Duchess Wood Local Nature Reserve Committee

MANAGEMENT PLAN 2012-16 Annexes 1-7

for the

DUCHESS WOOD LOCAL NATURE RESERVE

Helensburgh

Argyll and Bute

(Final approved version 22.10.2012)

ANNEX 1

Ecological evaluation using the Ratcliffe (1977) criteria

(This is a summary of the sections in the 2007-11 5YP which were based on the long established and widely accepted method of determining the nature conservation value of a site known as the 'Ratcliffe Criteria' (Ratcliffe, 1977). The Ratcliffe Criteria provide a standardised and objective way of assessing the value of a site using the following ten attributes: Size, Naturalness, Representativeness, Rarity, Diversity, Position, History, Fragility, Potential value, and Intrinsic appeal.)

Size

At 22.99ha, Duchess Wood LNR is a significant remnant of Semi-Natural Woodland, parts of which are most probably of ancient origin, in a largely urban landscape although its initial extent is currently unknown. Although classed on the SNH Ancient Woodland Inventory as of Long Established Plantation Origin (LEPO), this assessment is based on the Roy Maps of 1750 which were prepared for military purposes and thus woodlands not of military importance were often not mapped. Maps by John Ross, 1777 and J Thomson & Co, Edinburgh 1820 show mature tree cover along burnsides south of the Highlandman's Road, although their precise location is confusing on maps of this age and scale. The 1st Edition Ordnance Survey 25" map for 1860 (See Annex 6) shows the Wood almost as it is today, except for a small extension in the NE corner which seems to have occurred when the west Highland railway line was built. The older maps also show the woodland as possibly part of the designed landscape of Ardencaple Castle grounds.

Duchess Wood LNR is a small site in a large urban setting and as such is vulnerable to edge effects. Edge effects include issues such as small losses of woodland to developments, erosion, pollution, unauthorised changes in boundaries, which, if allowed to continue unchecked, can accumulate and reduce woodland size and cover over time. Any impact that reduces the size and extent of woodland cover will reduce the value of the woodland. At the same time there are beneficial edge effects associated with the garden habitats and the food and shelter found there - either naturally occurring or provided by the residents. The sports fields too, with their grass edges and insect life, can also provide support for wildlife. What is needed is an approach which looks to support boundary relationships for the environmental and biodiversity benefit of the Wood and its neighbours.

The size of a woodland has a direct impact on its ecology and, put simply, the larger the size, the more functional the woodland is in ecological terms. Greater size allows woodland specialists to persist, and provides territory opportunities sufficiently large to support a wide variety of flora and fauna. This in turn enables healthy populations to interbreed and secures genetic variation in species. It also means that specialist woodland species do not need to run the risk of moving across potentially dangerous non-wooded areas to reach new territories or locate food sources.

Many woodlands of this type are found as very small remnants, often highly degraded and quite often entirely isolated from similar woodland remnants. The size and therefore importance of Duchess Wood should also be viewed with regard to its connectivity to adjacent and other nearby woodland which, when taken as a whole, significantly increases its overall size and thus nature conservation value. It is also very valuable due to its setting on the edge of Helensburgh, providing a larger than average asset for interpreting woodland and natural heritage values to a wide audience which, if located further from the urban setting, would not be possible. This plan also identifies opportunities in the longer term for expansion of the Wood and improving connectivity, which could have a significant impact on the conservation value of the Wood.

Diversity

The diversity of Duchess Wood is high with three woodland communities identified within its boundary. The landforms, soils, hydrology and lack of high intensity modern management have resulted in a woodland that today provides a wide variety of habitats for both specialist and generalist species of flora and fauna. The mosaic of these differing habitats across the site results in a very varied and thus valuable asset in nature conservation terms across an area that is larger than average in an urban setting. Woodland of this size and diversity of communities could, and probably does, support a number of species of conservation interest, and more research is needed to identify conservation priorities in the Wood.

Naturalness

The assessment of naturalness is intimately connected to the assessment of woodland origin. The site can be classed as a combination of ancient and planted woodland. The overall character of the current woodland is semi-natural in most areas and native with remnants of non-native underplanting and self seeded Sycamore.

For the purposes of this evaluation, naturalness is measured by assessing the combination of woodland character, how long internal woodland conditions are likely to have prevailed, and, whether human impact has been detrimental to the functional ecology of the woodland and other habitats contained within it over time.

There is a strong association between the distribution of some plants and the history of woodland sites. The National Vegetation Classification (NVC)[i]-based survey of the Wood (see Annex 2) which was part of the 2007-11 MP identified that several of the species present in the Wood are woodland specialists that require continuous woodland interior conditions over long periods of time and are considered to be indicators of ancient woodland (Kirby et al 2005). These include Bluebell *(Hyacinthoides non-scriptus*), Wood Sorrel *(Oxalis acetosella*), Dog's Mercury *(Mercurialis perennis*), Water Avens *(Geum rivale*), Holly *(Ilex aquifolium*), Great Wood-rush *(Luzula sylvatica*), Red Campion *(Silene dioica*), Herb Robert *(Geranium robertianum*), Hard Fern *(Blechnum spicant*), Ivy *(Hedera helix*) and Honeysuckle *(Lonicera periclymenum*). These plants are distributed across the site, although some are localised, which suggest that woodland interior conditions have been present over a long period of time.

Although subject to many years of recreational use, commercial underplantings and the regeneration of Sycamore, the woodland groundflora in the majority of areas still survives intact and in fairly good condition with composition and abundance levels as one would expect for such woodland types. Recreational use has in the past impacted on some path edges through visitors avoiding wet areas and thus widening paths through usage (braiding). However, work has been undertaken to improve paths and their edges and this damage is localised in informal path areas. Where braiding has ceased, groundflora recovery has been excellent.

The commercial underplantings may include some specimens of Norway spruce in Compartment 4 and Scots pine in Compartment 11. The Scots pine however constitutes most of compartment 11, along with some oak, ash and birch. Holly, Elder, Hawthorn, Hazel, Bramble and Honeysuckle occur in the understorey and evidence site suitability to support native broadleaved woodland. Any operational activities within Compartment 11 need to consider the established Rookery and, although not subject to statutory protection, operations should only be implemented outwith the bird breeding season to avoid disturbing the population unnecessarily. Management of some of the younger broadleaved trees and restocking over time with more appropriate species should however be considered as a long-term objective to increase the diversity of tree, shrub, groundflora and fauna species on the site.

The nature conservation values of the site were assessed as medium to high in the 1997 management plan. The impact of human activities has not been so significant as to reduce the overall conservation values and future potential of the site and the Wood functions very well in terms of woodland and landscape ecology. Encouraging the use of the peripheral paths for most users of the Wood has helped the main blocks of woodland to remain relatively undisturbed. Active management has aided the conservation of the woodland and secured its status as a long established woodland for the foreseeable future. General trends in woodland recreation show that use is increasing year on year, so continued active management in Duchess Wood is considered essential to secure its long-term survival in an urban setting. Active planning and management will provide the necessary framework to balance nature conservation and public access objectives and ensure the site is sustainably managed to increase both biodiversity and social benefits.

In conclusion, the woodland is considered to be essentially semi-natural using the above identified criteria, despite human intervention, giving it a significantly high nature conservation value in an urban setting.

Rarity

The rarity of the Atlantic oakwoods is well documented and researched. Atlantic oakwoods are identified as habitat of high importance in the European Union's Habitats Directive. The oakwoods are restricted to the Atlantic coastal fringes of Britain, France, Ireland and Spain. They are described in the UK Biodiversity Plan as 'upland oakwoods', and are recognised as Britain's temperate rainforest.

Duchess Wood provides a more lowland example of Atlantic oakwood types, displaying a different character to the more exposed lichen-rich upland examples. Nonetheless, its rarity in global terms is recognised by all relevant authorities and its conservation value is significant.

Nature conservation value is added to the Atlantic Oakwood by the wet woodland types, the Upland Mixed Ashwood (W9) and Wet Woodland (W7) that together form an intricate mosaic of priority habitats across the site.

Refer to Diversity section below for rare species of conservation interest.

Fragility

Fragility is measured as a habitat's susceptibility to change. The inherent nature of woodland habitat, the specialist species it is composed of and supports, the intricate symbiotic relationships that occur between species means it is highly fragile and not robust against change.

The community relationships are often so closely interlinked from mycorrhiza in the soil to specialist invertebrates in the canopies, that if one species or population is removed, it could have serious implications for the community as a whole.

Duchess Wood has been subject to various types of management intervention in the past which have impacted on local ecological processes but not to the extent that ecological functionality has been impeded. However, it is currently fragile through neglect of invasive non-native species and inappropriate access in various areas.

Duchess Wood LNR, although large in terms of urban woodland resources, is fragile due to its small size in wider urban landscape terms. Surrounding urban development and other urban land uses can put unsustainable pressures on this type of site through imposed isolation, litter/fly tipping and inappropriate methods of access. Care is therefore required to ensure that such pressures are limited. Any loss of woodland cover

to further urban or other developments would have significant negative impacts on the woodland.

Typicalness/Representativeness

Duchess Wood LNR is a typical example of Atlantic Oakwoods, Upland Mixed Ashwoods and Wet Woodlands[ii] in an intricate mosaic. It may in fact be one of the better, less modified examples as the limited planting activities have not disrupted the wider functional ecology of the site. The site is therefore somewhat less typical of this type of woodland due to its less modified state which significantly increases its nature conservation value. The woodland does show typical successional characteristics, including those represented by a significant sycamore component which results in a decline in native groundflora.

Plant community composition is that typically expected for each of the types identified, and each community is fully represented with both the frequency and abundance of the characteristic species assessed as excellent.

(Included in this section in the 2007-11 MP were references to bluebells (included in Schedule 8 of the Wildlife & Countryside Act), and to Maidenhair spleenwort and two types of sub erect brambles[iii] as being uncommon species present in the Wood. This whole issue of protected species in the wood needs a more detailed review, as the array of controls seems very complex. The Bullfinch, for example, which is present in the Wood, is a UK Priority Species - on UKBAP.)

Position in Ecological Unit (Landscape Ecology)

The importance of landscape ecology with the emphasis of policies orientated towards integrated land management is now recognised and non-isolation from similar populations and the distances between them therefore cannot be underestimated. In this situation, Duchess Wood performs an important role in local landscape ecology. Its extent and shape provides an excellent refuge for specialist woodland species. Although it is bounded by urban housing to the east and south and a railway line to the north, it connects (across/under the railway) to Ardencaple Wood to the north, following the burn, essentially creating a much larger continuous woodland habitat. There may also be an opportunity to connect Duchess Wood with the broadleaved woodland directly to the west above Torwoodhill, which would create a continuous woodland cover of approximately 50-60ha.

Duchess Wood LNR is the most significant remnant refuge from which populations can expand to facilitate genetic outbreeding within these other smaller woodland remnants, thus making it important in nature conservation terms.

Recorded History

The area of which Duchess Wood is a part is has for many years been part of the Ardencaple estate[iv]. The estate was sold in 1767 to John, 4th Duke of Argyll who bestowed it on his son Lord Frederick and on his death, it passed into the possession of Lord Frederick's nephew, Lord John Campbell, who in 1839 became the 7th Duke and moved to Inverary, but retained ownership of the Ardencaple estate. On his death, in 1847, his wife Ann(e), the Dowager Duchess of Argyll, moved back to Ardencaple Castle, where she lived for a number of years. The estate was sold to Sir James Colquhoun in 1862, and it is assumed that the Dowager Duchess moved elsewhere; she died in 1874. Local research suggests that Duchess Wood may be named after Ann. It is worth noting this history here, as improvements in the Wood, and some of the specimen tree planting, may date back to this 15 year period from 1847-62.

In the year in which this updated plan comes into effect, 2012, the wood will have been in the ownership of the Colquhouns of Luss for 150 years. Unfortunately, Luss Estate records were largely destroyed in a fire some years ago, and it has not so far been possible to investigate the history of the woodland area in any detail. Old maps have been consulted (Appendices 7, 8 & 9) and although woodland cover is shown on the area of the site, it appears to be restricted to the riparian areas along the eastern and western boundaries. The trees also appear to be associated with Ardencaple (Castle) Estate on maps drawn by Charles Ross, 1777. The 1898-1904 OS map appears to show the boundaries of the Wood almost exactly as we know them today, except that the northern boundary is defined by the old stone dyke, which is still there. Further research into the history of the estate would help confirm the longevity of the woodland, and throw light on its ecology, and might also reveal when the various stone dykes were built.

It is also worth referring to another aspect of the history of the Wood, namely that a branch of the Highlandman's Road from Glen Fruin to the coast passed down the Ardencaple Farm road, then through the Wood, roughly following the east side path, over the stone bridge roughly half way down the path. Little is known of this route, but research might reveal when improvements took place and the bridge was built.

Potential value

Value is often associated with the restoration potential of woodlands where previous use or management has had a degrading influence. The composition and condition of much of Duchess Wood can be classed as excellent, and the potential value of the woodland as a whole could be increased significantly by a more positive approach to woodland management to progressively remove invasive species (including sycamore) and re-establish a more appropriate woodland mix.

In terms of recreation, the site has high value due to its proximity to Helensburgh and Rhu and its attraction to tourists. The paths in the wood have been linked in to the wider footpath network to the west and north and work on these links will continue during the period of this updated plan.

In terms of education, the site is already subject to use by the local schools, and it is hoped that this can be increased. The provision of adequate high quality interpretation will also increase the educational value of the site to a wider informal audience.

The Wood also offers valuable opportunities for research, to build upon the work that has already been done. This will help in the enhanced management of the Wood.

Intrinsic Appeal

The intrinsic appeal of particular locations is subjective by nature. In this instance, the assessments above have identified intrinsic appeal values on several levels.

The woodland has significant value to the local community, evidenced by the heavy use it receives and the interest shown by the community when the Local Nature Reserve consultation was undertaken. The woodlands' accessibility and proximity to Helensburgh and Rhu adds appeal as it is accessible on foot to the local population. The size, composition, condition and nature of the woodland also means that the visitor experience is one of semi-wilderness rather than urban woodland and although sounds from the town are heard, the isolation and effect of muffling provides for a relaxing, healthy and interesting visit.

A land use consultants' report commissioned by LCG on open spaces identified 51 open spaces in and around Helensburgh. Duchess Wood was one of only four spaces recorded as "most valued" and one of only eight assessed as "important".

The Scottish Biodiversity List includes social criteria identified in a 2005 survey which indicate the species and habitats which were most important to the Scottish public.[v] The Wood has three of the top ten animals, including the No 1, roe or red deer, and seven of the top ten plants; woodland is ranked three in the habitat list with rivers and streams at five. This gives a sense of the overall intrinsic appeal of the wood.

The improvements to the Wood's paths now provide a link from the south-west of Helensburgh to the round-town network of countryside paths created during the past 15 years through initiatives of the Helensburgh Green Belt Group, the Access Forum / Trust, Lower Clyde Greenspace and the Employability Team, with the support of relevant landowners. The Green Belt Group's leaflet "The Countryside Around Helensburgh" and the Access Trust's footpath map illustrate the progress that has been made. It also now provides access to the new 50 km Three Lochs Way.

The location of Duchess Wood LNR in the urban landscape provides ideal opportunities to link woodland and access management with wider social inclusion agendas such as the provision of all ability access routes, local, regional and national social health and fitness programmes and environmental volunteer health groups such as the Green Gym initiatives. The woodland also has significant value in terms of landscape character, providing a green wooded backdrop for Helensburgh and making the immediate housing estates more pleasant places to live. The history of Duchess Wood provides linkages with the past and provides glimpses of historical woodland management techniques such as coppicing.

Annex 2

THE NATIONAL VEGETATION CLASSIFICATION: GROUND VEGETATION & ENVIRONMENTAL ATTRIBUTES

The 2007-11 MP contained a section detailing the results of a survey of the wood, using the National Vegetation Classification (NVC) framework. A summary of this description is given below as it will continue to inform the management of the Wood during the next five year period and beyond. The "W" prefix denotes a particular woodland classification.

W7 Alder-Ash-Yellow pimpernel woodland (*Alnus glutinosa – Fraxinus excelsior – Lysimachia nemorum*)

Sub-community W7b-c: **Tufted Hair-grass** (*Deschampsia cespitosa)*

Origin & Structure

This sub-community is typical of moist to very wet mineral soils and often occurs in wet flushes on slopes where drainage is temporarily impeded and is associated most with gradation to neighbouring W11 Oak and W9 Ash woodland types around the banks of burns. Alder rarely entirely dominates and tends to occur with Ash, Downy birch and Sessile Oak dependent on very local flushing.

Overstorey Species and Age Classes

Alder, Ash, Sessile Oak. Aged between 5-50 years.

Size Classes

Size classes range from seedling regeneration and pole stage examples to mature specimens at approximately 20m. The canopy has quite a low character in places although individual Oak and Ash are reaching 25m.

Sub-storey structure

The sub-storey is excellent in small pockets with Rowan, Hazel, Elder and Birch occurring frequently. An odd Sycamore is also present but does not dominate as it does in other areas of the wood.

Under-storey composition

The under-storey is more sporadic, although younger Hazel and Rowan occur. Some are low growing neglected coppice stools.

Ground Layer

The ground layer is typical for W7c type communities. Tufted Hair–Grass (*Deschampsia cespitosa),* Wood-Sorrel *(Oxalis acetosella),* Broad Buckler Fern *(Dryopteris dilatata),* Meadowsweet *(Filipendula ulmaria),* Holly *(Ilex aquifolium),* Great Wood-Rush *(Luzula sylvatica),* Wood Horsetail *(Equisetum sylvaticum),* and Wild Honeysuckle *(Lonicera perclymenum)* occur frequently. Dense pockets of Dog's Mercury *(Mercurialis perennis)* provide linkage to W9 Ash types in intricate mosaics.

Threats and Trends

Invasion by *Rhododendron ponticum* presents an immediate threat as this will outcompete and shade all native flora, acidifying soils over time. There are some quite large areas of rhododendron within the Wood, mainly in compartments 4 and 8. Invasion by Japanese Knotweed (*Polygonum cuspidatum),* present on the car park burn, and in a few other small pockets will have similar effects to *Rhododendron* but poses a more serious threat due to its highly invasive nature and ability to spread rapidly by rhizomes. Laurel (*Prunus lusitanica)* also occurs and although non-native and shade bearing, its ability to spread is not as great as the species named above. However, over time it can also cause a decline in native flora.

The above species are all present on site and require appropriate control; a start has been made in the current 5YP period, but further efforts are needed.

Trampling by woodland users is a continuing problem and can damage the groundflora. Where desire-lines have been created through persistent use, groundflora has in places been eradicated, leading to erosion is some areas and waterlogged pools in others.

W9 Ash-Rowan- Dog's mercury woodland (*Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis)*

Sub-community W9a *Typical sub-community*

Origin & Structure

This sub-community represents the most typical of the W9 woodland type. Ash dominates although Oak, Rowan, Wych elm and Birch are locally frequent. This woodland type is generally restricted to the immediate riparian areas, particularly the deeper gorges within Duchess Wood. It is also the dominant woodland type found in compartment 6 to the east which displays a very rich groundflora.

Over-storey Species and Age Classes

The over-storey has a distinct character dominated by Ash with less frequent Oak, Rowan and Wych elm. Willows and Alder occur in the wettest pockets within the community creating intricate mosaics with W7 woodland types.

Age classes range from seedling stage to 80 years.

Size Classes

In pockets, the Ash reaches 25m in height. Other species tend to appear closer to 15-20m in height which gives the canopy a distinct two layered appearance.

Sub-storey structure

The sub-storey consists of younger specimens of all the species in the canopy.

Under-storey composition

The understorey is variable but includes Hazel, Holly, Rowan and occasional Birch in the drier areas, the wetter areas having a more open character.

Ground Layer

Ground flora is dominated by Dog's mercury (*Mercurialis perennis),* Wood sage *(Teucrium scorodonia),* Herb Robert *(Geranium robertianum),* Red campion *(Silene dioica),* Bluebell *(*Hyacinthoides *non-scripta),* Wood sorrel *(Oxalis acetosella),* Bramble *(Rubus fruticosus),* Wood aven *(Geum urbanum),* Barren

strawberry *(Potentilla sterilis),* Stinging nettle *(Urtica dioica),* Dog-violet *(Viola riviniana)* providing a rich and varied appearance. These species occur in very close association with both the Oak (W11) and Alder (W7)woodland types and create intricate mosaics across the woodland.

Some ferns, including Lady-fern (*Athyrium filix-femina),* Hard fern *(Blechnum spicant),* Male-fern *(Dryopteris felix-mas)* and Broad Buckler fern (*Dryopteris dilatata)* are frequent, particularly in more shaded and damp pockets.

A high frequency and abundance of liverworts, mosses and ferns gives a rich and 'green' appearance to the community in late season.

Threats and Trends

The spread of *Rhododendron ponticum,* Japanese knotweed *(Polygonum cuspidatum)* and Portugal laurel *(Prunus lusitanica)* may pose a threat if these species are not controlled.

W11 Oak-Birch-Wood sorrel woodland *(Quercus petraea – Betula pubescens – Oxalis acetosella)*

Sub-community W11a Broad Buckler fern (*Dryopteris dilatata)* sub-community

Origin & Structure

This is the most abundant sub-community found within Duchess Wood. It occurs from the north of the site to the south and appears in an intricate mosaic with more linear communities of W9 and W7 throughout. This community is rich in appearance although in many areas the abundance of shade bearing Sycamore has adversely affected the typical groundflora. Spring flowering species, such as Bluebell *(Hyacinthoides non-scripta),* Wood sorrel *(Oxalis acetosella)* and Wood anemone (*Anemone nemorosa)* are likely to be less affected due to their ecology which involves growth and flowering before trees are in full leaf. However, later flowering species appear less abundant than they would if Sycamore were not present.

Over-storey Species and Age Classes

Over-storey species are dominated by Oak with Rowan, Ash and Birch frequent. Non-native specimens include Norway spruce, sycamore, sweet chestnut, lime, beech and larch. The origin of the Scots Pine is unknown, but their character suggests non-native origin, perhaps German. Although present in the other NVC types, sycamore is most abundant in the oak woodland areas, that is to say that although sycamore may be the dominant canopy species, the groundflora is that of typical W11 oakwood.

Three large old Lime trees occur in compartment 5 that may have been planted adjacent to the old road that passed close by running north/south. An interesting layered, possibly ancient neglected coppice, of Sweet chestnut occurs on the western boundary.

Ages range from seedling (sporadic) to possibly 100+ years.

Size Classes

The average height of the canopy is 15-25m although this varies considerably throughout.

Sub-storey structure

Sub-storey species are less frequent than one would expect, most likely due to the competition from significant presence of sycamore. Where the sub-storey occurs, Rowan, Birch and Holly can locally dominate.

An area of Birch dominated coppice occurs to the west in Compartment 4. Although Birch dominates, groundflora indicates it is not a Birch woodland type, rather a Birch dominated pocket of W11.

Under-storey composition

Where the understorey is not significantly affected by sycamore, typical species are abundant, particularly Hazel.

Ground Layer

The ground layer consists of sporadic Bracken *Pteridium aquilinum),* with Bluebell (*Hyacinthoides non-scripta),* Wood sage *(Teucrium scorodonia),* Broad Buckler fern *(Dryopteris dilatata),* Bramble *(Rubus fruticosus),* Wood aven *(Geum urbanum),* Wood sorrel *(Oxalis acetosella),* Hard-fern *(Blechnum spicant),* Tufted Hair-grass *(Deschampsia cespitosa),* Foxglove *(Digitalis purpurea)* and Wild honeysuckle (*Lonicera periclymenum)*, with oak, ash, hazel rowan and alder seedlings present.

Threats and Trends

Sycamore often occurs within this woodland type. However, it is not a native to Scotland, rather a naturalised species that, due to its prolific seeding capabilities and shade bearing form, often out-competes native woodland types and becomes the climax species over time. Although sycamore can provide some biodiversity benefit, it cannot provide the same level of benefit, even as a component, as an intact and ecologically functioning oak woodland.

Annex 3

ARGYLL AND BUTE LOCAL BIODIVERSITY ACTION PLAN 2010-2015

The A&B Local Biodiversity Action Plan (LBAP)[vi] identifies woodland as a priority habitat and emphasises the vital role that woodlands play in conserving threatened plants, animals and fungi. The LBAP recognises that our woodlands hold one of the most diverse ranges of moss, liverwort and lichen communities in the world and are home to many important protected and priority species. Although focused on the opportunities created by the harvesting of commercial forests, the plan's vision of increasing woodland habitat networks to help reverse the pattern of habitat fragmentation that has occurred over the centuries is very relevant to the future management of Duchess Wood and to adjacent woodlands.

The LBAP identifies a number of factors limiting the biodiversity of forest and woodland ecosystems, including:

- Limited extent and fragmented nature of native woodland habitat.
- Lack of structural diversity and deadwood.
- Limited natural regeneration of some woodlands.
- Limited or inappropriate management of woodland, including woodland grazing.
- Spread of invasive species, particularly Rhododendron, which forms dense thickets that out-compete native shrubs and ground flora and casts a dense shade, beneath which lichens and bryophytes are unable to persist.
- Inappropriate woodland management, e.g. coppicing Atlantic oakwood and hazelwood.
- Climate change.

The LBAP also tabulates priority species against different types of woodland habitat; none of the plant priorities are known at present in Duchess Wood, and of the birds, the black grouse and the cuckoo are known in the vicinity. Four types of bat are listed, but the species occurring in the Wood are not known.

The Work Programme table in the LBAP includes a number of actions, some of which directly or indirectly may have an impact on this 5YP:

- Native woodland expansion
- Control of invasive species
- Native woodland survey of Scotland Forest education initiative (The local group is aiming to re-establish new activities.)
- The pearl-bordered fritillary survey 2010-2015
- Bat box project
- Fungi, lichen and bryophyte management advice
- Dead wood management advice
- Bryophyte and lichen ID training and surveys
- Woodland management advice.

Annex 4

CHECKLISTS OF SPECIES IN DUCHESS WOOD

It should be noted that the FODW checklists are not exhaustive in coverage but are seen as evolving lists which can be amended at any time. Those concerning flowers, flowering shrubs, fungi and bryophytes are based on initial professional surveys (copies of reports available for inspection). Although some attempt has been made to cover seasonal changes, the potential for gradual extension of the checklists is a recognised feature. The lists are all available on the FODW website.

Bird Checklist

Common Name/ *Scientific Name*

Blackbird *Turdus merula*
Blackcap *Sylvia atricapilla*
Blue Tit *Parus caeruleus*
Bullfinch *Pyrrhula pyrrhula*
Buzzard *Buteo buteo*
Carrion Crow *Corvus corone*
Chaffinch *Fringilla coelebs*
Coal Tit *Parus ater*
Collared Dove *Streptopelia decaocto*
Dunnock *Prunella modularis*
Goldcrest *Regulus regulus*
Goldfinch *Carduelis carduelis*
Great Spotted Woodpecker *Dendrocopus major*
Great tit *Parus major*
Greenfinch *Carduelis chloris*
Grey Wagtail *Motacilla cinerea*
Jay *Garrulus glandarius*
Long-tailed tit *Aegithalos caudatus*
Magpie *Pica pica*
Mistle Thrush *Turdus viscivorus*
Pheasant *Phasianus colchicus*
Pied Wagtail *Motacilla alba*
Redwing *Turdus iliacus*
Robin *Erithacus rubecula*
Rook *Corvus frugilegus*
Siskin *Carduelis spinus*
Song Thrush *Turdus philomelos*
Sparrowhawk *Accipiter nisus*
Tawny Owl *Strix aluco*
Tree Creeper *Certhia familiaris*
Willow Warbler *Phylloscopus trochilus*
Woodcock *Scolopax rusticola*
Woodpigeon *Columba palumbus*
Wren *Troglodytes troglodytes*

Bryophytes (Mosses and liverworts) Checklist

Scientific Name/Common Name

Amphidium mougeotii Mougeot's Yoke-moss
Aneura euromaxima (proposed name No Common Name
Atrichum undulatum Common Smoothcap
Brachythecium rutabulum Rough-stalked Feather-moss

Calliergonella cuspidate Pointed Spear-moss
Calypogeia arguta Notched Pouchwort
Campylopus pyriformis Dwarf Swan-neck Moss
Cephalozia bicuspidate Two-horned Pincerwort
Cephalozia lunulifolia Moon-leaved Pincerwort
Cephaloziella sp Threadwort
Chiloscyphus polyanthos St Winifrid's Moss
Cololejeunea minutissima Minute Pouncewort
Conocephalum conicum s.l. Great Scented Liverwort
Dicranella heteromalla Silky Forklet-moss
Dicranum scoparium Broom Fork-moss
Diplophyllum albicans White Earwort
Fissidens bryoides var. curnovii Curnow's Pocket-moss
Fissidens taxifolius Common Pocket-moss
Fontinalis antipyretica var. antipyretica Greater Water-moss
Frullania dilatata Dilated Scalewort
Heterocladium heteropterum Wry-leaved Tamarisk-moss
Hookeria lucens Shining Hookeria
Hygrohypnum luridum Drab Brook-moss
Hyocomium armoricum Flagellate Feather-moss
Hypnum andoi Mamillate Plait-moss
Isothecium myosuroides Slender Mouse-tail Moss
Kindbergia praelonga Common Feather-moss
Lejeunea cavifolia Micheli's Least Pouncewort
Lejeunea lamacerina Western Pouncewort
Lepidozia reptans Creeping Fingerwort
Lophocolea bidentata Bifid Crestwort
Lophocolea heterophylla Variable-leaved Crestwort
Lophocolea semiteres Southern Crestwort
Masupella emarginata var. emarginata Notched Rustwort
Metzgeria conjugata Rock Veilwort
Metzgeria consanguinea Whiskered Veilwort
Metzgeria furcata Forked Veilwort
Metzgeria violacea Blueish Veilwort
Microlejeunea ulicina Fairy Beads
Mnium hornum Swan's-neck Thyme-moss
Nowellia curvifolia Wood-rust
Orthodontium lineare Cape Thread-moss
Orthotrichum affine Wood Bristle-moss
Orthotrichum pulchellum Elegant Bristle-moss
Oxyrrhynchium hians Swartz's Feather-moss
Pellia endiviifolia Endive Pellia
Pellia epiphylla Overleaf Pellia
Plagiochila asplenioides Greater Featherwort
Plagiochila porelloides Lesser Featherwort
Plagiomnium undulatum Hart's-tongue Thyme-moss
Plagiothecium curvifolium Curved Silk-moss
Plagiothecium undulatum Waved Silk-moss
Platyhypnidium riparioides Long-beaked Water Feather-moss
Pogonatum aloides Aloe Haircap
Polytrichastrum formosum Bank Haircap
Polytrichum commune Common Haircap
Pseudoscleropodium purum Neat Feather-moss
Racomitrium aciculare Yellow Fringe-moss
Radula complanata Even Scalewort
Rhizomnium punctatum Dotted Thyme-moss
Rhytidiadelphus loreus Little Shaggy-moss

Rhytidiadelphus squarrosus Springy Turf-moss
Saccogyna viticulosa Straggling Pouchwort
Scapania gracilis Western Earwort
Scapania scandica Norwegian Earwort
Scapania umbrosa Shady Earwort
Scapania undulata Water Earwort
Sciuro-hypnum plumosum Rusty Feather-moss
Tetraphis pellucida Pellucid Four-tooth Moss
Thamnobryum alopecurum Fox-tail Feather-moss
Thuidium tamariscinum Common Tamarisk-moss
Ulota bruchii Bruch's Pincushion
Ulota crispa Crisped Pincushion
Ulota drummondii Drummond's Pincushion
Ulota phyllantha Frizzled Pincushion

Ferns checklist

Common Name/*Scientific Name*

Bracken *Pteridium aquilinum*
Hard – fern *Blechnum spicant*
Hart's - tongue *Phyllitis scolopendrium*
Hybrid Polypody *Polypodium x mantoniae*
Intermediate Polypody *Polypodium interjectum*
Male – fern *Dryopteris filix – mas*
Scaly Male – fern *Dryopteris affinis*

Fungi checklist

Scientific Name/Common Name

Auricularia auricula-judae Jelly Ear
Baeospora myosura Conifercone Cap
Chondrostereum purpureum Silverleaf Fungus
Coprinopsis laanii No common name
Cortinarius obtusus No common name
Crepidotus epibryus No common name
Crepidotus mollis Peeling Oysterling
Crepidotus variabilis Variable Oysterling
Dacrymyces stillatus Common Jelly Spot
Flammulina velutipes Velvet Shank
Fomes fomentarius Hoof Fungus / Tinder Bracket
Ganoderma applanatum Artist's Bracket
Gymnopilus penetrans Common Rustgill
Heterobasidion annosum Root Rot
Hymenochaete corrugata Glue Crust
Hypoxylon fragiforme Beech Woodwart
Hypoxylon fuscum Hazel Woodwart
Kretzschmaria deusta Brittle Cinder
'Kuehneromyces mutabilis Sheathed Woodtuft
Laccaria laccata Deceiver
Laetiporus sulphurous Chicken of the Woods
Mycena arcangeliana Angel's Bonnet
Mycena filopes Iodine Bonnet
Mycena galericulata Common Bonnet
Mycena inclinata Clustered Bonnet
Mycena vitilis Snapping Bonnet

Nectria cinnabarina Coral Spot
Phellinus ferreus Cinnamon Porecrust
Piptoporus betulinus Birch Polypore / Razorstrop Fungus
Psathyrella piluliformis Common Stump Brittlestem
Psathyrella sarcocephala No common name
Rhytisma acerinum Sycamore Tarspot
Russula nigricans Blackening Brittlegill
Schizophyllum commune Splitgill
Schizopora paradoxa Split Porecrust
Scleroderma citrinum Common Earthball
Scutellinia crinita No common name
Stereum hirsutum Hairy Curtain Crust
Stereum rugosum Bleeding Broadleaf Crust
Trametes versicolor Turkeytail
Tremella foliacea Leafy Brain
Tubaria romagnesiana No common name
Xylaria hypoxylon Candlesnuff Fungus
Xylaria longipes Dead Moll's Fingers
Xylaria polymorpha Dead Man's Fingers

Trees checklist

Scientific Name/Common Name

Acer platanoides Norway Maple
Acer pseudoplatanus Sycamore
Aesculus hippocastanum Horse Chestnut
Alnus glutinosa Alder
Betula pendula Silver Birch
Betula pubescens Downy Birch
Castanea sativa Sweet Chestnut
Corylus avellana Hazel
Cotoneaster horizontalis Wall Cotoneaster
Crataegus monogyna Hawthorn
Cytisus scoparius Broom
Fagus sylvatica Beech
Fraxinus excelsior Ash
Hedera algeriensis Algerian ivy
Hedera helix Ivy
Hydrangea macrophylla Hydrangea
Ilex aquifolium Holly
Ilex X altaclerensis Highclere Holly
Larix X marschlinsii Hybrid larch
Leycesteria Formosa Himalayan Honeysuckle
Ligustrum ovalifolium Privet
Lonicera nitida Japanese Honeysuckle
Lonicera periclymenum Honeysuckle
Lonicera pileata Box- leaved Honeysuckle *Philadelphus coronarius* Mock Orange
Picea abies Norway Spruce
Pinus sylvestris Scots Pine
Prunus avium Gean
Prunus laurocerasus Cherry Laurel
Prunus spinosa Blackthorn
Quercus robur Pedunculate Oak
Rhododendron ponticum Rhododendron
Ribes nigrum Black Currant
Ribes rubrum Red Currant

Ribes sanguineum Flowering currant
Rubus fruticosus agg Bramble
Salix caprea Goat Willow
Sambucus nigra Elder
Sambucus racemosa Red- berried Elder
Sorbus aucuparia Rowan
Sorbus X intermedia Swedish Whitebeam
Taxus baccata Yew
Tilia X vulgaris Common Lime
Tsuga heterophylla Western Hemlock
Ulex europaeus Gorse
Ulmus glabra Wych Elm
Vinca major Lesser Periwinkle
Vinca minor Greater Periwinkle

Flowers checklist

Scientific Name/Common Name

Aegopodium podagraria Bishop's-Weed/Ground Elder
Ajuga reptans Bugle
Alchemillla mollis Soft Lady's Mantle
Allium ursinum Ramsons
Carex pendula Pendulous Sedge
Carex sylvatica Wood–Sedge
Chrysosplenium oppositifolium Opposite-leaved Golden Saxifrage
Conopodium majus Pignut
Cortaderia richardii Early Pampas-Grass
Corylus avellana Hazel
Cotoneaster bullatus Hollyberry Cotoneaster
Cotoneaster simonsii Himalayan Cotoneaster
Cytisus scoparius Broom
Dactylis glomerata Cock's-Foot Grass
Deschampsia cespitosa Tufted Hair-Grass
Digitalis purpurea Foxglove
Fallopia japonica Japanese Knotweed
Ficaria verna ssp fertilis Lesser Celandine
Ficaria verna ssp verna Lesser Celandine, with bulbils
Filipendula ulmaria Meadowsweet
Fuchsia magellanica Hardy Fuchsia
Galanthus nivalis Snowdrop
Galanthus nivalis 'Flore-pleno' Double Snowdrop
Galium odoratum Woodruff
Geranium robertianum Herb Robert
Geum urbanum Wood Aven
Hedera helix Common Ivy
Hedera 'Hibernica' Irish Ivy
Helleborus x hybridus Lenten Rose hybrid
Heracleum sphondylium Hogweed
Hyacinthoides x massartiana Hybrid Bluebell
Hyacinthoides non-scripta Bluebell
Hypericum x inodorum Tall Tutsan
Hypochaeris radicata Cat's-Ear
Lamiastrum galeobdolon ssp. argentatum Aluminium/Tricoloured Archangel
Leycesteria formosa Himalayan Honeysuckle
Ligustrum ovalifolium Garden Privet
Lonicera nitida Wilson's/Hedging Honeysuckle

Lonicera periclymenum Wild Honeysuckle
Lonicera hybrid Garden hybrid Honeysuckle
Luzula sylvatica Great Wood-Rush
Lysimachia nemorum Yellow Pimpernel
Meconopsis cambrica Welsh Poppy
Mercurialis perennis Dog's Mercury
Narcissus (various garden types) Daffodil
Oxalis acetosella Wood-Sorrel
Persicaria wallichii Himalayan Knotweed
Primula vulgaris Primrose
Prunella vulgaris Selfheal
Prunus laurocerasus Cherry Laurel
Ranunculus repens Creeping Buttercup
Rhododendron ponticum Rhododendron/Wild Rhododendron
Ribes uva-crispa Gooseberry
Rubus fissus A Sub-Erect Bramble
Rubus idaeus Raspberry
Rubus scissus A Sub-Erect Bramble
Rubus ssp Brambles
Rumex acetosa Common Sorrel
Rumex obtusifolius Broad-Leaved Dock
Sambucus nigra Elder
Sambucus racemosa Red-Berried Elder
Tolmiea menziesii Pick-a-back plant
Urtica dioica Nettle
Vinca major Greater Periwinkle
Vinca minor Lesser Periwinkle

ANNEX 5

Friends of Duchess Wood paper: Consideration of boundary/neighbour issues

Duchess Wood is bordered on its east side by a number of residential streets. From the north, they are Macleod Crescent, Macleod Drive, Duchess Drive, and Duchess Park; as the eastern boundary continues south, it runs alongside the end property in Millig Street, then after the garages, alongside Strathclyde Court and its garden. Kathleen Park in the south west corner also borders the Wood, although it is separated from the Wood by the south banks of the burn which runs behind the houses.

The northern boundary is formed by the West Highland railway line, and the southern boundary mainly by sports fields; this note is mainly about the eastern residential boundaries.

The Macleod Crescent properties are at the top of the steep bank that runs down to the burn in that area. There are trees along that bank, one of which fell in the December 2011 gale; A&BC felled a number of other trees following this gale and more fell in January 2012. The area has become a little inaccessible in recent years, since the Thurgood Bridge was installed, thereby directing walkers to a more suitable route.

Some of the Macleod Drive properties border the north-south boundary of the wood below the stone bridge. An old stone dyke forms the boundary for much of this length, and there are mature trees close to the boundary, including a very large old beech.

The rest of the Macleod Drive properties border the north boundary of the "hammerhead" and a fair sized ditch runs along much of this length. The Duchess Drive properties border the east boundary of the hammerhead, and there are numerous mature trees close to the boundary, of various species. In the area of the Macleod Drive/Duchess Drive corner, there are a number of large pines; one of these is isolated from the rest and may be more vulnerable. A large branch from an oak tree fell into the back garden of one of the Duchess Drive houses in the 23 May 2011 storm and further trees and large branches fell into Duchess Drive properties in the December 2011 and January 2012 gales. Again, A&BC took protective action after these storms. The Duchess Park (and the end of Queen Street) properties border the south boundary of the hammerhead; there are numerous mature trees along this boundary. A number of mature trees and large branches fell during the 2011/2012 gales, mostly into the Wood, but some into gardens, particularly at the north west corner of Duchess Park. The hammerhead is less accessible than the rest of the Wood and has only informal paths, which has made dealing with storm damage more difficult.

South of the hammerhead, the end two houses in Duchess Park and the end house in Millig Street border the wood. The eastern boundary continues through the Strathclyde Court garages into the Scots Pine plantation between the garages and Rhu Road Higher, where the border is with the gardens of Strathclyde Court. This is a mixed, scrubby area under the Scots/Corsican pines and the rookery, and there have been incidents here in the past with branches falling into Strathclyde Court. A number of large trees fell in this area in the 2011/12 storms, particularly the January 2012 gale, and the upper parts of some of the trees landed in the gardens of Strathclyde Court; again A&BC has dealt with the immediate remedial work in relation to the trees crossing into the gardens, although further heavy work is needed to begin to clear the woodland floor.

Most of the properties that border the wood were built between the 60s and early 80s, while one or two predate this. Over the last 30-40 years the trees in the wood, particularly the sycamores and birches, have grown substantially, and the shading effect on gardens has increased significantly. The Macleod Drive houses have the wood on their south side, and suffer particularly from shading and light loss, while those houses

which border a western boundary of the wood also suffer in the late afternoon and evenings. The issue about light is similar to the concerns over high hedging which have taken up parliamentary time in recent years. On the other hand, the wood gives considerable shelter to all the properties.

We understand that up until the first management agreement was signed 15 years ago, Luss Estates staff inspected the wood boundaries each year and dealt with significant overhanging branches or suspect trees, but this has not happened on a regular basis since then. It is possible that as a result, there are now more overhanging branches and potentially dangerous trees than during the first 20-30 years of the housing boundaries.

On the other hand, there are also places where residents have used the wood to dump mainly garden waste over their boundary; there are one or two examples of scrap machinery, but not many; and with better access these could easily be removed. Invasive species may have entered the Wood from gardens and one of the aims should be to get greater understanding and cooperation between neighbouring residents and the management needs of the wood. We need to remember that gardens are in essence an extension of the wood and residents can help protect and improve wildlife in the wood, particularly the bird life.

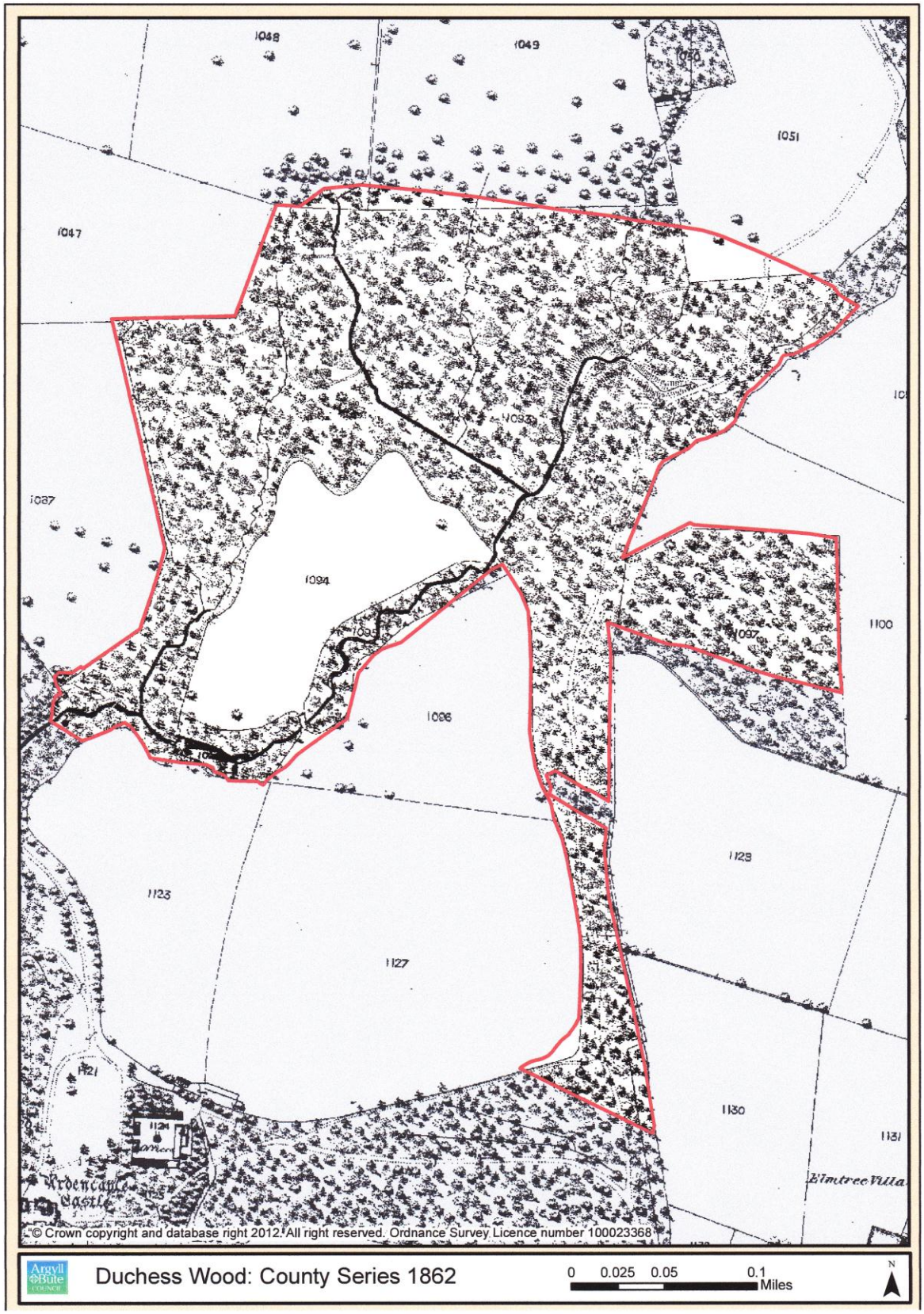
In terms of the management plan, a thorough boundary survey is needed to better inform future actions. Thinning the boundary areas; removing dangerous trees; removing some of the trees which are very close to boundaries; removing overhanging branches; and making access around the boundaries easier for maintenance, should all be considered.

The updated management plan needs to take boundary issues seriously; while there is a risk that some residents might use management plan commitments to seek an unfair level of Council resource, this is outweighed by the potential risks of falling trees and branches if the boundary zone is not managed. The storms of 2011/12 have clearly demonstrated the scale of the problem and the risks involved.

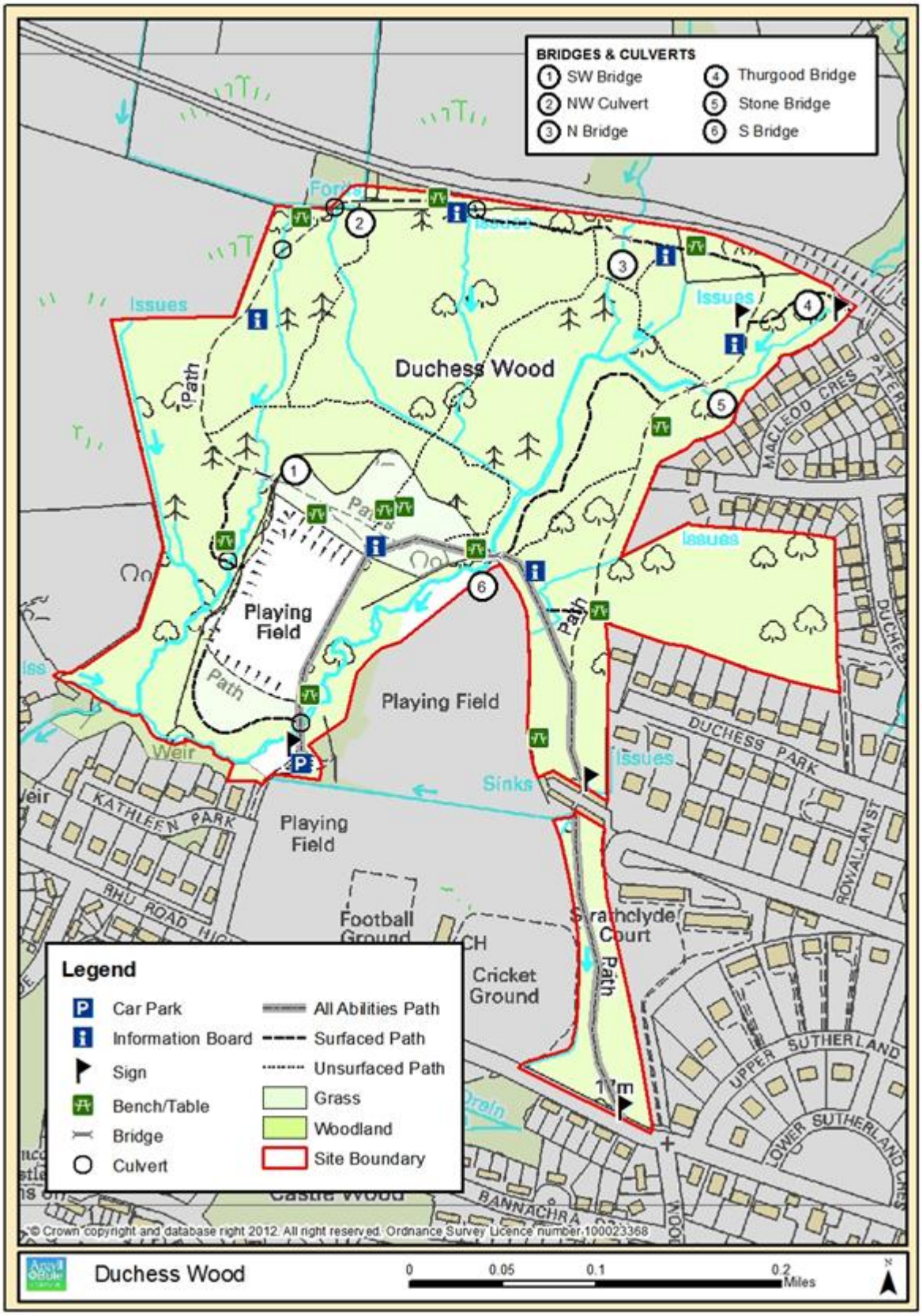
Proper boundary management will bring gains for biodiversity in the Wood; gains in amenity for residents; and greater support for the aims of the management plan.

ANNEX 6 Maps

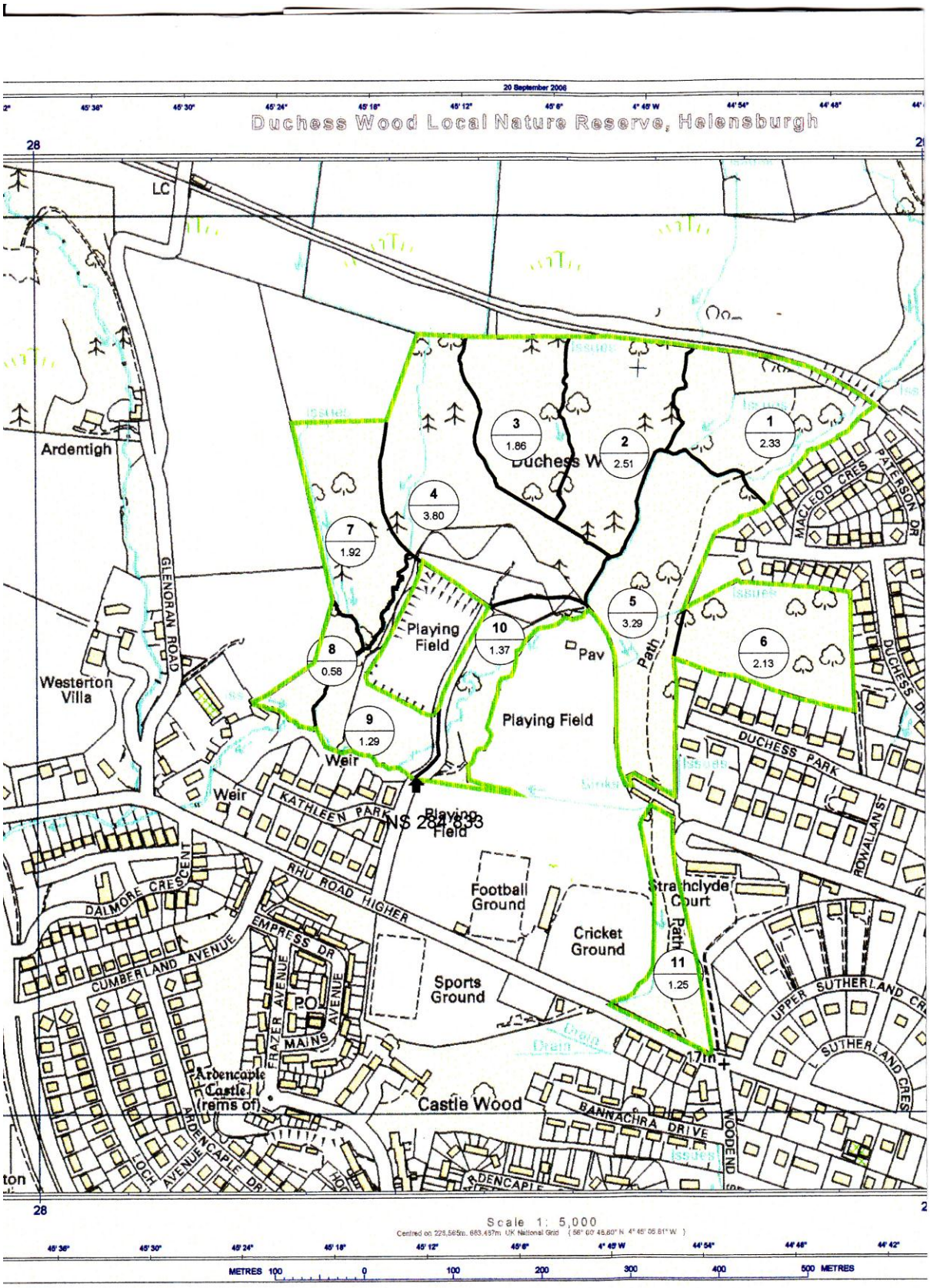
Ordnance Survey County Series 1862



Map of Duchess Wood, prepared by John Dale, A&BC, 6.9.2012



Compartment map from 2007-2011 Management Plan



ANNEX 7

Duchess Wood Local Nature Reserve maintenance schedule

1. What elements of the woodland should be subjected to *routine* maintenance by Argyll and Bute Council?
    - Regular inspections of paths for safety issues
    - Damage and rectification to paths which cause safety issues/significant trip hazard
    - Risk arising from trees overhanging paths or properties
    - Bins
    - Uplift of fly tipping or larger accumulations of litter.

2. What elements would benefit from an initial one-off input from Argyll and Bute Council?
    - Japanese Knotweed eradication, with some follow-up visits
    - Annual tree survey - paths and alongside properties.

3. What elements could be maintained through sources other than Argyll and Bute Council?
    - General keeping tidy activities could be tackled through the FODW, BTCV, Green Gym, Employability.
    - Damage to paths which cause safety issues/significant trip hazard
    - Larger scale path maintenance could be tackled by Employability or BTCV teams or, in exceptional circumstances, contractors. In the case of contractors this would be dependent on additional funding being secured by LCG/FODW.
    - Culverts can be cleared through the input of FODW.
    - Leaf raking/clearing fallen branches by FODW/Green Gym/BTCV
    - Litter on or adjacent to the paths managed by FODW
    - Strimming alongside picnic benches by FODW

Assessment of current partnership capacity levels

Argyll and Bute Council

A one-off sum of funding is available towards maintenance support of Duchess Wood. This funding should be used as carefully as possible to ensure that the maximum benefit, for the greatest possible time, is delivered within Duchess Wood Local Nature Reserve.

Lower Clyde Greenspace

To date Lower Clyde Greenspace has used limited reserve funding to support a range of activities within Duchess Wood, notably safety surveys of trees, tree surgery and larger scale footpath improvements.
With a remit now covering the whole of Argyll and Bute, coupled with the end of the approved SFGS scheme and no access to Argyll and Bute Council capital funding, Lower Clyde Greenspace can bring best value through a planning, coordination and support role.

Argyll and Bute Employability

The employability team have delivered the bulk of the outcomes highlighted in the SFGS grant, allowing exceptional value for money to be obtained. However, now that the SFGS has ended, their involvement is strictly on an ad-hoc basis. Their preferred method is for any works in Duchess Wood to come to them through Lower Clyde Greenspace.

Friends of Duchess Wood (FODW)

As already indicated the FODW already deliver a range of maintenance benefits within Duchess Wood. Their activities are

understandably limited by the availability and abilities of their members, and their level of insurance cover .

Helensburgh and District Access Trust

This group has contributed significantly to the development of the path network within, and linking to, Duchess Woods LNR.

Community Service Teams
Available for small scale works within the woods, particularly to wooden structures.

Local Schools

Teachers from local schools have in the past contributed significantly to the development of educational resources, and Lomond School are represented on the LNR Management Committee.

Tables omitted – could not be copied

References

[i] See: http://jncc.defra.gov.uk/page-4264 for NVC description
[ii] These appear to be descriptions from the EC Habitats Directive, 92/43/EEC, Annex 1, "Natural habitat types of community interest whose conservation requires the designation of special areas of conservation". These habitat descriptions don't match easily with the Annex 1 descriptions: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1992L0043:20070101:EN:PDF
[iii] Good bramble list at: http://hedgerowmobile.com//index.html
[iv] From a note by Alistair McIntyre
[v] See: http://www.scotland.gov.uk/Publications/2006/03/27152321/0
[vi] See: http://www.argyll-bute.gov.uk/sites/default/files/planning-and-environment/AandB%20BAP%20Draft.pdf