



Duchess Wood Local Nature Reserve Committee

MANAGEMENT PLAN

1 October 2016 – 30 September 2021

for the

DUCHESS WOOD LOCAL NATURE RESERVE

Helensburgh

Argyll and Bute

(draft 5 July 2016)

CONTENTS	Page
Abbreviations	3
Executive summary	4
Management Plan 1 October 2016 – 30 September 2021	
➤ Introduction	9
➤ Description	10
○ Location / designation of Duchess Wood	10
○ Map	12
○ Duchess Wood in the context of the A&B Biodiversity Action Plan	13
○ Duchess Wood – what we know already know	13
➤ Management principles, aims and objectives	14
○ Overall aims	14
○ Long-term objectives	15
○ Medium-term objectives	15
○ Woodland management	16
▪ Native trees	17
▪ Deadwood	17
▪ Sycamore and ash	17
▪ Beech	19
▪ Scots pine	20
▪ Other mature trees	20
▪ Other invasive species	20
▪ Boundary issues	21
▪ Pond provision	21
○ Public access	22
▪ Access policies	22
▪ Paths	22
▪ Burn crossings and drainage	23
▪ Signposting	24
▪ All-abilities access	25
▪ The health benefits of the Wood	25
▪ Horse riding route	25
○ Maintenance	26
○ Research	26
○ Education	27
○ Recreation	28
▪ Events policies	29
▪ In the end	30
○ Voluntary effort	30
○ Conclusion	30
➤ Table 1: Objectives, policies and actions	32
➤ Bibliography	41
Annexes	
Annex 1 Ecological evaluation using the Ratcliffe criteria	42
Annex 2 The National Vegetation Classification	48
Annex 3 A&B local biodiversity action plan	52
Annex 4 Checklists of species	53
Annex 5 FODW: boundary/neighbour issues	59
Annex 6 Maps	61
Annex 7 DWLNR maintenance schedule	64

ABBREVIATIONS USED IN THIS PLAN.

A&B	=	Argyll and Bute
A&BC	=	Argyll and Bute Council
CWA	=	Community Woodlands Association
DW	=	Duchess Wood
DWLNRC	=	Argyll and Bute Council Duchess Wood Local Nature Reserve Committee
FCS	=	Forestry Commission Scotland
FODW	=	Friends of Duchess Wood
LBAP	=	Local Biodiversity Action Plan
LCG	=	Lower Clyde Greenspace
LDP	=	Local Development Plan
LEC	=	Luss Estates Company
LNR	=	Local Nature Reserve
MA	=	Management Agreement
MP	=	Management Plan 2007-2011 MP (The third plan) 2012-2016 MP (The fourth plan) 1 October 2016 – 30 September 2021 MP (This plan, the fifth)
NVC	=	National Vegetation Classification
SNH	=	Scottish Natural Heritage

EXECUTIVE SUMMARY

Management Plan 1 October 2016 - 30 September 2021

Overall aims of the Management Plan

Duchess Wood is a Local Nature Reserve (LNR) in a town setting and is well used by the local community and visitors from further afield. It will be managed as a semi-natural area, to conserve and enhance its biodiversity and landscape value. While giving priority to the Management Agreement and the LNR objectives, the Wood is a multipurpose facility in which exercise, recreation, research and outdoor education will be encouraged; and as a quiet space it will provide all visitors with opportunities for relaxation and contemplation, thus supporting both mental and physical wellbeing.

i. This is the fifth consecutive Management Plan for Duchess Wood. It serves three main purposes:

- a. to provide a basis for actions within the five year span;
- b. to provide longer term policy within which the five-year work is set;
- c. to provide the basis for seeking funding to support the actions.

ii. Duchess Wood lies at the western edge of Helensburgh, north of Rhu Road Higher and south of the West Highland railway line. It is bounded on the east by a residential area and on the west by semi-improved wet grassland. At the southern edge there are sports pitches and some housing. Further housing is planned adjacent to the south west boundary.

Designation

iii. Duchess Wood is one of only two Local Nature Reserves in Argyll and Bute. Duchess Wood lies within the Green Belt, is a Local Nature Conservation Site, is an Open Space Protection Area, and is part of the proposed Helensburgh Green Network being developed in 2015 as a supplement to the A&BC Local Development Plan (LDP). It is a "Woodland of Long Established Plantation Origin" on the Scottish Natural Heritage Ancient Woodland Inventory.

Value

iv. Duchess Wood is highly valued by the local community and much used by local people and visitors. The importance of Duchess Wood has been recognised in official reports. The "Greenspace Audit and Action Plan" (2006) identified Duchess Wood as one of just four "most valued sites" in the Helensburgh area, and one of only seven designated for priority action. The "Green Belt Landscape Study" (2010, p76) defined Duchess Wood as of high value and described it as "managed well". The main paths in Duchess Wood were designated by A&BC as Core Paths in 2015. The Woodland Trust has described Duchess Wood as "A model nature reserve and community woodland". It is important to emphasise that the value of the Wood is seen not only in terms of its biodiversity, but in its recreational and social uses, and its role in enhancing both the physical and mental health of the community.

Management and partnership

v. Duchess Wood has been a Local Nature Reserve (LNR) since 1998, and is one of only two LNRs in Argyll and Bute. The landowner is Luss Estates Company (LEC) which in 2010 renewed its Management Agreement (MA) with Argyll and Bute Council (A&BC) to manage the Wood as a Local Nature Reserve for a further ten years, until 31 July

2020. The management aims are described in this Management Plan (MP), the fifth for the Wood.

vi. Argyll and Bute Council exercises its management responsibility through the Duchess Wood Local Nature Reserve Committee (DWLNRC), a sub-committee of A&BC. In addition to a Councillor (as Chair) and A&BC officials, membership of the DWLNRC includes representatives of Luss Estates Company, Lower Clyde Greenspace (LCG), the Scottish charity Friends of Duchess Wood (FODW), Lomond School (one of the main neighbouring landowners), and wider educational and community organisations. Scottish Natural Heritage maintains an overview of LNRs, including Duchess Wood. Numerous other local and national organisations have given, and will continue to give, support to the maintenance and enhancement of the Wood.

vii. Cooperative partnership is the essence of operations in the Wood. The Chair and other A&BC members of DWLNRC work with a range of administrative and legal personnel. FODW, representing the local community, has regular contact with police, fire, environmental and other local services on behalf of DWLNRC; with the Community Payback team; press and other public information links; research groups; as well as with local voluntary groups and national and regional organisations. LCG has partnership links to help arrange works in the Wood and to raise the necessary external grants. A number of other groups and organisations also help manage improvement works in the Wood. The DWLNRC is committed to managing the woodland in a way which encourages multipurpose uses and outcomes, while taking into account the needs of the different users of the Wood and planning for access by visitors of all abilities. In line with guidance from SNH and Forestry Commission Scotland this Plan takes into account the primary designation of the Wood as a Local Nature Reserve and its wider function as community woodland.

viii. One of the broad issues that we will keep under review during the currency of this plan is the impact of the Community Empowerment (Scotland) Act on the management or stewardship of the Wood and the potential for transfer to a form of community ownership, or partnership with A&BC.

Long-term objectives

- ix. The long-term objectives reflect the aims above:
- a. to manage the Wood so as to maintain and enhance its semi-natural, mostly broad-leaved, habitat and conserve and improve its biodiversity;
 - b. to provide and enhance provisions for public access;
 - c. to maintain access ways and other facilities used by visitors;
 - d. to encourage and publicise research;
 - e. to encourage and promote education for both children and adults, including the use of the Wood for forest nursery or forest school initiatives;
 - f. to encourage recreational uses of the Wood, including appropriate sporting and entertainment activities;
 - g. to support voluntary involvement.

Medium term objectives and priorities for action

x. Within each long-term objective are several medium-term objectives, and medium and short term actions, which we anticipate will be met during the life of this plan, **but with the proviso that many of the actions depend on the necessary external funding being found, and this is a major challenge.** The delivery of all of these objectives is supported by a number of agreed operational policies which help determine the approach to be taken. In the context of limited availability of funding it is

important to be clear about where the priorities lie; the main elements are summarised below and set out in a comprehensive action table in the MP.

a. Woodland management:

- continue to restructure the woodland to a more native composition and condition and to assess, protect and enhance its biodiversity;
- implement the strategy and action plan for the boundaries;
- support the increase of “woodland corridors” linking Duchess Wood to other local woodlands;
- increase the biodiversity of the Wood by digging and maintaining suitable pond(s) to provide a still-water habitat;
- continue to investigate the use of timber from the Wood which becomes available as the result of action in support of the MP.

Action priorities

- * **secure professional advice on woodland management**
- * **remove selected storm-damaged trees**
- * **thin sycamore and ash in selected areas**
- * **create open glades/fell sycamore near peripheral path**
- * **eradicate Japanese knotweed and rhododendron**
- * **clear fell small coups of sycamore**
- * **plant/replant where opportunities arise**
- * **manage and protect areas of new planting**
- * **maintain trial ponds and monitor condition**
- * **boundary management**
- * **use of timber from Wood**

b. Public access:

- support and publicise access policies based on the Scottish Outdoor Access Code and SNH guidelines for LNRs
- manage and improve existing constructed paths
- improve burn crossing points and drainage
- provide and maintain clear signage to the Wood and around the main paths
- improve access around the Wood for the less able or those looking for easy gradients and smooth, surfaces and create opportunities for those less mobile to take part in activities in the Wood
- explain the benefits to health – both physical and mental – which access around the Wood provides.
- keep question of horse riding route under review.

Action priorities

- * **maintain the all-abilities loop path and make the car park as suitable as possible for all-abilities use**
- * **new car park sign from Rhu Road Higher**
- * **maintain direction and information signs in Wood**
- * **replace three bridges by large culverts**
- * **regularly review access policies.**

c. Maintenance:

- maintain paths and drainage and other facilities to ensure the Wood remains an attractive, diverse and reasonably safe natural woodland through regular inspection, repair and safeguarding;

Action priorities

- * **maintain existing paths, drainage, fencing and signs**
- * **deal with storm damage where it affects access or safety**
- * **clear litter and report problems to fire, police and other services**
- * **work in partnership with official and voluntary organisations.**

d. Research:

- encourage research into the Wood's plants and wildlife and publish the results.

Action priorities

- * **engage with the "Citizen Science" initiative as a framework for further research**
- * **conduct surveys of mammals, other animals (reptiles, amphibians, etc), birds, insects and spiders, and water life and prepare species lists**
- * **survey the surface geology and soils**
- * **maintain and improve existing checklists of birds, flowers, trees, fungi and mosses/liverworts found in the Wood.**

e. Education:

- enhance the use of the Wood for educational purposes and maintain and improve its educational values and facilities.
- support the use of the Wood for forest nursery or forest school initiatives
- develop links with all local schools so that they can take advantage of the learning environment provided by the Wood, and can feedback information from their work into our understanding of the Wood's biodiversity
- provide information on the Wood's biodiversity for all visitors.

Action priorities

- * **liaise with schools and tertiary education centres**
- * **make information for schools available through website**
- * **evaluate impact of Forest Nursery on Wood environment,**
- * **visitor survey**
- * **maintain website and publish information leaflets**
- * **keep information hub up to date**

f. Recreation and community engagement

- keep under review policies for recreation and community engagement which take account of the different needs of users.

Action priorities

- * **encourage recreational uses of the Wood, including appropriate sporting and entertainment activities;**
- * **monitor recreational and sporting uses of the Wood and where necessary require formal approval (while taking a proportionate approach to small scale events);**
- * **ensure such activities cause no damage to the Wood.**

g. Voluntary effort:

- support voluntary effort to protect, maintain and enhance the Wood and its facilities.

Action priorities

- * **support the Friends of Duchess Wood, their coordination of voluntary effort and their representation of the local community**
- * **facilitate the use of the Wood by other voluntary groups.**

xi. Some of the priorities will need substantial funding; some will need limited funding, whereas others can be undertaken by voluntary action. These priorities indicate a balanced and positive approach which should lead to significant improvements in the biodiversity of the Wood and its value to the local and wider communities.

Conclusion

xii. Duchess Wood is a long-established woodland, recognised as an outstanding example of a Local Nature Reserve with a high level of planning protection. It is much used and valued as a local facility which also attracts visitors from afar. It is a good example of partnership working, not just between the Council and the Friends of Duchess Wood, but involving a wide range of other contributors. Its long-term value to the people of Helensburgh, to tourism and to biodiversity close to a major town is exceptional, and it is essential that such a facility is fostered for future generations.

MANAGEMENT PLAN 1 OCTOBER 2016- 30 SEPTEMBER 2021

INTRODUCTION

1. Duchess Wood, in the Green Belt to the west of Helensburgh, has been a Local Nature Reserve (LNR) since 1998. At the time of writing it is one of only two LNRs in Argyll and Bute and 72 in Scotland. The landowner is Luss Estates Company (LEC) which in 2010 renewed its Management Agreement (MA) with Argyll and Bute Council (A&BC) to manage the Wood as a Local Nature Reserve for a further ten years, until 31 July 2020. This is the fifth Management Plan (MP) for the Wood, although the two earliest plans, dating back to 1994, were of a different nature, and not consecutive.

2. Argyll and Bute Council exercises its management responsibility through the Duchess Wood Local Nature Reserve Committee (DWLNRC), a sub-committee of A&BC. In addition to a Councillor (as Chair) and A&BC officials, membership of the DWLNRC includes representatives of Luss Estates Company, Lower Clyde Greenspace (LCG), the Scottish charity Friends of Duchess Wood (FODW), Lomond School (one of the main neighbouring landowners), and wider educational and community organisations. LCG acts as the Council's agent over some aspects especially in relation to obtaining and managing major grants for which the Council can apply. FODW assists with day-to-day safeguarding tasks and carries out certain management and educational and community liaison tasks delegated to it by the DWLNRC; it also seeks funding related to those tasks. Scottish Natural Heritage maintains an overview of LNRs, including Duchess Wood, and advises and supports as appropriate. Numerous other local and national organisations have given, and will continue to give, support to the maintenance and enhancement of the Wood.

3. Partnership is the key characteristic, not only in terms of representation, but also in taking action. The Chair and other A&BC members of DWLNRC work with a range of administrative and legal personnel. FODW, representing the local community, has regular contact with police, fire, environmental and other local services on behalf of DWLNRC; with the Community Payback team; press and other public information links; research groups; as well as with local voluntary groups and national and regional organisations. LCG has partnership links to help arrange works in the Wood and to raise the necessary external grants. A number of other groups and organisations may also manage improvement works in the Wood. Cooperative partnership is the essence of operations in the Wood. **Where "we" is used in the text it signifies the partnership represented through the DWLNRC.**

4. This combination of interests has shown itself to be dynamic, and a great deal has been achieved in the span of the 2012-16 MP, especially regarding access (paths, culverts, bridges), fencing (including new fencing along the West Highland railway line), clearing of rhododendron and sycamore, the planting of native trees (including native fruiting trees), the removal of the old railway carriage, biodiversity recording, educational activities, a much increased recreational use of the Wood, and greater community involvement. Duchess Wood is highly valued by local residents and visitors for its biodiversity and its recreational and social opportunities; it plays a significant role in enhancing the physical and mental health of the community. It is significant that A&BC continues to support it at a time of financial pressure, but external grants will be essential if the full aspirations of the community are to be maintained.

5. We are committed to managing the woodland in a fashion which encourages multipurpose uses and outcomes. Such an approach complements guidance available from organisations such as SNH and Forestry Commission Scotland. This Plan takes into account the primary designation of the Wood as a Local Nature Reserve (and the

protection and enhancement of its biodiversity), its function as community woodland with a wide range of users, and the possibility, arising from the management activities, of using timber from the Wood for a variety of purposes. We will do this by working in partnership both with official and with voluntary organisations, and by taking into account the needs of the different users of the Wood.

6. One of the broad issues that we will keep under review during the currency of this plan is the impact of the Community Empowerment (Scotland) Act on the management or stewardship of the Wood and the potential for transfer to a form of community ownership, or partnership with A&BC.

7. This Management Plan covering the five years from 1 October 2016 - 30 September 2021 has been prepared by the DWLNRC, and is an edited and revised version of the MP for 2012-2016. That in turn was based upon the third MP prepared by Erika Luukas of Scottish Origins LLP. **The Plan was noted and approved by A&BC's Helensburgh & Lomond Area Committee on XXXX.**

8. The main emphases for this period will be:

- i. Woodland management
- ii. Access
- iii. Maintenance
- iv. Research
- v. Education
- vi. Recreation
- vii. Voluntary effort

The Plan covers a wide range of activities, some quite substantial, and actions have generally been expressed in positive language such as "X will be done". **However all of the major "woodland management" and "access" actions, and some less substantial actions, depend on the necessary funding being found, and this will be a challenge.** At the same time, many other actions will continue to be undertaken through voluntary and partnership efforts.

DESCRIPTION

Location / designation of Duchess Wood

9. Duchess Wood lies at the western edge of Helensburgh, north of Rhu Road Higher and south of the West Highland railway line between Glasgow and Fort William. It is bounded on the east by a residential area and on the west by semi-improved wet grassland. At the southern edge there are sports pitches and some housing. Further housing is planned at the lower boundary of the western edge. The Duchess Wood car park access grid reference is NS 2842 8337. A new map showing the location, accessways and facilities of the Wood is on page 12. This map is also included in Annex 6, along with a section of the Ordnance Survey map of 1862, which shows the outline of the Wood much as it is today, and a map taken from the 2007-2011 MP which shows the designated "compartments" which help in subdividing the Wood. The importance of Duchess Wood has been recognised in official reports. The " Greenspace Audit and Action Plan" (2006) identified Duchess Wood as one of just four "most valued sites" out of 59 Helensburgh sites assessed, and one of only seven designated for priority action. The Ironside Farrar Report "Green Belt Landscape Study" (2010, p76) defined Duchess Wood as of high value and described it as "managed well". The Woodland Trust has described Duchess Wood as "A model nature reserve and community woodland".

10. The Wood is designated in the A&BC Local Development Plan (2015, map 25) as Green Belt, as a Local Nature Reserve, a Local Nature Conservation Site, and an Open

Space Protection Area. It is a "Woodland of Long Established Plantation Origin" (LEPO) on the SNH Ancient Woodland Inventory and is on the A&BC list of Sites of Importance for Nature Conservation. It appears in the Argyll and Bute (A&B) Biodiversity Action Plan. The main paths in Duchess Wood have been designated by A&BC as Core Paths, and the Wood is part of the proposed Green Network for Helensburgh.

11. The Wood's aspect is south-south-westerly, its altitude is between 20 and 65 metres above mean sea level and its gradients range from flat to 30°. No site specific soil survey has been carried out, although general surveys of the area suggest that the soil may include gley soils, and forest brown earth soils. Rainfall is about 60 inches a year. The geology underlying the Wood shows two faults running through the area and they form the boundaries between three main rock groupings: (i) Bullrock Greywacke (a form of sandstone) to the north-west, (ii) Sandstone and red-brown siltstone with nodules of limestone to the south-east, and (iii) Rosneath conglomerate to the south and south-east. Small burns with steep-sided banks and gullies run down the hill. The quality of the burn water is clear. Some web links to explanations of the geology are given in the Bibliography at (1).

12. At 23ha, Duchess Wood LNR is a significant remnant in a largely urban landscape of Semi-Natural Woodland, parts of which are most probably of ancient origin, although its initial extent is currently unknown. Although classed as of Long Established Plantation Origin, 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. The 25 inch Ordnance Survey map from 1862 (See Annex 6) shows the woodland area (which was possibly part of the designed landscape of Ardencaple Castle grounds) almost the same as it is today. A summary of the historical context of the Wood is given in Annex 1. The natural woodland is dominated by oak, ash, birch, alder, Scots pine, rowan, and hazel, but there are also significant stands of sycamore and beech. Local information suggests that the dominance of sycamore in sections of the Wood dates back to the great West of Scotland gale of 1968. Ring counting of a recent fallen Scots Pine in the plantation north of Rhu Road Higher suggests that this dates to the period between the first and second world wars. The understorey trees and shrubs and the groundflora are also varied and interesting. The Wood is home to a wide range of animals (including roe deer, fox, moles and bats); birds (including owls, sparrowhawk, jay, and bullfinch); and insects (although further research is needed on the insect life of the Wood). In shaping this MP much helpful information has been taken from "Woodland management: a practical guide" and "A handbook of Scotland's trees"; the full references are given in the Bibliography at (2).

13. A full ecological evaluation using the Ratcliffe (1977) Criteria was prepared for the 2007-11 MP, and this (with some revisions and updates) is attached as Annex 1. This emphasises the value of the Wood as an ecological resource and the potential for continuing to protect and develop its biodiversity.

14. The 2007-11 MP also contained a report detailing the results of a survey of the Wood, using the National Vegetation Classification (NVC) framework, and this is attached as Annex 2, with some revisions to make it more readable for a lay audience, and updates. This description remains an important resource and will continue to inform the management of the Wood during the five year period 2016-21 and beyond. It identifies three main woodland types:

- Oak-Birch-Wood sorrel (the most abundant type)
- Alder-Ash-Yellow pimpernel
- Ash-Rowan-Dog's mercury

The report pointed out that the three types occurred in an intricate mosaic with each other throughout the Wood.

Map of Duchess Wood

(prepared by Kenny Steele, Babcock International, 2015, and based on a map by John Dale, A&BC, 6.9.2012)



Duchess Wood in the context of the Argyll and Bute Biodiversity Action Plan

15. The A&B Local Biodiversity Action Plan (LBAP) 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 A&B 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 LBAP'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.

16. The Work Programme in the LBAP includes a number of actions, some of which may have an impact, directly or indirectly, on this MP, such as native woodland expansion and the control of invasive species. The LBAP reference is given in full in the Bibliography at (3) and a fuller summary of the LBAP is given in Annex 3. This 2016-2021 MP aims to address all the biodiversity issues in the LBAP, and seeks to support and learn from the actions envisaged for woodland habitats.

Duchess Wood – what we know already

17. During the period of the 2007-11 MP, the Friends of Duchess Wood arranged the compilation of a number of constantly evolving and updated checklists of species found in the Wood; these now comprise:

- Bryophytes (Mosses and liverworts)
- Ferns
- Fungi
- Trees and shrubs
- Birds
- Flowers and flowering shrubs
- Mammals.

Several of these invaluable checklists (attached in annex 4) were based on longer professional reports – see the Bibliography at (4) and (5). They confirm the diversity of species found in the Wood and the value of the Wood as a haven for a large number of plant and animal species. It will be important during the next period to continue to revise the existing checklists and undertake additional surveys.

18. This description confirms that a great deal is now known about the ecology and biodiversity of Duchess Wood, but that there is much still to be discovered. In essence, we need to know what currently exists. This offers great opportunities for further research and educational work. The development of the "Citizen Science" movement in recent years can shape research which not only aids our understanding of the Wood, but can also contribute nationally to important issues (and see P XX). This updated plan will:

- seek to act on and develop our knowledge,
- integrate the different approaches to classifying the ecology of the Wood,
- identify the biodiversity priorities for the Wood,
- investigate where enhanced protection or support is needed.

MANAGEMENT PRINCIPLES, AIMS AND OBJECTIVES

Overall aims

Duchess Wood is a Local Nature Reserve (LNR) in a town setting and is well used by the local community and visitors from further afield. It will be managed as a semi-natural area, to conserve and enhance its biodiversity and landscape value. While giving priority to the Management Agreement and the LNR objectives, the Wood is a multipurpose facility in which exercise, recreation, research and outdoor education will be encouraged; and as a quiet space it will provide all visitors with opportunities for relaxation and contemplation, thus supporting both mental and physical wellbeing.

19. In line with the views of Scottish Natural Heritage and Forestry Commission Scotland our intention is to manage the Wood as a multipurpose facility - see the web reference at Bibliography (4). The context for its effective management therefore contains a number of strands:

- i. The Management Plan implements the terms of the Management Agreement between Luss Estates Company and Argyll and Bute Council.
- ii. The primary designation of the Wood as a Local Nature Reserve means that we must meet the SNH objectives for such sites (see Bibliography at (5)).
- iii. At the same time we must be conscious of the significant community use of the wood, and while giving priority to the MA and the LNR objectives, take account of the Community Woodland Association objectives for community woodland.
- iv. We will do this by working in partnership with both official and voluntary organisations, and by paying attention to the needs of the different users of the Wood.
- v. A&BC ensures that any legal obligations in relation to public access provisions and health and safety legislation are met.
- vi. A&BC has established the A&BC DWLNRC under the chairmanship of a local councillor to manage the implementation of these objectives, monitor and record all activities, and report to the Council and to the community.
- vii. The DWLNRC delegates authority to FODW to carry out many relevant day-to-day actions

20. This plan sets out what we hope are achievable objectives and actions, in the short term (over the first two years 2016-18); in the medium term (over the next three years 2018-2021); and in the long term (beyond the end date of this MP (30 September 2021)). These objectives are structured in the context of the overall aims for the Wood. The actions in relation to the objectives are described in general terms and specific actions are related to locations in the Wood as illustrated in the map on page 12 and to the compartment structure used in the 2007-11 MP, shown in Annex 6.

21. During the currency of this plan the DWLNRC may evaluate and review the possible relevance and impact on the management of the Wood of the Community Empowerment (Scotland) Act and its supporting legislation and guidance, and consider the potential for transfer to a form of community ownership or partnership with A&BC. During the period covered by the fourth MP (up to 2016) a number of ideas were put forward for different uses of the Wood. We will evaluate and where appropriate support suggestions for innovative uses of the Wood, for example the establishment of forest nurseries or schools, or the provision of autumn illumination events.

Long-term objectives

22. The following long-term objectives reflect the aims above:
- i. to manage the Wood so as to maintain and enhance its semi-natural, mostly broad-leaved, habitat and conserve and improve its biodiversity;
 - ii. to provide and enhance provisions for public access;
 - iii. to maintain access ways and other facilities used by visitors;
 - iv. to encourage and publicise research;
 - v. to encourage and promote education for both children and adults, including the use of the Wood for forest nursery or forest school initiatives;
 - vi. to encourage recreational uses of the Wood, including appropriate sporting and entertainment activities;
 - vii. to support voluntary involvement.

Medium-term objectives

23. Within each long-term objective are a number of medium-term objectives, and medium and short term actions which we anticipate will be met during the life of this plan (but with the strong proviso set out in paragraph 8). The delivery of all of these objectives is aided by a number of agreed operational policies which help determine the approach to be taken. The detailed objectives, policies and actions are described in the full text which follows, and are set out in table 1 at the end of the text; the main elements are summarised below:

i. Woodland management:

- a. following the principles of good woodland management and in the context of the available resources, continue to restructure the woodland to a more native composition and condition;
- b. establish a programme of selective thinning of sycamore, and ash and beech where appropriate, to open up the Wood and create additional open glades; to deal with damaged trees, or those near boundaries; and to allow the planting or replanting of native species;
- c. identify individual native trees, or groups of trees, which can be managed as a demonstration of good forestry practice to enhance their later value
- d. eradicate rhododendron and Japanese knotweed and reduce other non-native invasive species;
- e. assess the biodiversity of habitats and species in the Wood to improve understanding of how it can be protected and enhanced;
- f. manage and protect the fruiting trees/shrubs and the oak and other trees planted by FODW around the Pony Field and in other areas of the Wood.
- g. increase the biodiversity of the Wood by digging and maintaining suitable pond(s) to provide a still-water habitat;
- h. establish a strategy and action plan for the boundaries which meets the needs of both the woodland and its neighbours;
- i. increase the "woodland corridors" linking Duchess Wood to other nearby woodlands;
- j. encourage the use of timber from the Wood and in the context of the primary management objectives, sell redundant timber for firewood and make timber from the Wood available for craft purposes.

ii. Public access:

- a. support and publicise access policies based on the Scottish Outdoor Access Code and SNH guidelines for LNRs

- b. manage and improve existing constructed paths
- c. improve burn crossing points and drainage
- d. provide and maintain clear signage to the Wood and around the main paths
- e. improve access around the Wood for the less able or those looking for easy gradients and smooth, surfaces and create opportunities for those less mobile to take part in activities in the Wood
- f. explain the benefits to health – both physical and mental – which access around the Wood provides.
- g. keep question of horse riding route under review.

iii. Maintenance:

- a. maintain paths and drainage and other facilities to ensure that the Wood remains an attractive, diverse and reasonably safe natural woodland, through regular inspection, repair, and safeguarding.

iv. Research:

- a. encourage research into the Wood's plants and wildlife and publish the results.

v. Education:

- a. enhance the use of the Wood for educational purposes for both children and adults and maintain and enhance its educational values and facilities;
- b. support the use of the Wood for appropriate children's forest nursery or forest school initiatives
- c. develop links with all local schools so that they can take advantage of the learning environment provided by the Wood, and can feedback information from their work into our understanding of the Wood's biodiversity
- d. provide information on the Wood's biodiversity for all visitors.

vi. Recreation

- a. keep under review policies for recreation which take account of the different needs of users.

vii. Voluntary effort:

- a. support the Friends of Duchess Wood, their coordination of voluntary effort, and their representation of the local community
- b. facilitate the use of the Wood by other voluntary groups.

Woodland management

24. Effective woodland management is potentially the most demanding aspect of protecting and enhancing the Wood and professional advice is likely to be necessary to help plan and undertake this work. Useful source texts which this section draws on are "Woodland management: a practical guide" and "A handbook of Scotland's trees", as well as the FCS, SNH and CWA websites.

25. The management context for the Wood is established firstly by the requirements of the LEC/A&BC Management Agreement which has as its objective to *"preserve and enhance the appearance of the Managed Land, and to promote the enjoyment of the*

countryside by the public". The agreement refers to a range of maintenance and access works (which are dealt with later), but also to the proper management of the Wood and the inspection of all trees for obvious signs of disease/damage. FCS guidance supported by SNH emphasises the importance of a multiple use approach, and specific SNH guidance on LNRs concentrates on enhancing recreation, education and biodiversity. The aims of the Community Woodlands Association add economic development, renewable energy and social inclusion to the mix. The A&B Biodiversity Action Plan (see paragraphs 15 and 16) identifies a number of important issues for woodlands which this plan will help address. The overall **policy** is to manage the Wood so as to protect and enhance its biodiversity and its landscape value, while providing suitable public access. At the same time we will examine whether it will be possible to sell, or otherwise make available, unwanted timber from the wood to aid local businesses and craft workers. A primary important **action** will be to secure professional support and advice on woodland management.

Native trees

26. The Wood has a wide range of native trees, including oak, ash, birch, hazel, alder, rowan, wych elm, willow and others. One main aim of this plan is to conserve and protect the native trees, but also to manage them in a way which gives a variety of age and spacing, and helps encourage greater biodiversity of the understorey, of ground flora and wildlife. **Action** may, in places, involve thinning of native trees and their replacement by the same or different species and while this work is being done, the removal or thinning of any non-native trees – see below.

27. We also propose to identify individual native trees, or groups of trees, which can be managed as a demonstration of good forestry practice, to show what can be done to help produce local timber suitable for a variety of uses, such as furniture, construction, turning and other crafts, woodfuel and charcoal. This approach will also include some of the non-native species discussed below. The establishment of good forestry practice will have a strong educational element and should also help the rural or woodland-based economy.

Dead wood

28. Leaving dead wood standing or lying naturally or in man-made heaps brings a lot of advantages in terms of creating habitats to support a wide variety of bird, animal and insect life. The Wood already has a fair number of standing and fallen trees. "Woodland Management" suggests a minimum ratio of three standing and three fallen trees per hectare, spread throughout the woodland. The Wood probably has this minimum at present, though it tends to be concentrated in certain areas. The storms during the 2011 - 2014 period left a large number of fallen and broken trees which will add to the deadwood in time. Another problem is that there are many dead, diseased or damaged trees close to the peripheral path (mostly sycamore, some ash), and for safety reasons we propose that the more fragile of these should be felled and the timber left to decay, or removed for other uses. It may also be possible to "ring bark" some trees deeper in the Wood to create standing dead wood in areas where there is little at present. This **action** will be covered by the short term work proposed in the section below.

Sycamore and ash

29. **Action** to change the Wood to a more natural woodland will mean gradually removing quite substantial numbers of sycamore. Relatively little light penetrates the dense sycamore canopy. FODW work parties have observed that extensive areas of the Wood are now dominated by sycamore. It is the greatest arboreal threat to the character of Duchess Wood and much the biggest challenge to the Wood's management. Experience in the Wood suggests that in current conditions, sycamore is self-seeding freely only in localised areas, although there are many saplings perhaps 20-30 years old,

and regrowth from old stumps is very vigorous. The variation in re-seeding of sycamore is something that will merit further research and testing to see how reseeded can best be controlled. Although the sycamore canopy blankets areas of the Wood thus reducing flower and other lower growth, it is thought that mature trees can support a high (although not particularly diverse) population of wildlife. It appears that ash does self-seed successfully around the Wood, and in several areas ash and sycamore grow side by side, and removal of some mature ash with the sycamore will be necessary. Recent wind experience and FODW observation has shown that many of the sycamore and ash trees are not particularly healthy with damaged and split trunks and upper branches, creating a potential safety risk which will need to be managed.

30. The **policy** is therefore that a number of mature sycamores and ash are identified for retention as specimens through the Wood, but that a major part of the workplan for the next five years and beyond should involve the progressive removal of the rest of the sycamore, ash and in the longer term birch and beech where appropriate. FODW has already started a campaign of removing sycamore saplings through its work parties, but there is urgency to obtain funding for professional felling of the larger trees. Discussion with FCS and with felling and woodfuel selling contractors suggests that there may be sufficient value in sycamore and ash in certain areas to at least cover the cost of felling/thinning and this will be factored into any application for funding under the "Woodlands In and Around Towns" (WIAT) grant scheme. The areas being considered for initial thinning are the lower section from Rhu Road Higher to the garages, and the area immediately north of the garages. In the former section, thin and damaged sycamore, ash and other trees are not growing well under the pine canopy, and a few of the Scots Pine themselves are hung up on other trees or unstable; all would be better removed and the opportunity taken to replant Scots Pine. In the latter section, sycamore has created a closed canopy with little growth underneath. Many of the ash in this area are growing poorly, and several have fallen. A fairly extensive thinning of this area would open it up for replanting with other native trees. In the longer term, if this work is successful, further thinning of sycamore will be carried out along the east and north sections of the main path, where many of the trees show signs of damage and in the adjacent sections of the Wood particularly where birch is growing too thickly or where beech is taking over (and see para 32 below). While planning this work, tests will be made to identify whether any of the trees are of the "ripple" form of sycamore, which may have significant commercial value. As the more detailed description below suggests, thinning or clear felling may cause significant disruption but should also enable us to begin the restructuring of the Wood into a more natural and biodiverse environment. Without this short-term pain, it will be difficult to achieve the long-term gain that is the main objective of this plan.

31. This policy has a number of important implications:

- i. Such extensive work may, on occasion, necessitate professional support and assistance
- ii. Much of the work can only be carried out with mechanised (or possibly horse-drawn in some places) equipment.
- iii. The main peripheral path and some other parts of the paths network may have to be improved to take small log-handling transporters. Experience suggests that this can be managed in an attractive way, commensurate with the setting. Such improvements would also improve accessibility for some users for example horseriders and those with buggies.
- iv. However, while the work is being carried out some areas of the Wood may have to be closed to users.
- v. Although some of the cut wood will be left in the Wood, most will have to be removed, and arrangements will have to be made for the disposal of the timber, which could involve selling wood for a range of purposes.

- vi. This offers opportunities to work with local arboriculturists, tree surgeons, timber and wood fuel merchants, craft workers and others who can use the timber. Areas may have to be created near the main road access (and possibly rail access) points to enable timber to be stored and removed. Removal may also damage access paths and planning of the operations will need to include provision for restoration of the paths.
- vii. Dealing with the brash from tree felling will also have to be considered and while some can again be left to decay, experience has shown that very large quantities can be produced from some trees. Chipping (which may also have some commercial value, or can be used as a mulch in the Wood) or burning may have to be considered.
- viii. Any extensive removal from the main sycamore-dominant areas (north of the garages and along the northern boundary with the railway) will leave quite bare areas for some years. A policy of progressive thinning of sycamore and ash may be more acceptable in certain areas, particularly the heavily used areas near entrances and there will also be biodiversity and maintenance advantages in identifying and clearing a number of small open glades. The cleared or thinned areas can then be replanted with a native mixture of oak, ash, alder, rowan, hazel and other trees and shrubs, the mix depending on the ground conditions and other factors. Another option may be to allow the open glades to be recolonised naturally and to study over time how the woodland develops compared to the replanted areas – this could be a useful research and education opportunity.
- ix. Volunteer work parties organised by FODW can manage the removal of seedlings, regrowth and small saplings, but not anything more than about 100mm in diameter.
- x. In the short term we propose to seek professional advice and seek funding to begin to create open glades and to thin and remove sycamore and ash from close to the main peripheral path and the south/north path from the eastern Rhu Road Higher and Millig Street entrances; these areas are generally easier to access and maintain. We will also look carefully at standing dead or diseased trees near paths and where appropriate fell or prune. With professional advice we will also use the period to plan for the clearance or thinning of a larger area of sycamore (roughly one third of this section) along the northern boundary, then carry out the works at a suitable time. Depending on the success or otherwise of these works we will then plan for the clearance or thinning of the remaining sycamore-dominated area along the northern boundary at a later stage. The timetabling for this work may also depend on the nature of the grants that might be available to support the work.
- xi. It will also be necessary to consider what to do with the cut stumps – whether to try to kill or remove the stump or to allow it to coppice. This is another area where professional advice will be important.

Beech

32. Beech is more widespread in the Wood than a casual look might suggest. Although not a native tree, it is thought that its natural climatic limit has not yet been reached in the UK, and its presence can be accepted in a sensible way in our natural woodland, contributing to the biodiversity. It is an attractive tree particularly in its spring and autumn colours. There are a number of very large and old mature trees around the boundaries (although again, several of the older trees have been quite badly damaged) and it is the **policy** that these should be protected and retained. However, beech seems to regenerate quite successfully in the Wood (better than sycamore) and it needs to be monitored and controlled. Possible **action** is to allow it to regenerate in a managed way in the North West corner compartment where the mature trees are concentrated. In time it is likely that the beech would become the dominant species there. A number of other semi-mature trees would be identified around the Wood for

retention and protection, while the remaining trees would be removed at the same time as other operations were being carried out in the area.

Scots Pine plantation

33. The Scots Pine plantation (which possibly has other pines mixed in) between Rhu Road Higher and the Millig Street garages needs to be managed as a separate section. It is narrow and has a long boundary facing the prevailing wind direction, so edge effects will be important. It is also home to a large rookery, with over 80 nests (spring 2016) which needs to be protected. However there is a fairly substantial undergrowth of sycamore and ash in places, and the pine trees are now of such a size that they should be thinned. Much of the undergrowth can be dealt with by volunteer action, but thinning the larger trees and the complexities involving the rookery will need professional advice. There may be timber value in the felled trees which could help fund other work in the Wood.

Other mature trees

34. Around the Wood there are a number of other mature trees including different conifers, several limes, and a few sweet (Spanish) chestnut. We propose a **policy** to protect and retain these trees, with the proviso that if any become unsafe near to paths, **action** will be taken to assess and manage the problem trees.

35 FODW has planted a number of new trees in recent years – for example the group of 100 oak trees in the middle section of the north of the Wood, the group of fruiting trees and shrubs around the boundaries of the Pony Field, and smaller groups where opportunities presented. It is important to look after these trees while they are still young and subject to deer damage in particular. The **policy** is to continue to look for opportunities to replant, and **action** is to fence and protect, and nurture new plantings. Major opportunities for replanting will occur if any significant sycamore coups are felled.

Other invasive species

36. As well as the sycamore and beech trees, there are a number of other non-native invasive species which have a major impact on the Wood and its biodiversity, and our **policy** is to control and eradicate them. They include:

- Rhododendron. Scattered throughout the Wood, sometimes in substantial clumps. **Action** to continue removing the bushes and control of regrowth is a short-term priority for this plan. Dealing with the brash involves the same considerations as for the trees, but recent experience has shown that it can successfully be burned.
- Japanese Knotweed. Present in a number of locations around the Wood and has been regularly attacked. **Action** to remove and to continue control of regrowth is also a short-term and urgent priority.
- Laurel. Only present in a few locations, mainly in the south west corner. Its removal and control of regrowth is a medium term priority for **action**.
- Lamium galeobdolon (Tri-coloured archangel). Present in a number of locations around the eastern boundary of the wood. Will be monitored initially, and consideration given to **action** to remove in the medium term.

37. In addition, two native species will be monitored and action considered:

- Bracken. In open areas mainly in the south half of the Wood. The areas are not extensive but one of the few open areas in the Wood is being taken over and trial action is being undertaken in the short term to examine if the

bracken in part of this area can be beaten and bruised and thereby sufficiently weakened to go into decline. Results so far have been encouraging. Care will also be taken to ensure that other ferns are not damaged.

- Brambles are not generally a problem, except that they can erupt and make the ground impassable when a section of woodland is felled – but they can be managed in such circumstances. However there is also a large area of mixed trailing brambles and sub-erect brambles (which are relatively uncommon) at the east end of the pony field, and they are steadily extending their coverage. Professional advice will be sought on how best to control this area.

Boundary issues

38. Many of the issues identified above are more significant near the boundaries of the Wood, particularly where the boundary is with houses. 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 lengthy garden. Kathleen Park in the south west corner also borders the Wood, although it is separated from the Wood by the south bank of the burn which runs behind the houses. It is also important to bear in mind that the northern boundary is formed by the West Highland railway line. A more detailed note on boundary issues is attached as Annex 5. In addition a new housing development in and to the north of the old Dobbie's garden centre beyond the south west corner of the Wood has been designated in the LDP for housing. The development will be contiguous with the Wood and there will be access from it to the Wood; it will be important to monitor the detail of the development and the impact it might have on the Wood.

39. The management of the Wood should take into account the safety (and to an extent the amenity) of neighbouring residents. Branches and trees have fallen into gardens and onto garages in recent years and particularly during the severe storms between 2011 and 2014. Action has been taken by A&BC and FODW to deal with emergency issues that have arisen. An informal survey of the state of the trees close to boundaries was carried out in December 2011, but this preceded the gale of 3 January 2012 when there was a great deal of tree damage. Further informal surveys have since been carried out. In the short term, occasional boundary surveys will be needed. It will then be necessary to consider how to maintain a safe and suitable boundary or transition zone. In carrying out work in the transition zone around the boundary (which could be perhaps 5m wide) we should follow the principles set out in paragraphs 24-34 in relation to particular species and retain native mature trees where they are safe, retain other native trees and some non-native mature trees, but remove and thin drastically other non-native trees (while remembering edge effect issues). Lower, fruiting and flowering native trees such as rowan, hazel, hawthorn and blackthorn could then be planted in the transition zone to create a food-rich environment for birds, animals and insects.

40. At the same time, one of the broader aims of the MP is to ensure that neighbouring residents gain a greater understanding of the management needs of the Wood. There is no strict boundary as far as the wildlife is concerned and gardens are in essence an extension of the Wood. Residents can help protect and improve wildlife in the Wood, particularly the bird life. Boundary residents will also be encouraged to respect the needs of the Wood and not dump inappropriate garden waste (especially where there is a risk of spreading non-native invasive species).

Pond provision

41. In terms of enhancing the biodiversity of the Wood, one of the main habitats which has recently been introduced with support from the Amphibian and Reptile

Conservation Trust are two still water ponds, which will provide a habitat for frogs, toads and newts, but also be a resource for animals, birds and insects. Although there are numerous relatively fast-flowing burns in the Wood, which provide a special habitat, these ponds will help attract a wider range of wildlife. The ponds are in relatively open areas so that they can warm up, but it was still uncertain at the time of writing whether both ponds would hold sufficient water. In the short term the water retention of the ponds will be monitored and suitable planting organised in and around the ponds to create a better water environment and to deter dogs and human visitors from entering the water.

Public access

Access policies

42. Access to Duchess Wood will take into account both the Scottish Outdoor Access Code and the SNH Guidelines for LNRs. The Outdoor Access Code is based upon three key principles:

- Respect the interests of other people. Visitors to the Wood should act with courtesy, consideration and awareness and should respect the needs of other people enjoying the outdoors.
- Care for the environment. The DWLNRC's role is to help maintain the natural and cultural features which make the Wood attractive to visit; visitors are expected to look after the Wood and leave the land as they find it.
- Take responsibility for your own actions. The DWLNRC, on behalf of A&BC will act with care at all times for people's safety. Visitors must remember that the outdoors cannot be made risk-free and should act with care at all times for their own safety and that of others.

The Code allows access for example by cyclists, horse riders, dog walkers, etc., but emphasises the importance of responsible access which takes account of other users of the Wood.

43. The Guidelines for LNRs draw attention to the general objectives of LNRs and explain that access is necessary to:

- maintain and improve biodiversity
- provide opportunities for environmental research and education
- enable people can become involved in nature conservation activities
- quietly enjoy their natural heritage.

The principles in the Access Code and the LNR guidelines are compatible with one another and are built in to the objectives of this management plan.

Paths

44. The paths network has been steadily improved since the first Management Agreement was signed, and particularly so since 2002. There are now a number of "constructed" paths, most of which are now designated by A&BC as Core Paths. There are four recognised access points (and the north-west access links the Wood to the round-Helensburgh footpath network and routes to the National Park), a well-laid peripheral path, an all abilities path at the flat, lower part of the Wood (which has been made a circular path thanks to cooperation with the Cricket and Rugby Club when they were carrying out other work), and two subsidiary paths. A small car park is available at the Kathleen Park entrance. In addition, a number of informal or "desire line" paths exist throughout the Wood which are used much less frequently and give access to the more central parts of the Wood. Discussion between local residents and A&BC has been initiated to examine options for new footpaths associated with the possible housing development next to the south west corner of the Wood.

45. There are five main **policies** which will inform future actions in relation to the paths network:

- To help provide and maintain relatively undisturbed “refuges” for wildlife (within the peripheral path, the south-west corner, and the “hammerhead” between Duchess Park and MacLeod Drive), general visitors should be encouraged to use the existing “constructed” paths network. This plan does not envisage the creation of any new paths other than temporary paths to facilitate access for the removal of timber or woodland management, and perhaps paths associated with any new housing beyond the south west corner.
- The paths should be as natural as possible, and support the semi-wild nature of the Wood. This means that any fencing will be limited to narrow bridges, and when the fencing which is currently installed on one side of the Victorian stone bridge on the eastern path, and on part of the steep bank to the south, rots or is damaged, it will not be replaced. A similar approach will be taken to the small section to the south of the Strathclyde Court garages. However, the section of fencing at the bottom of the Scots Pine plantation on Rhu Road Higher should be maintained as it provides an effective barrier to visitors, particularly children and dogs, running onto a busy road.
- The main paths may need to be improved to allow small timber-handling and maintenance vehicles access around the Wood (although any contractor involved would have experience of dealing with such terrain). It may also be necessary to create some temporary paths into other areas of the Wood. The planning for any such use will take into account the need for path restoration. Such improvements/changes may also have benefits for horse riders and others. Clearances over and around paths will also have to be checked and improved to allow vehicles or horses to pass freely.
- The “constructed” paths should be well made, well drained and mud-free, and easy to maintain.
- The “informal” paths should be left as they are, with no attempt at improvement, or management, but should be monitored to check for over-use, and appropriate action taken if this appears to be a problem.

46. The short term priority for action is to resurface, and in places regrade, the all-abilities path which has deteriorated over the last decade. This will restore the smoothness of that path to its state ten years ago to make it more suitable for wheel-chairs and push-chairs. In addition, if any substantial removal of trees is undertaken (as envisaged above), the main paths may need to be improved, and in places widened, to allow access for tree handling equipment. Even if such major works are not carried out, most of the peripheral path will need maintenance in the medium term as some of the edges are deteriorating and some wash-away of the path covering has occurred. Although drainage has been much improved, (following a survey and report by the Paths for All Partnership, commissioned by FODW – see Bibliography at (6)), there are still some areas where paths are damaged by rain and spate erosion, and crisis action will be needed to maintain the paths.

Burn crossings and drainage

47. Apart from the Victorian stone bridge on the eastern path, the bridges are wooden; three were constructed around 20 years ago and one about ten years ago. They are showing signs of wear. The three older bridges have been repaired regularly, but their life-span is limited. They are also relatively narrow, and two of the three are in awkward positions which do not lend themselves to substantial improvement. The newer bridge (the “Thurgood Bridge”) is in good condition, but the steps down to it are exceptionally steep, and maintaining the fill of the steps is a problem. The steps were improved and refilled during 2014, but they remain a problem for the longer term. By contrast, two large culverts and a number of small culverts installed over the last ten

years have so far proved easier to maintain (although the smaller culverts can block easily). The pathways over the larger culverts are also wide enough to take tree-handling equipment if this is brought in, and horses.

48. Many of the drainage culverts and ditches were installed and dug on the basis of a detailed report by the Paths for All Partnership in 2009 commissioned by the Friends of Duchess Wood. Of the 37 recommendations in that report, those rated as "High priority" and most of those designated as "Medium priority" have been implemented, much of the work having been done by the A&BC Employability Team. This is a good example of how partnership working also furthers the social inclusion potential of work in the Wood. The ditching needs regular maintenance, and the upstream and downstream stonework on the smaller culverts needs occasional maintenance, all of which can largely be carried out by voluntary effort. Other drainage improvements have taken place in the last five years (for example around the information boards on the pony field), and we will continue to monitor and improve areas of the paths which do not drain freely.

49. The **policy** is to continue to review and repair the remaining wooden bridges and maintain other crossings and drainage ditches and as the bridges approach the end of their usefulness and/or become unsafe, to replace them with wider, large diameter culverts (see photograph). The Thurgood Bridge, being only ever likely to be used for pedestrian access, will be maintained as a bridge.

50. A range of **actions** is envisaged in the short and medium term. Depending on other action, in the short term, the bridge to the west of the Pony Field, and in the medium term the north-east bridge, will be replaced by culverts. The south east bridge is likely to remain in reasonable repair in the short term. It is not essential for vehicular access to the peripheral path that it is replaced, but for ease of maintenance, a culvert will be advantageous in the longer term. Access into and out of the burn on the west side of the south east bridge has been graded to allow horses to cross easily, and this approach may be necessary at the other crossings, depending on when culverts can be provided. The Thurgood Bridge will remain, but the gradient of the access steps will be reviewed.

Signposting

51. There are seven categories of signage in the Wood at present:

- Main Information Boards at the Pony Field
- LNR biodiversity information notices
- Duchess Wood LNR signs
- Finger signposts, mostly at entry points
- Map boards at each entry point
- A stone marking the establishment of the Wood as a LNR
- Waymarkers for the spring flower walk/all-abilities path (green arrows) and main peripheral path (red arrows).

The main Information Boards installed in 2015 give many useful facts and illustrations of the management, history and wildlife of the Wood. The robust Duchess Wood LNR signs installed by Lower Clyde Greenspace remain in good condition and have been supplemented by the new map boards. The finger signposts and biodiversity information signs are starting to deteriorate and some have broken and been repaired. The car park is not signposted.

52. The **policy** is to maintain the existing signage, and develop additional clear, helpful guidance to users of the Wood.

53. The **action** planned in the short term is to maintain, repair and where necessary replace all deteriorated signs and to confirm the request for a brown tourist sign from Rhu Road Higher to the car park.

All-abilities access

54. When the Wood first became a LNR, access around the Wood was limited to the able-bodied, who were equipped with wellies to ford the burns, and were able to climb over or round fallen trees. The changes in accessibility which have taken place since then have been remarkable, with the development of the surfaced peripheral path, the provision of bridges and culverts, and the all-abilities surfacing of the lower part of the paths network (recently made circular by the provision of an all-abilities section round the rugby field). However it is recognised that the surface of the all-abilities path has greatly deteriorated and so far funds to regrade or upgrade it have not been available. This is a high priority. The main part of the paths network now varies in its suitability – some parts are still in good condition, but other sections have deteriorated, and significant maintenance is likely to be needed over the period of this Plan. It is possible that the whole of the main circuit could be upgraded to close to an all-abilities standard, though there are some “pinch points” where this might be problematic (and the “ravine” spanned by the Thurgood bridge is always going to be difficult). The improvement of the all-abilities path would create much better opportunities for those less mobile to take part in activities in the Wood (for example the Spring Flower Walk largely follows the route of the all-abilities path, and other information and activities could be concentrated on this area).

The health benefits of the Wood

55. Access in and around the Wood has the potential to bring health benefits – both physical and mental – to all visitors, and one of the main objectives over the period of the Plan will be to explain these benefits to local users (and potential users) and visitors, as part of the wider campaign to improve Scotland’s health. A recreational overview is given in paragraph 71 below. The Wood is used regularly for cross-country races and training, and for orienteering, and it is has been agreed that a semi-permanent but discreet orienteering course will be established in the Wood. Other challenging athletic events have been held in the Wood in recent years. There are also believed to be geocache points in the Wood which attract visitors. However even regular walking in the Wood brings health benefits – the main path has a fair incline and a circuit from any of the main entry points is about 1 mile in length. In addition although the Wood is busy at times, and social interaction is frequent, it is also easy to go round the Wood and not see anyone; this green circuit, with regular birdsong, varied flowers and trees, and the occasional deer is ideal for helping quiet contemplation and helping to resolving mental challenges. In explaining and publicising the attractions of the Wood, the health benefits will be given greater priority during the period of this Plan.

Horse riding route

56. Horse riding is permitted in the Wood and follows the Scottish Outdoor Access Code. A preferred horse trail has been discussed in the past, but it has not been possible to provide this facility. Given the relatively small size of the Wood, and the need to maintain the “refuge” nature of the central part of the Wood, a separate horse trail raises problems. Equally, mixing horseriders, walkers and dogs on paths which have not been designed for horse riding also brings potential difficulties. The recent regrading of the burn crossing by the south-east bridge has been welcomed by riders, and some of the proposed access developments (such as the provision of culverts rather than bridges) should make riding around the wood easier. No clear **policy** on this issue has emerged, and at present the **action** planned is to consult further to try to determine the best way ahead which balances the needs of all users.

Maintenance

57. The **policy** in relation to maintenance is to make sure that the Wood as a whole is kept in a safe condition for users, while respecting the semi-wild character of the LNR, and that access ways and equipment provided in the Wood are kept in good condition. Many aspects of the maintenance function have been mentioned above, which can be divided into two broad categories: emergency rectification and safety, and routine maintenance.

58. Emergencies, some minor, some significant, arise for a number of reasons. Recent examples have included path erosion due to excessive rain, damage to fencing and bridges, vandalism and wind damage from storms. Responsibility for the management of the Wood rests with A&BC and safety is a fundamental part of that duty. The major crisis maintenance is carried out by A&BC and LCG, while minor work is undertaken by FODW. FODW regularly liaises with the police, fire and other services, and provides a safeguarding function, rectifying what is within its capacity and reporting to the appropriate authority anything that is not.

59. A routine maintenance schedule, attached as Annex 7, has been approved by A&BC and the local environment services section of the Council has the responsibility to apply it. The schedule recognises that routine maintenance is very much a partnership activity. A&BC regularly empties the litter bins placed at all four entry points to the Wood. FODW not only carries out daily clearance of litter beside paths, but periodically holds a litter sweep deeper into the Wood. A&BC then arranges to collect the findings. Bins are generally well-used by the public, including scooping by most dog-owners. However there are continuing problems with dog scoop bags being left for later collection by some owners and then forgotten. Other maintenance includes strimming beside the picnic benches and cutting back undergrowth (especially over and around paths), and clearing culverts to protect paths, especially at the leaf fall in the autumn. FODW has been greatly assisted in these activities by the local Community Payback team and other voluntary effort.

60. In general the **action** envisaged for the 2016-2021 MP will focus on dealing with any emergencies that arise, continuing the present level of regular maintenance in line with the agreed schedule, and undertaking specific action identified in earlier sections; these specific actions are brought together in the Action table below.

Research

61. The earlier MPs and the research undertaken so far (summarised in paragraph 17) help to understand the diversity of life in the Wood. Since the MP 2012-16 was drawn up, the concept of Citizen Science has developed, and the **policy** for the next four years will be to participate in relevant Citizen Science projects and to encourage and undertake further research in the Wood to help understanding of:

- Which species might need protection
- Which species might need to be controlled
- How greater biodiversity can be encouraged
- How the Wood relates to the local community and to tourism

62. Citizen Science is defined as "scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions" and SNH leads and coordinates much of the activity in Scotland. The SNH website gives access to the report on an important workshop in May 2015. Amongst the topics which could usefully be pursued in Duchess Wood are

- The use of “camera traps” to help identify mammals, birds, amphibians and reptiles and other wildlife present in the wood
- Air quality surveys through the monitoring of lichen and tar spot on sycamore
- Tree health
- Soil and earthworm surveys
- Pond and flowing water surveys.

The development of Citizen Science in the Wood could involve schools and families in a coordinated way and contribute not only to research specific to the Wood, but also to help build the national picture in those areas of interest.

63. Paragraph 17 above refers to the research already carried out within Duchess Wood and to the seven checklists already prepared by FODW (see Annex 4). In addition, we will continue to monitor the rookery population and we will seek help in surveying

- mammals
- other animals (reptiles, amphibians, etc)
- insects and spiders
- water-living species
- the surface geology and soils
- and we will continue to update and extend the existing species checklists.

The short term priorities will be the rookery, mammals, particularly bats, and butterflies/moths. Bats are a European Protected Species, and like the other priorities for surveys, will have to be considered in the context of adjacent woodland and other habitats. Bat surveys during the 2012-2016 period have shown Pipistrelle and Soprano Pipistrelle bats at least, using the Wood for feeding; where their roosts are remain unclear though guidance suggests that houses and other buildings around the Wood may be their hosts. It is difficult to predict at this stage what the most appropriate priorities might be in the medium term.

64. It is likely that specialist advice or support will be necessary to help plan and undertake some of this work, and contact has been made with Buglife, Plantlife, the Bat Conservation Trust, Butterfly Conservation, and the Amphibians and Reptiles Conservation Trust, all of whom have been supportive of this work. We hope that this essential research can involve local schools and colleges and volunteer groups, and significantly enhance the educational value of the Wood.

Education

65. The educational value of the Wood has been long appreciated and the **policy** over the five years of this plan will be to develop further both the support which the Wood can give to education and the support that education can give to the Wood. It is important for the long-term management and use of the Wood that children become involved and interested in the Wood from an early age. It should be noted that “education” does not refer only to children since information for adults is as important (see para 62).

66. An Education Pack aimed at primary schools was developed some years ago by the Forestry Commission Scotland but consultation during the period of the 2012-2016 MP has confirmed that in the context of the new curriculum, this is now of limited value. FODW will continue to make the material available on the website, with a suitable warning that parts may be obsolescent and that it needs read in the context of the new curriculum. Primary schools visit the Wood for a range of activities including classroom-linked learning, activities working towards the John Muir award, and Citizen Science related projects. Primary schools also participated during 2014 in a guided visit to the Wood by the Buglife Project Officer and this kind of activity will be pursued further. A more interactive approach to schools’ use of the Wood will be developed which will allow activities and information to be shared. One of the two local secondary schools uses the

Wood regularly for small-scale sporting and developmental activities such as orienteering and team-building, and discussions have taken place with the other secondary school to identify how their pupils could also benefit from the resources offered by the LNR. One of the schools has also liaised with the National Park Service to refurbish bat boxes installed some years ago, and this activity will be helpful in understanding the bat and bird population. Local colleges and universities have used the Wood for project work. There should also be opportunities to use the Wood in rural skills courses, and in the art and science parts of the curriculum.

67. One of the main developments during the 2012-16 MP period was the introduction of the Lomond School Forest Nursery for pre-primary children in the north west of the Wood. It will be interesting to see how this develops, and the DWLNRC will monitor progress and developments.

68. The other side of the coin is the contribution that pupils and students can make to the maintenance and development of the Wood. For example, primary school pupils have assisted in gully clearance, litter sweeps, and tree mulching. A secondary pupil has assisted in the preparation of the FODW Flowers checklist, and university students have carried out mapping activities. There are many ways in which teachers, pupils and students of all ages could assist further, particularly in relation to survey work, identifying species in need of protection, building nest boxes, preparing signs and maps, IT developments, and general environmental improvement work. These kinds of activities can also contribute to the "Volunteering" element of the Duke of Edinburgh's Award Scheme. The Wood has also been regularly used by scouts, guides, cubs and brownies and this should continue.

69. Education and lifelong learning for adults of all ages are also important. The checklists have attracted broad interest and the development of the Spring Flower Walk, and the guide leaflet, have also proved attractive. Similar leaflets giving guidance on other things to be seen in the Wood will also be considered. A range of local groups use the Wood. Tuition sessions have been organised by FODW about topics including edible fungi, plant identification and foraging, while others value the Wood to hone interests such as ornithology or painting.

70. **Action** will be taken over the five years of the plan to help improve the educational value of the Wood for teachers, pupils, students and adults of all ages. Further leaflets to help visitors understand the biodiversity of the Wood will be developed. Steps will also be taken to encourage greater involvement by local schools and colleges in supporting the work to improve the woodland described in this Plan.

Recreation

71. It is important to emphasise that the Management Agreement requires A&BC to "preserve and enhance the appearance of the Managed Land, and to promote the enjoyment of the countryside by the public". The Wood has been enjoyed and used for recreation by local residents and visitors for many years. As a recreational facility, the Wood is very successful, and FODW have received many complimentary comments on the attractiveness of the Wood. FODW now publishes three leaflets which are available from dispensers in the Wood and from local visitor centres:

- one gives general information on the Wood (which includes a new member form),
- another details the "Top ten" things to see in the Wood, and which includes the latest map to help guide visitors round the waymarked paths
- the third describes a spring flower walk round the lower part of the Wood, largely on the all-abilities path.

These leaflets are supported by the wide range of information boards mentioned in paragraph 51 above. Earlier work suggested a figure for visits of around 100,000 a year and this figure does not seem too fanciful; a recent partial survey over a cold weekend

(April 2016) suggested a minimum figure of over 90,000 visitors. Most visitors come simply to walk (especially with dogs), but running, cycling, horseriding, bird watching, foraging, painting, photography and general appreciation of the environment are enjoyed by many visitors. Children enjoy a range of more vigorous activities, such as den and dam building, tree climbing, paddling and leaping burns, and collecting cones and leaves. An increasing number of tourists use the Wood and its paths are now linked to the round-Helensburgh footpaths network, and the 50km Three Lochs Way from the south to the north of Loch Lomond via Helensburgh. A&BC's proposed new Green Network includes Duchess Wood.

72. In terms of **policy**, this Plan expects that activities will generally be small-scale, involving individuals, families or other small groups, and that organised activities, other than those involving schools, will be kept to a minimum and cleared through the DWLNRC (and see para 74 below). It is also intended that recreational facilities such as tables, benches and information signage will be confined to the vicinity of the main paths and the Pony Field area.

73. The Pony Field is the focus for information in the Wood and in view of its open, level nature, and its proximity to the car park and rugby pitches it may offer an opportunity to create a small recreational area with enhanced facilities, such as a form of shelter and some natural play facilities (perhaps supported by a mobile phone application, an "App") and current species records (for example of bird sightings). It is recognised that such facilities might be difficult to guard against vandalism, but we think it appropriate to consider them. The edges of the Pony Field are now being treated as an extension of the boundary transition zones discussed earlier and appropriate flowering and fruiting trees such as crab apple, rowan, wild cherry, blackthorn, hawthorn and a small selection of Scottish fruit trees have been planted to provide additional food sources for birds and animals and better opportunities to observe wildlife. As mentioned earlier some sensitive improvements to the area will be necessary if the pony field is to develop in this way, such as limited levelling of the site, and control of the extensive bramble patch on the east side. We will also consider encouraging photography, painting and wood sculpture and displaying the results. Fixed point photography to record the changing seasons and changes in habitats may be valuable both artistically and from a diversity management point of view.

Events policy

74. During the period of the 2012-2016 MP, a number of more substantial proposals for recreational use of the Wood were made, including cross-country relay competitions, major orienteering events, several well-attended performances by the Walking Theatre Company and a major night-time "horror" run. Other initiatives were considered – for example a fantasy light show, similar to that mounted successfully near Pitlochry for several years. The DWLNRC has viewed these developments positively as long as they have been properly planned and controlled and any unintended damage quickly rectified. We have developed an Events Policy which should help promoters of such events understand the special circumstances of the Wood and the processes which must be gone through before the Wood can be used in this way.

75. The DWLNRC Events Policy distinguishes between small-scale informal events (such as scout group outings) and larger events involving large numbers of people. The latter must obtain permission from A&BC which has an events pack to guide applicants. Where organisations seek to derive income from an event it may be appropriate for a donation to be made to FODW in recognition of the fact that FODW carries out the day-to-day maintenance of the Wood. Practical requirements for larger events include advance notices at the four entry points to the Wood a week prior to the event alerting the public, clearing up the Wood after the event, and forbidding use of shoes with spikes or metal studs that might damage wooden bridges.

76. The “promotional” aspect of the Management Agreement is also important, particularly in terms of reaching those who might benefit from the recreational and educational opportunities presented by the Wood. FODW produce regular newsletters, publish a number of leaflets, and maintain a website (www.duchesswood.org.uk) which give a lot of background information on the Wood, and information on activities. Good relationships have been established with the local media who have given excellent coverage to activities in the Wood.

77. In the short term **action** will focus on encouraging the use of the Wood for appropriate sporting and recreational activities, and monitoring such use, so that no damage is caused to the Wood. Ensuring that organisers understand the need where necessary for formal approval will also be important. We will also maintain the existing facilities and examining the possibility of developing the Pony Field area further (while completing hawthorn hedging work begun earlier), which could be pursued in the medium term. In relation to promotion, the existing sources of information will be used to try to reach a bigger audience and publicity through the local media and national organisations enhanced.

In the end

78. A suggestion has been made that a small part of the Wood might be set aside for interring cremation ashes. This has philosophical attractions, recognising the circle of life in an environment where life is constantly being renewed. It might also have mercenary attractions if donations or fees could help offset other costs in the Wood. However the Wood is relatively small and well used and local residents and visitors might be sensitive to such use. In the short term, informal consultation will take place to gauge reaction to the idea.

Voluntary effort

79. While the primary management responsibility rests with A&BC, much of the progress which has been made in the Wood in the past has depended on a wide range of voluntary effort, and it will be essential to support and encourage this over the period of this MP, and beyond. Many of the earlier paragraphs of the MP describe the work that volunteers have undertaken much of which has been led and organised by FODW, supported by several other local volunteer groups. We are committed to working closely with voluntary groups, particularly FODW, on the delivery of this MP and we will continue to take **action** on behalf of A&BC to support the work of FODW and other local voluntary groups. Direct support for insurance costs of FODW will continue to be covered by A&BC. FODW will represent the local community on the DWLNRC and will coordinate volunteer input to the Committee. More generally, local groups will, where necessary, coordinate their activities and priorities so as to make as efficient and effective use of resources as possible. We will alert groups to opportunities to secure funding and for training and development.

Conclusion

80. Duchess Wood is a long-established woodland, recognised as an outstanding example of a Local Nature Reserve with a high level of planning protection. It is much used and valued as a local facility which also attracts visitors from afar. It is a good example of partnership working, not just between the Council and the Friends of Duchess Wood, but involving a wide range of other contributors. Its long-term value to the people of Helensburgh, to tourism and to biodiversity close to a major town is exceptional, and it is essential that such a facility is fostered for future generations.

TABLE 1: OBJECTIVES, POLICIES AND ACTIONS

Long-term objective	Medium term objective	Policy	Action (priorities in bold)	Compartment
<p>1. To manage the Wood so as to maintain and enhance its semi-natural, mostly broad-leaved, habitat, and conserve and improve its biodiversity.</p>	<p>Continue to restructure the woodland to a more native composition and condition.</p>	<p>To manage the Wood so as to protect and enhance its biodiversity and its landscape value, while providing suitable public access.</p>	<p>Secure professional support to advise on woodland management. Fell standing deadwood near paths and where necessary create additional standing deadwood. Protect and retain native trees, unless they become unsafe near to paths. Identify native trees at the sapling stage which can be used to demonstrate good forestry practice Create open glades around the peripheral path.</p>	<p>All</p>
	<p>Establish a programme of selective thinning of sycamore, and ash and beech where appropriate, accompanied by planting or replanting of native species.</p> <p>This is potentially a very long term-action which will need to be carefully managed.</p>	<p>Identify a number of mature sycamores for retention as specimens and plan the progressive removal of the rest of the sycamore.</p>	<p>(i) Selectively thin areas dominated by sycamore, and where appropriate ash. (ii) Examine options with professional support for (at minimum) cost-neutral thinning. (iii) Seek funding for additional/residual costs, and for other aspects of woodland management. (iv) Clear-fell designated coups where needed and appropriate (iv) identify mature sycamore to be retained (v) cut back regrowth and saplings near peripheral path (vi) treat or manage to prevent regrowth (vii) re-plant cleared areas with appropriate native trees.</p>	<p>Priorities 11, 5, 1, 2, 3 All</p>

		The very large and old beech trees around the boundaries should be protected and retained. Beech should be allowed to regenerate in a managed way in the north west corner where the mature trees are concentrated.	A small number of other semi-mature beech trees will be identified for retention and protection, while the remaining trees will be removed at the same time as other operations are being carried out in the area.	4, 7
	Eradicate rhododendron and Japanese knotweed and reduce other non-native invasive species. Monitor invasive native species.		Remove rhododendron bushes progressively throughout Wood, beginning on west side. Chemically treat or physically inhibit regrowth.	All
			Remove and chemically treat Japanese knotweed.	6b, 9a, 11a
			Monitor and take action to control laurel and lamium when opportunities arise.	1b, 5c, 6b, 8a
			Take action when necessary to control bramble and bracken.	4b, 7a/b
	Assess the biodiversity of habitats and species in the Wood (All woodland management objectives are all intended to contribute to the improvement of biodiversity.)	Improve understanding of the biodiversity of the Wood, protect existing habitats and species and consider how habitats can be improved.	Specific action will be considered in relation to plants; mammals, particularly bats; insects; and birds.	All
	Manage and protect new plantings of fruiting trees and other native trees.	Look for opportunities for new plantings, and provide and maintain initial protection	(i) Further new planting likely to be linked to thinning work (ii) Keep existing protection in good repair, but remove when trees are mature enough.	11, 5 2, 4

	Manage and maintain new ponds.	Monitor development of new ponds and if appropriate look for opportunities to extend.	<p>(i) Plant native water plants in and around ponds.</p> <p>(ii) Provide natural fencing protection around ponds.</p> <p>(iii) Monitor reptile and amphibian population of the Wood.</p>	7, 9
	Establish a strategy and action plan for the Wood boundaries	<p>The management of the Wood should take into account the safety (and to an extent the amenity) of neighbouring residents, and residents should be encouraged to respect and support the Wood.</p> <p>Developments around the Wood will be monitored and action taken where necessary to represent the community interests of the Wood.</p>	<p>(i) Carry out a thorough boundary survey, and fell or lop trees identified as particularly dangerous.</p> <p>(ii) Monitor in particular the proposed development of the old Dobbie's site at the south-west corner of the Wood</p> <p>(iii) Begin to establish a transition zone between Wood and gardens</p> <p>(iv) Organise a campaign to help improve understanding of how neighbouring residents can help protect and enhance the Wood.</p> <p>(v) Explore opportunities in relation to neighbouring land.</p>	1c, 5bcd, 6ab, 11a
	Increase the "woodland corridors" between Duchess Wood and other nearby woodlands.	Encourage the establishment of additional woodland, particularly on the western boundary of the Wood.	Look for opportunities to lobby for the establishment of additional woodland.	

	Investigate the use of timber from the Wood.	Timber which is generated in the Wood as a result storm damage or deliberate felling, and which is not needed to aid biodiversity, can be removed in support of the Management Plan objectives.	<p>(i) Establish a means of safely gathering and securely storing wood.</p> <p>(ii) Investigate partnership working with local firewood suppliers or selling firewood directly.</p> <p>(iii) Establish links with local craft workers so that hardwoods can be made available for turning etc.</p> <p>(iv) Investigate other uses of wood products, such as charcoal production.</p>	
2. To provide and enhance provisions for public access.	Support and publicise the Scottish Outdoor Access Code and SNH guidance for LNRs	Ensure that these policies are built in to action and developments in the Wood.	Information and leaflets about the Wood will include references to the Code and guidance.	
	Manage and improve existing constructed paths particularly taking into account the needs of less mobile visitors.	Paths should be as natural as possible, and support the semi-wild nature of the Wood. "Constructed" paths should be well made, well drained and mud-free, whereas "informal" paths should be left as they are. Path surfaces should be "all-abilities" and information and events in the Wood should take needs of less mobile visitors into account.	<p>(i) Resurface the all-abilities path and the car park.</p> <p>(ii) consider surface improvements in other parts of the paths network</p> <p>(iii) consider all needs when planning information boards and events</p>	
	Improve burn crossing points and drainage	Burn crossings should be well-graded and reasonably wide.	<p>(i) Progressively replace S Bridge, SW Bridge and NE Bridge by suitable culverts.</p> <p>(ii) Improve grading at Thurgood Bridge, NE Bridge, and S bridge/culvert</p>	

	Provide clear signing to the Wood and around the main paths.	Signage should be clear and appropriate to the woodland setting	Provide signage from Rhu Road Higher to car park.	
	Explain the benefits to health which access around the Wood provides.	Emphasise health benefits in all communications about the Wood	Describe health benefits in grant applications, articles, publicity and information.	
	Keep question of horse riding under review	Improvements for horse riding have been made, but there are still some difficult areas.	Take opportunities that arise, particularly when developing new burn crossings, to improve horse access.	
3. To maintain access ways and other facilities used by visitors.	Maintain paths and drainage, and other facilities in the wood.	Ensure that the Wood as a whole is kept in a reasonably safe condition, while respecting its semi-wild character, and that access ways and equipment provided in the Wood are kept in good condition.	(i) The three remaining wooden bridges on the peripheral path (NE, SE and SW) will be maintained until they can be replaced. (ii) Drainage channels and culverts will be kept clear, and repaired as necessary. (iii) Benches and tables will be repaired and treated as necessary.	
			(i) Maintain information boards and signs. (ii) Maintain colour-coded waymarker posts to indicate main routes round Wood. (iii) Maintain leaflet dispensers for map and other leaflets.	

	Maintain the Wood through regular inspection, repair, and safeguarding, working in partnership with official and voluntary bodies.	As above.	<p>(i) Regular inspections and safeguarding will continue, supported by regular and ad-hoc FODW work parties. Litter clearance and reporting problems to emergency services and others.</p> <p>(ii) The lead on serious issues such as dangerous trees and storm damage will be taken by A&BC in conjunction with FODW and contractors.</p>	
<p>4. To encourage and publicise research.</p>	Encourage research into the Wood's plants and wildlife and publish the results	<p>Identify:</p> <ul style="list-style-type: none"> - which species might need protection, or might need to be controlled; - how greater biodiversity can be encouraged; - how the Wood relates to the local community and to tourism 	<p>(i) Engage with the Citizen Science initiative as a framework for further research.</p> <p>(ii) Undertake surveys of:</p> <ul style="list-style-type: none"> • the rookery population • mammals (particularly bats) • other animals (reptiles, amphibians, etc) • insects and spiders (particularly butterflies and moths). • water-living species. <p>Investigate sources of information on surface geology and soils.</p> <p>Continue to update and enhance the existing checklists.</p>	

<p>5. To encourage and promote the educational use of the Wood.</p>	<p>Enhance the use of the Wood for educational purposes.</p>	<p>Develop further both the support which the Wood can give to education and the support that education can give to the Wood.</p>	<p>(i) Improve the educational value of the Wood for teachers, pupils, students and adults of all ages. Liase with, and encourage greater involvement by local schools and colleges in supporting research, and protecting and enhancing the Wood. (ii) Make information for schools available through both the A&BC and FODW websites. (iii) Maintain websites and publish information leaflets and checklists. (iv) Keep information hub up to date.</p>	
<p>6. Recreation and community engagement</p>	<p>Keep under review policies for recreation which take account of the different needs of users.</p>	<p>Encourage recreational use of the Wood, which will mainly be small-scale, involving individuals, families or other small groups. Significant organised activities, other than those involving schools, will be kept to a minimum and cleared through the DWLNRC. Recreational facilities will be confined to the peripheral path and the Pony Field area.</p>	<p>(i) Apply the A&BC Events Policy to larger events while taking a proportional approach to smaller events. (ii) Continue to survey visitors to get a better understanding of numbers and needs. (ii) Maintain the FODW website and publish information leaflets. (iii) Promote the Wood as a valuable community recreational resource. (iv) Examine the possibility of developing the Pony Field area further as a central location for information and recreation.</p>	

<p>6. To support voluntary involvement.</p>	<p>Support the Friends of Duchess Wood and their coordination of voluntary effort and representation of the local community. Facilitate the use of the Wood by other voluntary groups.</p>	<p>While the primary management responsibility rests with A&BC, voluntary effort is essential to protect, maintain and enhance the Wood and its facilities.</p>	<p>(i) Support the work of FODW and other local voluntary groups. (ii) Direct support for insurance costs will continue to be covered by A&BC. (iii) FODW will be represented on the DWLNRC. (iv) Local groups will, where necessary, coordinate their activities and priorities. (iv) Groups will be alerted to opportunities for training and development.</p>	
--	--	---	---	--

BIBLIOGRAPHY

1. Information on geology at <http://www.macaulay.ac.uk/soilposters/4.pdf> and <http://nora.nerc.ac.uk/3231/1/Devonian%5B1%5D.pdf> .
2. Information on trees and woodland management: "Woodland management : a practical guide" Chris Starr, The Crowood Press, ISBN 978 1 86126 789 4 and "A handbook of Scotland's trees" Ed Fi Martynoga, Saraband, ISBN-13: 978-1-887354-86-8
3. Argyll and Bute Biodiversity Action Plan at <http://www.argyll-bute.gov.uk/sites/default/files/planning-and-environment/AandB%20BAP%20Draft.pdf>
4. "Fungal Diversity Survey and Management Recommendations for Duchess Wood LNR", Neville Kilkenny, Royal Botanic Garden Edinburgh, December 2008 and supplementary survey 2009.
5. "Bryophyte Survey, Duchess Wood Local Nature Reserve", Maren Flagmeier, February 2009.
6. Information on multi-purpose woodlands at <http://www.snh.gov.uk/land-and-sea/managing-the-land/forestry-and-woodlands/manage-woodlands/>
7. "Local Nature Reserves in Scotland : A Guide to their Selection and Declaration", Scottish Natural Heritage, 2000, pp 32. <http://www.snh.gov.uk/docs/A314445.pdf>
8. "Path Drainage Improvement Report on behalf of Friends of Duchess Wood", Kevin Fairclough, Paths for All Partnership, March 2009, pp 52.
9. Scottish Outdoor Access Code: <http://www.outdooraccess-scotland.com/>

Other background information:

- "Greenspace Audit and Action Plan – Helensburgh and Lomond", Land Use Consultants (Prepared for Lower Clyde Greenspace), October 2006, pp 107.T
- "Transforming Urban Spaces into People Places", Greenspace Scotland, Health Scotland, Scottish Natural Heritage and Institute of Occupational Medicine, June 2008, pp 74.
- "Scotland's Landscapes : Places for People", Scottish Landscape Forum, Report to Scottish Ministers, March 2007., pp 80.
- "Argyll and Bute Council Green Belt Landscape Study", Ironside Farrar, February 2010, pp 115.

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 burn-sides 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 secure 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 Woodlandsⁱⁱ 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 bramblesⁱⁱⁱ 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 in 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 understory 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 understory 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 Stragglng 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 Woodward
Hypoxylon fuscum Hazel Woodward
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
Alchemilla 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
Lamiaeum 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

Mammals checklist

Scientific Name/Common Name

<i>Erinaceus europaeus</i>	Hedgehog
<i>Talpa europaea</i>	Mole
<i>Sorex araneus</i>	Common shrew
<i>Clethrionomys glareolus</i>	Bank vole
<i>Apodemus sylvaticus</i>	Wood mouse
<i>Mus musculus</i>	House mouse
<i>Rattus norvegicus</i>	Brown rat
<i>Sciurus carolinensis</i>	Grey squirrel
<i>Oryctolagus caniculus</i>	Rabbit
<i>Mustela nivalis</i>	Weasel
<i>Vulpes vulpes</i>	Fox
<i>Pipistrellus pipistrellus</i>	Pipistrelle bat
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle
<i>Capreolus capreolus</i>	Roe deer

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.

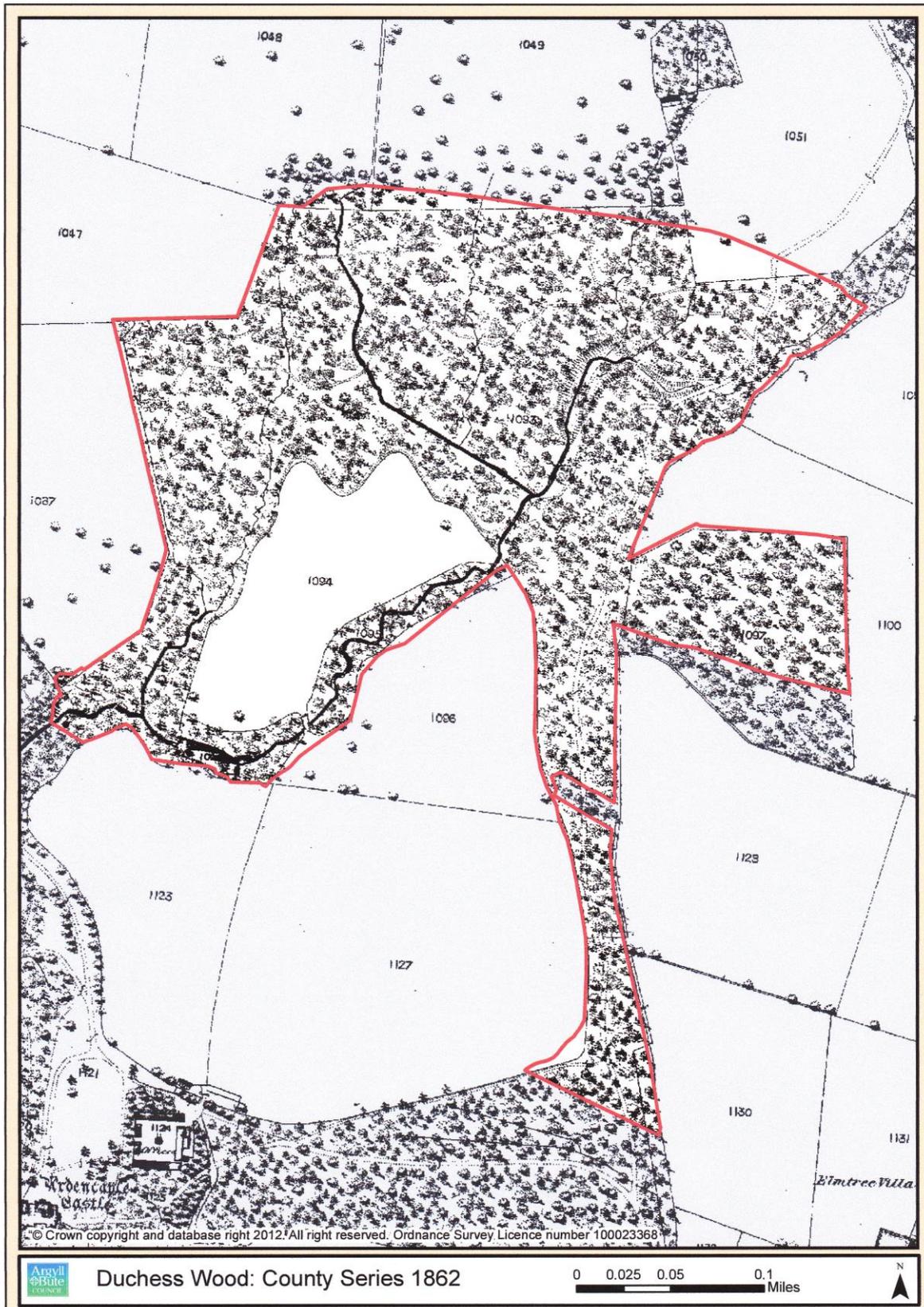
In terms of the management plan, a thorough boundary survey is needed to better inform future actions. Thinning the boundary areas; removing dangerous trees; removing some of the trees which are very close to boundaries; removing overhanging branches; and making access around the boundaries easier for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

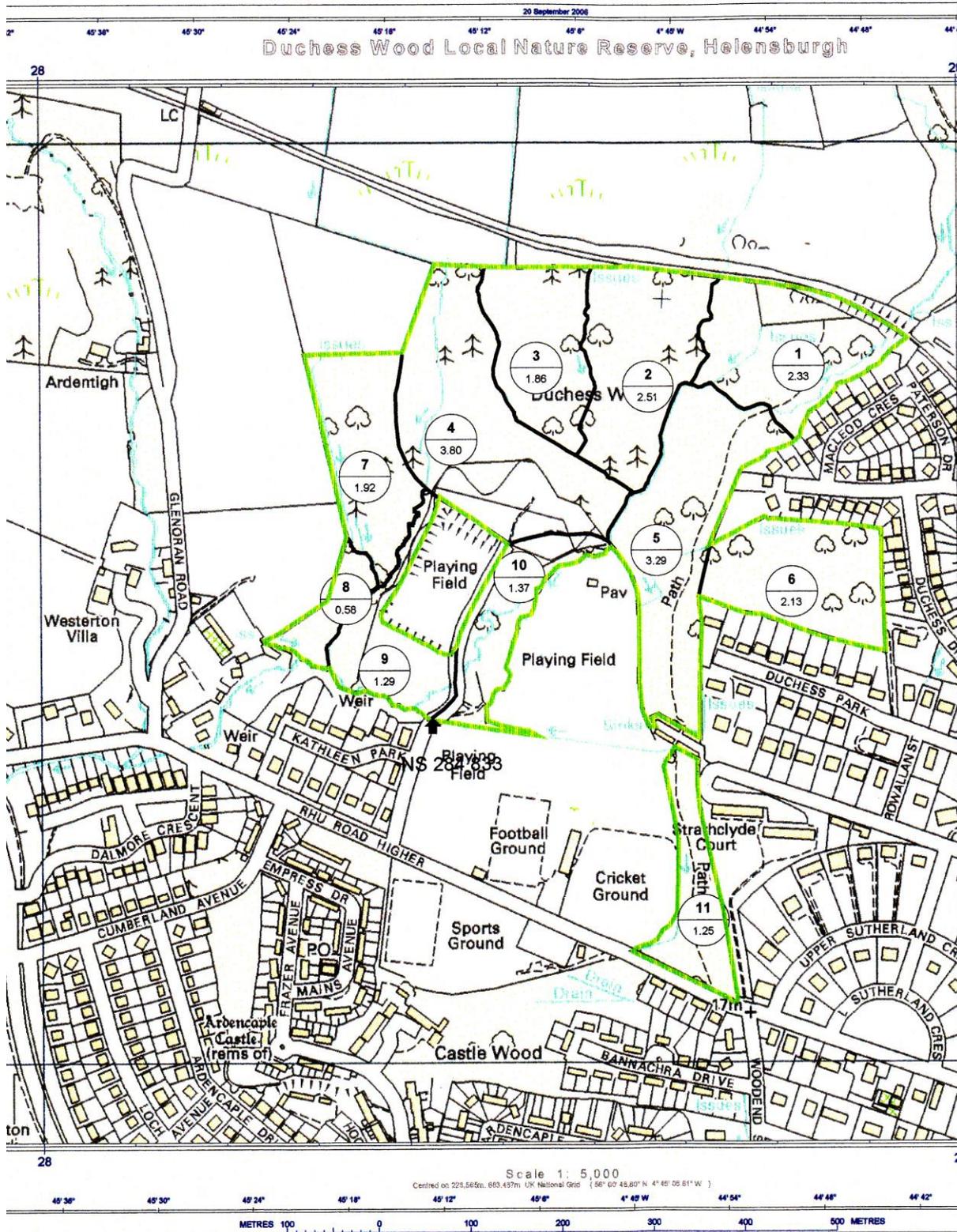


Map of Duchess Wood

(prepared by Kenny Steele, Babcock International, 2015, and based on a map 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.
 - Car park maintenance
3. What elements could be maintained through sources other than Argyll and Bute Council?
 - General keeping tidy activities could be tackled through the FODW, TCV, Green Gym, Community Payback
 - Repairs to bridges, benches and information boards by FODW/Community Payback
 - Other damage to paths from heavy rain
 - Larger scale path maintenance could be tackled by or TCV teams or, in exceptional circumstances, contractors. In the case of contractors this would be dependent on additional funding being secured by LCG/FODW.
 - drainage ditches and culverts can be cleared through the input of FODW and other volunteers (a navy team assisted in 2015).
 - Leaf raking/clearing fallen branches by FODW/Green Gym/TCV
 - 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. The backbone of support from the Council is essential to much that goes on in the Wood, but funding pressures mean that support has to be carefully managed.

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 the employability Team was wound up in 2015, so this source of support has now been lost.

Friends of Duchess Wood (FODW)

As already indicated the FODW already deliver a range of enhancement and maintenance benefits within Duchess Wood. Their activities are understandably limited by the availability and abilities of their members, the funding available, and their level of insurance cover. FODW has also when funds permitted enlisted the assistance of contractors to undertake heavier work.

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 Payback Teams

Community Payback has undertaken a wide range of work including strimming around the Pony Field, drainage installation and repair and the installation of waymarkers. CP should continue to be available to assist with work, dependent on the other demands for their services.

Local Schools

Teachers from local schools and their pupils contribute significantly to the development of educational resources, and Lomond School are represented on the LNR Management Committee.

Other environmental bodies.

The wood has benefited from assistance from SNH and FCS and a number of environmental charities such as The Community Woodlands Association, Buglife, Plantlife, and the Amphibians and Reptiles Conservation Trust and this kind of professional support is invaluable and is likely to continue.

Local funding sources

Grants or work from the Round Table, the Third Sector Interface, Action Earth, SNH, and Babcock International has been invaluable in progressing improvements in the Wood, and such support will continue to be sought from local organisations.

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>