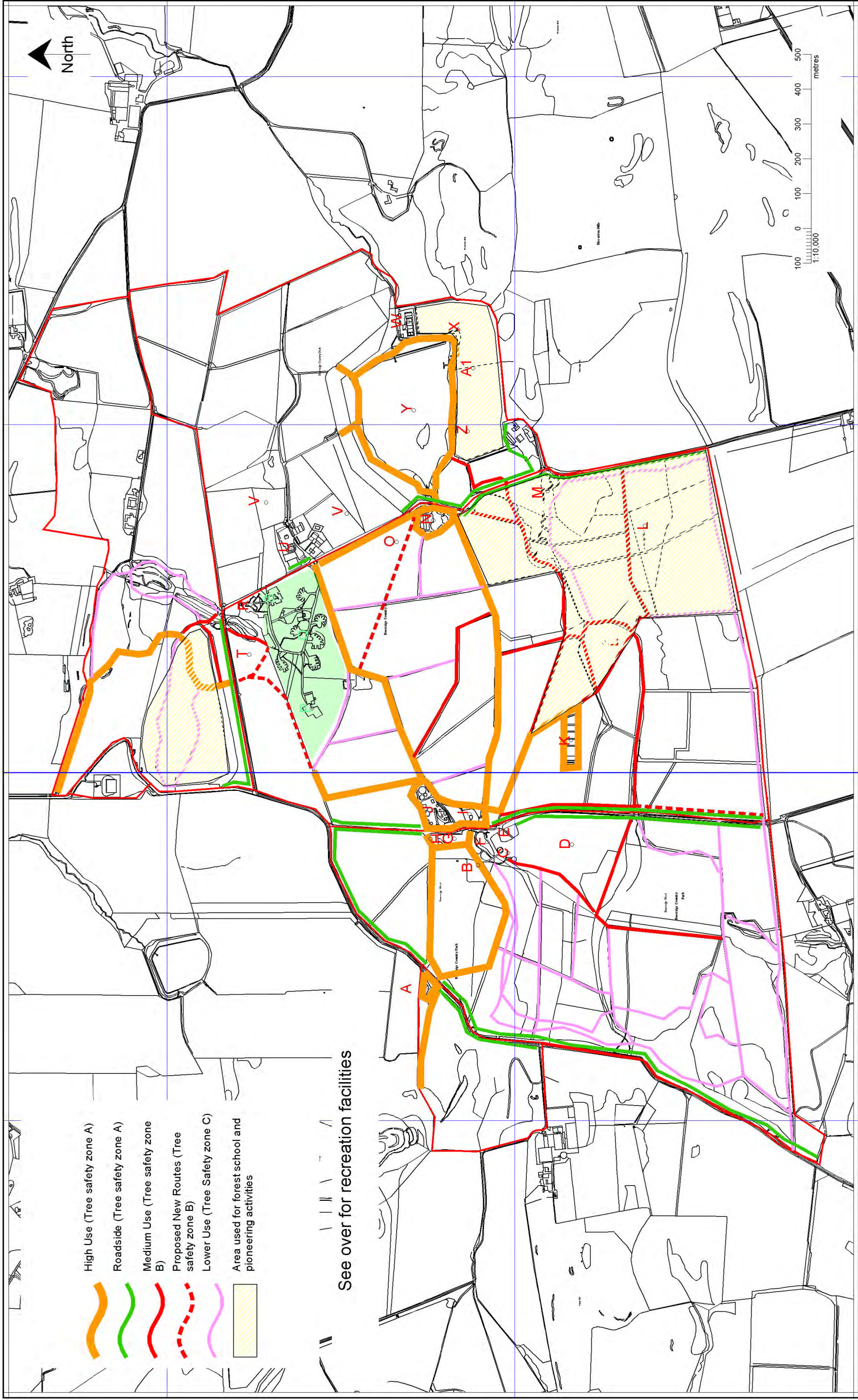
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Long Term Retention

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Recreation Zones

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Recreation Facilities

A	Cockleroy Car Park	A1	Activity Area / Field Archery
B	Toilets		
C	Barbecue Area		
D	Balvormie Meadow		
E	Overflow Car Park		
F	Balvormie Pond		
G	Picnic Area / Overflow Parking		
H	Bus Car Park		
I	Balvormie Car Park and Picnic Areas		
J	Adventure Play Area		
K	Target Archery		
L	Pioneering		
M	Climbing Wall		
N	Lochside Car Park and Picnic Area		
O	Pond		
P	Camping Site		
Q	Caravan Site		
R	Former Restaurant		
S	Car Park		
T	Field (may be used for events)		
U	Visitor Centre and Car Park		
V	Animal Attraction (Red deer & native breed cattle)		
W	Former Fish Farm used by Educational Group		
X	Fishing Lodge & Duke of Edinburgh Award Base		
Y	Beecraigs Loch		
Z	Badger Hide		

Recreation Concept Map Notes

All woodland to be retained adjacent to well used recreational areas

Particular care will be taken to remove all dead, damaged or diseased trees within 2 tree lengths of the path / facility. These areas are included in Zone A of the Tree Safety Plan.

1

Main path from Linlithgow through Hillhouse Wood

Adjacent conifer & broadleaved woodland <20 years old. Trees planted on thin soils <30cm rooting depth and hence will be prone to windblow and so all of the adjacent woodland will be managed on a fairly short rotation by group selection or small scale clearfelling and coppicing / replanting.

2

Caravan and camping site

Adjacent woodland is mainly 46 year old Sitka spruce and Japanese larch with some younger trees within and to the south of the site. The trees are planted on gleyed brown earth with a rooting depth of 40-50cm. However, in view of sporadic windblow already suffered, the exposed location at the top of the hill, the 24 hour use of the area by the public and the fact that the stands have not been thinned make this a high risk area to attempt thinning. The majority of the area of mature woodland is to be clear felled, with the younger conifers being retained to maintain some tree cover. The felled area is to be replanted with copses of mainly broadleaves and with groups of conifers to provide more shelter and winter colour. The edges adjacent to the caravan and camping areas will have open ground and small trees to allow more sunlight into the site. In the longer term woodland is to be well thinned to provide more windfirm tree cover.

3

Roadside Edge

Mature strip of Sitka spruce along roadside through which path runs to be felled and replanted with an avenue of broadleaves.

4

Lochside Car Park

Woodland around and within the car park is predominantly mature larch with pine and spruce. The site is relatively sheltered and in the drier areas trees have a rooting depth of >40cm. However, delayed thinning has resulted in less windfirm trees and some sporadic windblow has occurred. In view of the heavy use of the car park the trees will be felled to 2 tree lengths back from its edges and this area re-landscaped broadleaved trees.

5

North Lochside Path

Well used path through mature Scots pine and Sitka spruce. This is within the most sheltered eastern side of the forest and will be gradually thinned as part of the Continuous Cover Working Circle. Small area/s adjacent to the loch will be opened up to create south facing seating areas.

6

South Lochside

Tarmac road to the fishing lodge cum well used path runs through stands of large mature Sitka spruce and Scots pine. This is a sheltered part of the Park and the stands of trees on the lochside will be gradually thinned to favour well buttressed trees and retained as features long as possible. The semi-mature broadleaved and mature Sitka spruce / Scots pine woodland areas to the south and east of the track are to be managed as part of the Continuous Cover Working Circle.

7

Riparian Zone

Norway spruce in the wet hollow to the south west of the car park has suffered from windblow and this is to be clearfelled and replanted with broadleaved trees within the riparian zone adjacent to the burn.

8

Lochside to Balvormie Path

Well used forest track runs through mature stands of conifers. This part of the forest is reasonably sheltered and the soils have a rooting depth of 40-60cm and will be managed as part of the Continuous Cover Working Circle.

9

Target Archery and Approach Track

The mainly Sitka spruce woodland to the south of the track on the more exposed western edge of this part of the Park have already suffered badly from windblow therefore remaining trees are to be clearfelled and replanted with mixed conifers and broadleaves.

The areas to the north and east of the track have a semi-green edge and have deeper rooting depths. Also the prevailing wind is from the SW and so any windblown trees are more likely to fall into the plantation. This area has therefore been included in the Continuous Cover Working Circle.

10

Balvornie Toilets to Cockleroy Path

The woodland to the rear of the toilets and on the north side of the forest track has been severely affected by windblow and will be clearfelled and replanted with mainly broadleaves.

11

Cockleroy Car Park to West

The mature Sitka spruce and Scots pine on the gleyed soils around the car park and adjacent to the main Cockleroy path on this exposed edge of the Country Park are likely to suffer windblow and therefore will be clearfelled and the area replanted with widely spaced broadleaves.

12

Cockleroy to Bus Car Park and Wairdlaw Brae

A few small stands of mature conifers remain adjacent to the path and car park and along the side of the public road with the rest of the compartment having been windblown over several years. These stands are now exposed, are likely to blow down and therefore will be felled and replanted with widely spaced broadleaves.

13

Play Area and New Path to Visitor Centre

These are located towards the more exposed western edge of the forest in areas of larch and spruce which have suffered some sporadic windblow and are considered moderately suitable for Continuous Cover Forestry. They will be managed as such but with gradual thinning back from the edges and restocking with smaller broadleaved trees.

14

East of Play Area

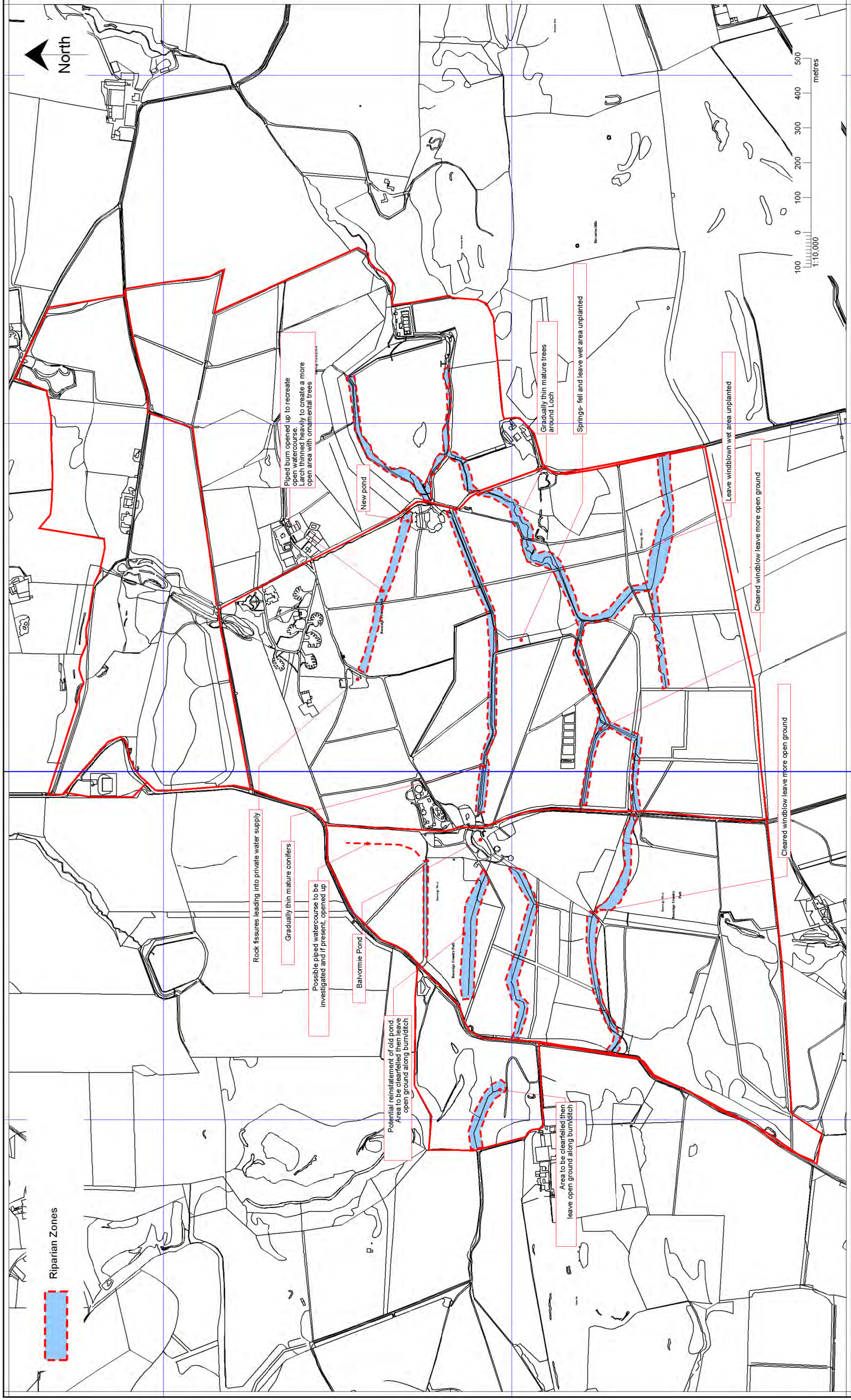
Stand of large mature Sitka spruce which has suffered windblow to the rear. Due to this area is currently well used by children but concern for potential recurring windblow in this highly accessible area the remaining trees will be felled.

15

Balvornie to Caravan Site Path

This forest track is the main route taken between the car parks and play area at Balvornie to the Visitor Centre and Animal Attraction. The adjacent woodlands are more sheltered in this eastern section of the forest and soils have a rooting depth of 40-50cm and so they are to be included in the Continuous Cover Working Circle.

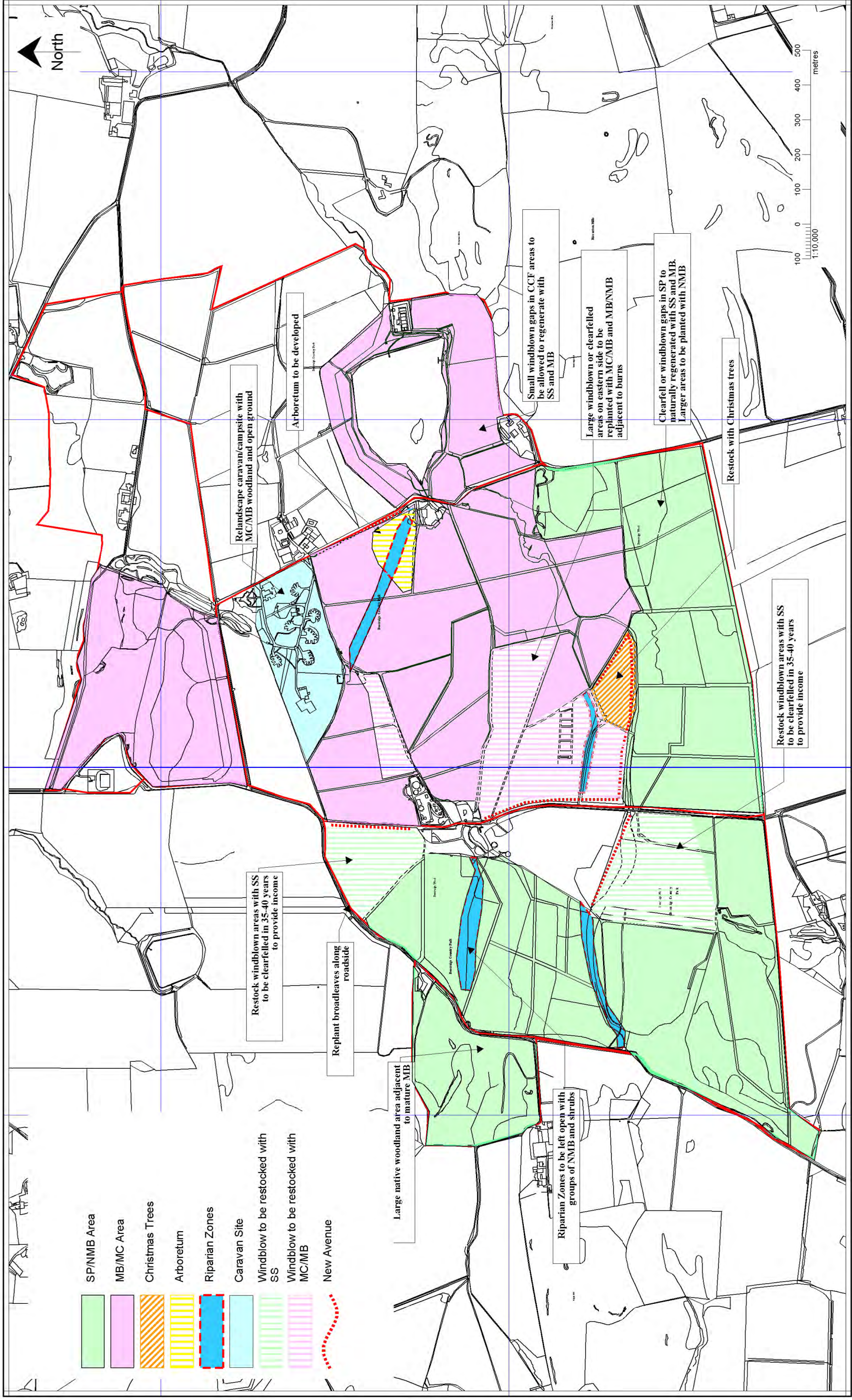
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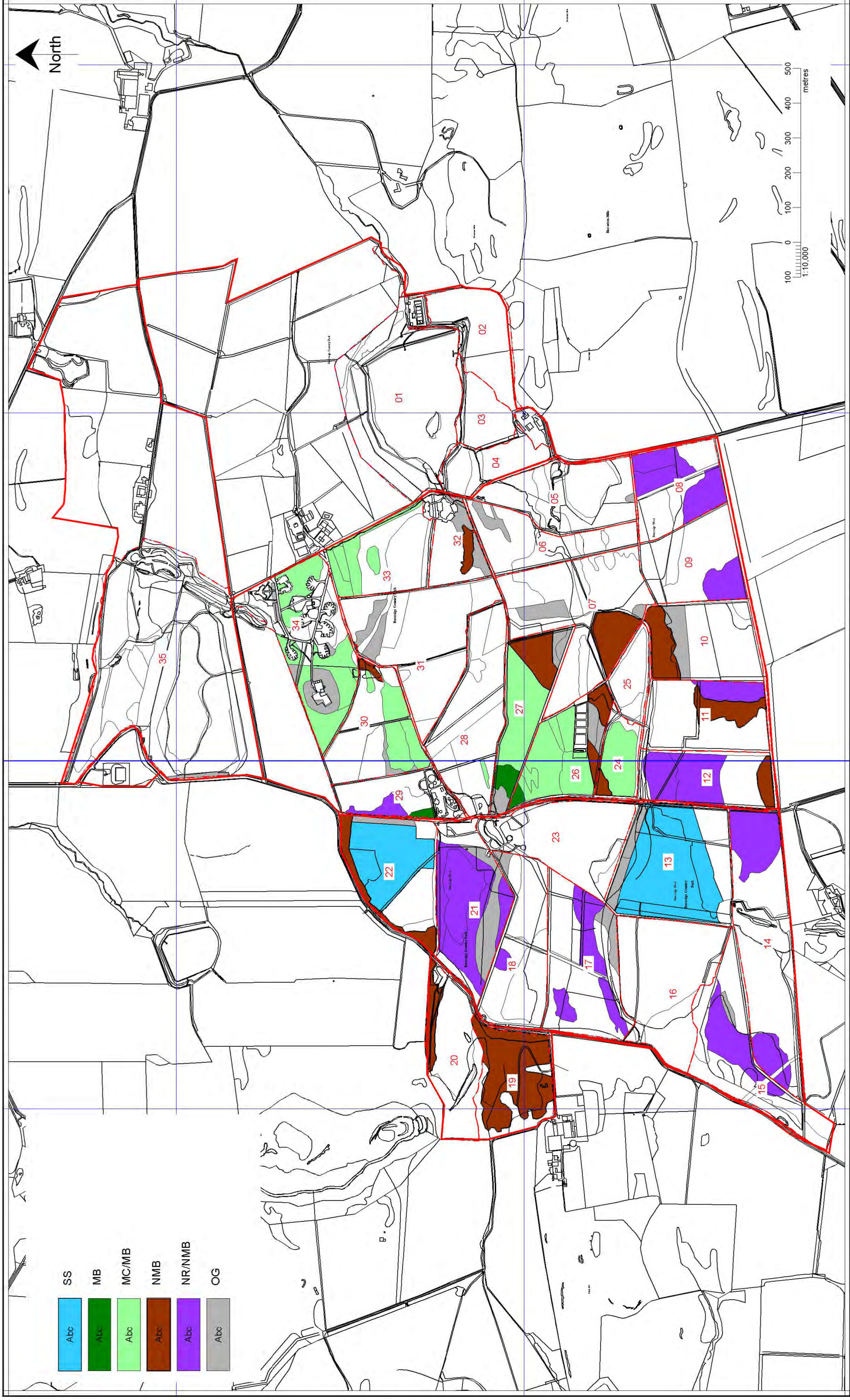
Riparian Zones



Restocking Concept

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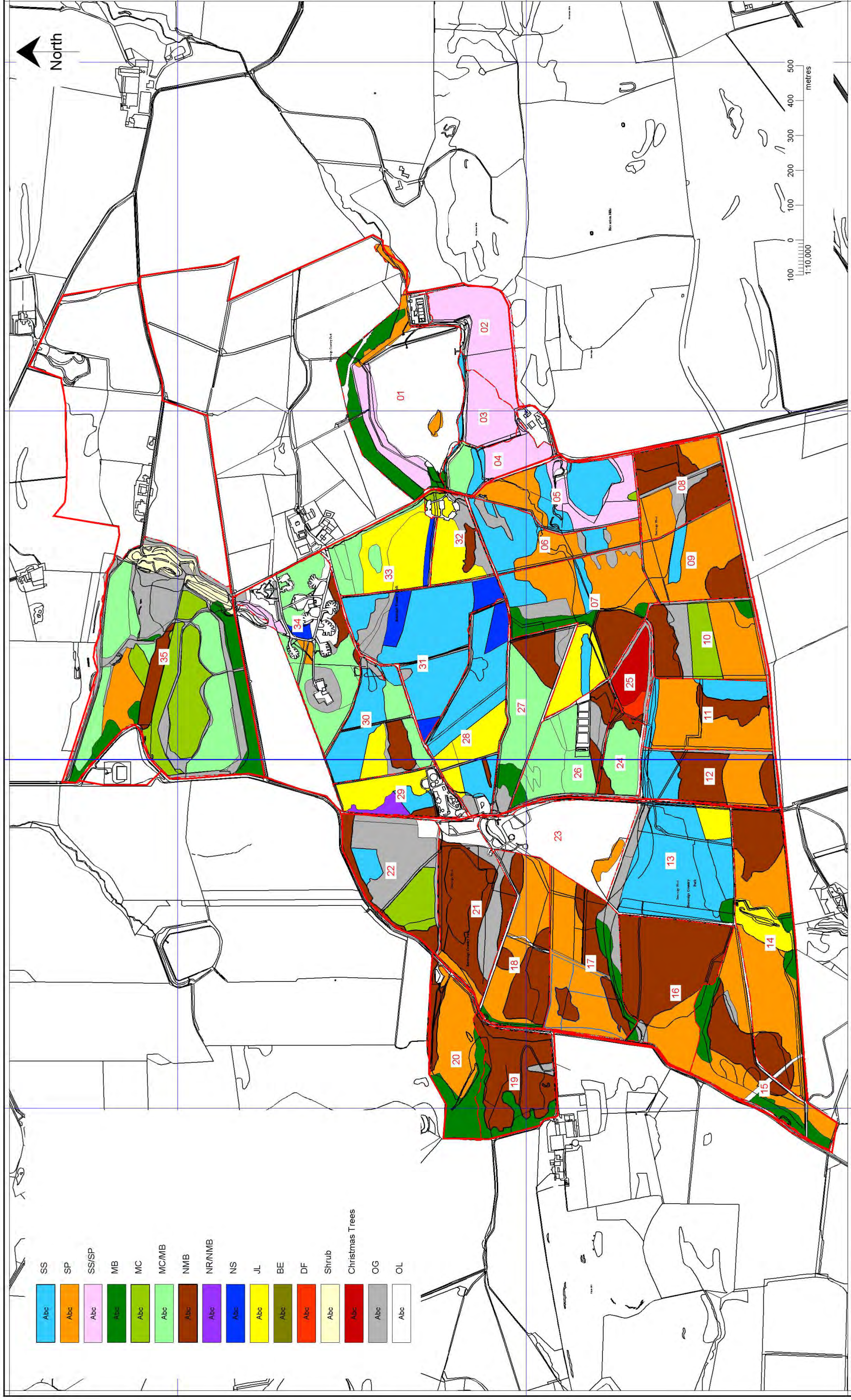


Replanting or Natural Regeneration of Felled and Windblown Areas

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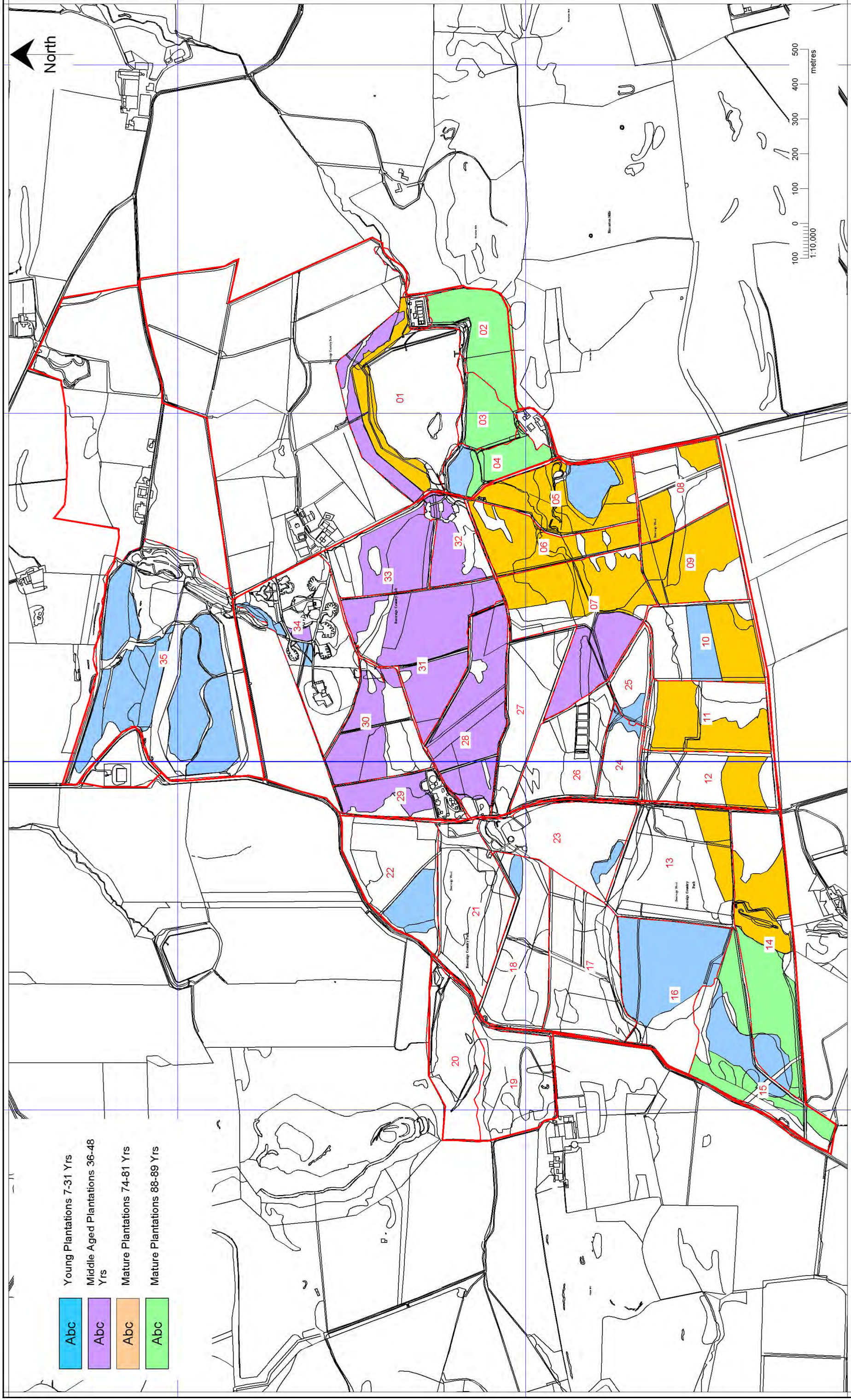


Future Species

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Thinning Map

Beecraigs Forest Plan 2013-2034

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