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Any corrections, additions, or comments would be very welcome.

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ACHVARASDALE WOODLANDS MANAGEMENT PLAN.

PREFACE

There have been various moves by public bodies to assist the Church of Scotland to maintain the woodlands surrounding the Eventide Home. The intention has been that local people should be involved and benefit from controlled access. The actual management body and its finance have yet to be decided at a public meeting. So far there has been agreement that the Church should lease land to the Highland Council, who would be responsible for its maintenance. A local management committee is required that should guide the council in its task. Whoever has the task, there is the same need for a clear agreed plan that attempts to be as far sighted as possible. A plan has been produced by the Council (ref.1) that could be considered as a proposal for action. Although informed by considerable expertise it suffers from a lack of local knowledge, and would require some amendment in detail. It should be possible to reconcile the different requirements of all the interested bodies, who can be assumed to agree on a common end. This note skips ahead of that effort and attempts to collect together what is known about The Woodlands and suggest options for future management.

0.01.INTRODUCTION.

0.01.1. Since the grounds have been opened to the public, there have been regular walkers (with a subset of runners) and occasional visitors who seem to appreciate the grounds as they are. Another important group are the residents of the home, who can walk or be pushed around the grounds or are just involved with the wild life near the house. There are undoubtedly a number of people who are concerned that the grounds should be preserved, and where necessary improved. It can also be assumed that most of these people are concerned for the far future. It is touching how many are content that the results of their efforts could only be appreciated long beyond human life spans; as is inevitable with tree culture. A mitigation is the joy of seeing healthy trees at all stages of growth and seasons of the year. A common idea is that without intervention The Woodlands will not continue much longer. It is worth considering what would be the consequences of doing nothing; bearing in mind that little work has been done in the last 50 years. It would also be worth while considering the acceptable motives for intervention. Some decisions would have to be taken on methods; based on the alternative extremes of clear felling or irregular thinning. To this end it would be instructive to gather as much as possible of the history of tree planting, together with their successes and failures. Also it would help to describe what is known of the present wildlife; archeological remains; buildings and artifacts; and garden features. Then the options for preservation or possible improvements could be considered together with their likely effects. Perhaps the most important decision to be taken would be preservation of the boundary fencing and walls, to keep them stock and fire proof.

0.02.HISTORY.

0.02.1. The Council plan makes the assumption that The Woodlands were started by the Pilkingtons in 1917; and hence that most of the trees are a first rotation crop. Actual observations of the trees shows that this assumption is a gross simplification, and that there is a history of tree planting that goes much further back in time. This would mean that the commercial forest paradigm of planting and harvesting is inappropriate. What we see now is a snap shot of a slowly evolving natural woodland of mixed species and ages. The knowledge of the history should influence the management plan; because it teaches what is feasible. Details of what can be gleaned of the history are given in Appendix 1.

0.03.CURRENT TYPES OF TREES.

0.03.1. Table I is a list of all the types of mature trees found in the wood, including those listed by the Council report (p4, para.5.1 ref.1). The greatest and typical ages and heights are given where possible. Where the trees are actively regenerating this is indicated. It is a pity that recommendations for tree planting schemes are frequently made from text books without any observation of past experience in the area. To set the record right it is necessary to expand on what can be found of healthy trees. This is given in Appendix 2.

0.04.WILDLIFE.

0.04.1. The Woodlands are essentially an amenity with a wide variety of uses. It is also incidentally home for a wide range of wildlife that could not exist without it. This is what draws a variety of enthusiasts. A description is necessary of this wildlife to inform any decisions made on the management of The Woodlands. Where possible this is given in Appendix 3.

0.05.MAN MADE FEATURES.

0.05.1. These would comprise archeological & historical remains; buildings and artifacts; and garden features. A description of them is given in Appendix 4 to help avoid any conflict with a management plan.

0.06.CONSEQUENCE OF DOING NOTHING.

0.06.1. It should be obvious from a detailed observation of the present trees and the natural regeneration; that The Woodlands could continue indefinitely, providing they are adequately fenced against livestock. That regeneration could also be halted by

fire, or an increase in the populations of Rabbits, Hares, or Deer. Hence the question should be re-phrased as, what would happen providing The Woodlands were protected from fire or grazing animals.

0.06.2. The past fifty years suggests that any change would be mainly quite slow. There has been evidence of windthrows of deciduous trees over most of that period. In many cases the tree has remained alive as a thicket of re-grown poles. Otherwise other seedlings have taken over the space left. The winning replacements have varied considerably depending on the nature of the gap site. When a large area was cleared, as in 1988, then Birch have been the winners. Otherwise Sycamore and Sitka Spruce seem to be joint winners, with Ash and Beech not far behind. This would suggest that the character of The Woodlands must slowly change to be dominated by the main climax trees. There would also be a lot of encroachment onto any open ground. The final state of stable equilibrium, with The Woodlands dominated with the climax trees, might take hundreds of years to evolve.

0.06.3. This paradigm of a slowly evolving woodland changes the motives for intervention. There is no requirement for any desperate type of rescue of the much loved local amenity. The time scale of change will be long even though some windthrows might appear catastrophic, especially in forested areas. Any intervention would be to retain or change the character of The Woodlands; according to the wishes of the local people who want to be involved.

0.07.INTERVENTION OPTIONS.

0.07.1. There is a need to consider all the various options; any of which could be applied to particular areas and periods of growth. Broadly these are: clear felling; irregular thinning; tree surgery, or coppicing; gap and area planting; and hedge, or shelter belt planting. These options are not all mutually exclusive and could be regarded as a range of tools to be used to retain or change the character of The Woods. They are described and discussed with possible motives in Appendix 5.

0.08.NEED FOR BOUNDARY MAINTENANCE.

0.08.1. The Council plan (p13, para.2.7 Ref.1) neglects this subject except to discount it with no justification. This appears to be a serious oversight, so in Appendix 6 the needs are outlined and then considered in detail. Any serious plan would have to consider these needs (especially for fire safety) as the first priority.

0.09.NEED FOR PATH BUILDING AND MAINTENANCE.

0.09.1. The Council plan rightly is concerned with maintenance for the present paths, and improvements where necessary. The standard aimed for is to provide a suitable surface for wheelchairs. This is in accordance with the use of The Woodlands as a public amenity; not just for the able bodied. This would probably also coincide with the requirements of runners who also value The Woodlands as a sheltered location. However with limited funds it is obviously important that the work has to be cost effective. The past record in this respect and some options for future improvements are examined in Appendix 7.

0.10.WILD LIFE ENHANCEMENT.

0.10.1 Some possible options for a water feature, wild flower enhancement and nest sites are given in Appendix 8.

0.11.SIGNPOSTING AND INTERPRETATION DISPLAYS.

0.11.1 It is significant that the Council Plan (p67-8, ref.1) devotes a large part of its budget for this end. It is obviously very important, particularly for occasional visitors and school parties. However there would be a tendency for the information to be fixed for all time. It could be more effective if a display area is chosen that could accommodate temporary notices, and changing information. Ideally it should not be necessary for it to cost too much. One possible compromise, might be if the Church would be ready to lease one of its outbuildings, with plenty of display space. Such a solution would open up other possibilities, such as records storage and the provision of toilets. There would also be potential problems like vandalism.

0.11.2. Whatever the type of display, it would be important that the content should have some input from local people. A flexible display such as notice boards could be used to encourage information from local enthusiasts: bird watchers, botanists, entomologists, historians, naturalists and photographers. If possible they should be enhanced by contributions from local school children. The signs could be simple and refer back to a map in the display area. A helpful touch would be to label some of the prominent trees.

0.12.RECORD KEEPING.

0.12.1. If the woodland management is regarded as a long term requirement, it would be essential that records are kept and shared with everybody involved. This would be how an interpretation centre would also be useful as a records office. It would be helpful if any records kept by The Church or The Council could be copied to the Local management body. This could probably be done with least effort as computer files. It would also be sensible to share records of any private plantings, to avoid them being weeded out. There is also a place for voluntary information to be shared; if the specialist enthusiasts who visit could describe their findings. A feeling that a lot of people share is a desire for continuity. This is particularly true of woodlands, where large scale changes of any sort are resented. Many also would be interested in the history of The Woodlands. It would help, if those who have known them for a long time, could share their memories. This would require somebody good at interviewing to record these impressions.

0.13.FINANCE.

0.13.1. The funding for work will probably have to come from a variety of sources: such as HC, CASE, SNH, Millenium Fund (grants ended Oct.98, small grants <£5000 left), Awards For All (small grants scheme), or National Lottery Charity Board (if agreed by the Church). The Council For Voluntary Services will give advice (Funder Finder) on the ideal source from the many available. More than likely part funding from one source will prove a strong case for top up from another. The general problem will be that the needs of the work is for modest regular funding for an indefinite future. Only commercial forest plantations can be left to their own devices for up to 15 years after planting. If anything is to be done for a mixed woodland, it will require annual attention. It is unlikely that any public body will agree to funding on that basis. They might agree to pay for a project such as new paths, fencing and wall repairs, or interpretive signs. It is possible that some income could come from sale of timber or fire wood, if the Church and Council are agreeable. See Appendix 5 for feasibility.

0.13.2. Either way it would probably be advantages if the local management body could raise a modest amount of money independently. One unique method might be if memorial trees could be planted and maintained in return for donations. Of course this would require the Church's agreement. A modest subscription might be popular, as a means for local people to show a tangible commitment. It should at least cover administration costs, and encourage funding from other bodies. If an interpretation site could be established, it should be possible to make it self financing from donations. There could even be a Wishing Well. A big boost would be if the centre could be added to the Green Tourism Route.

0.14.SUMMATION OF THE COUNCIL MANAGEMENT PLANS.

0.14.1. The plans are presented on the apparent assumption that they should be accepted as a package. They even include detailed costings; which are rather premature, unless they assume that the only function of the local management body is to raise funds. In spite of the size of the report (68 pages without appendices), the main criticism must be what it leaves out. It is possible that Fire Safety was considered to be outside of their remit; but it should have been declared to ensure that it is not overlooked. The boundaries should have been considered because it is a requirement of the lease, and parts need urgent attention. Inaccurate history has lead to a plan more suitable for a commercial plantation, now requiring re-planting; rather than an old mixed woodlands, that needs a more varied intervention. That does not mean that their plan should be rejected wholesale; neither should it be rubber stamped. Appendix 9 attempts a preliminary examination of the tree proposals. The history of recent path building has shown the consequences of remote management. Details and suggestions of alternative approaches are given in appendix 7 . The proposals for signposting and interpretation are very expensive and inflexible. An alternative approach is suggested in paragraph 0.11. Another consequence of remote management could be that most of the contractors would be based in Inverness. Local people would thus have even less appreciation of any work. The most successful work in recent years was by small local contractors, dealing directly with The Church. The ideal would be to encourage a local skills base.

0.15.CONCLUSIONS.

0.15.1. It should not be surprising that in a lengthy management plan there would be some errors. However the errors revealed are of such a fundamental nature, that it throws doubt on the ability to manage The Woodlands from Inverness. This remoteness appears to be the root cause of mistakes in the work of recent years.

0.16.RECOMMENDATIONS.

0.16.1. The management body should be assured that both the Church and the Council agree on the need to obtain expert Fire Safety assessment as an urgent precondition for assuming their role.

0.16.2. The Council report should not be accepted as a source of information until known errors are corrected. There should be an effort made to gather independent information as widely as possible; especially from local sources.

0.16.3. Every proposed project made by the Council should be examined separately in the light of independent information and opinion.

0.16.4. Other projects should be considered, according to the priorities of the time. These could consist of the following;

- Upkeep of boundary fences and walls, with a possible cattle grid.
- Consideration of plan for preservation of present trees; including recording, tree surgery and coppicing.
- Consideration of plans for wild life preservation; including water feature, wild flower enhancement and provision of refuge and nest sites.

REFERENCES.

1. Achvarisdale House & Policy Woodlands. WOODLAND MANAGEMENT PLAN.: Author unknown, but received from HC. Undated but received in 1999.
2. THE BUILDINGS OF SCOTLAND: Highland and Islands; John Gifford: Penguin Books 1991.
3. Flora Britannica; Richard Mabey; Chatto & Windus, 1998.
4. Mushrooms & Toadstools; John Ramsbottam; Bloomsbury Books, 1989.
5. The Caithness Book; Ed. Donald Omand; Highland Printers 1972.

MATURE TREES FOUND

This list does not include recent planting: which are taken as wish lists. They are made from the Council list in Ref.1 (HC), and those observed by locals (LOC). Regeneration is indicated in the column headed R by Y/N for yes or no.

COMMON NAME	BOTANIC NAME	LOC	H.C.	MAX. HT. metre	EARLIEST BIRTH	R	COMMENT
Hybrid Cypresses	?	yes	no	-	-	N	Church plantings.
Noble Fir	<i>Abies procera</i>	yes	no	18	1940	N	
European Larch	<i>Larix decidua</i>	yes	no	14	1933	N	
Japanese L.	<i>L. kaempferi</i>	yes	yes	15	1948	N	solitary
Sitka Spruce	<i>Picea sitchensis</i>	yes	yes	24	1890	Y	
Scots Pine	<i>Pinus sylvestris</i>	yes	no	16	1928	Y	
Shore P.	<i>P. contorta</i> 'contorta'	yes	no	-	-	Y	shrub
Mountain P.	?	no	yes	-	-	-	as above
Maritime P.	<i>P. pinaster</i>	yes	no	13	1932	N	
Monterey P.	<i>P. radiata</i>	yes	no	-	1932	N	one
Sallow	<i>Salix caprea</i>	yes	no	-	-	Y	shrub
Eared Willow	<i>S. cinerea</i>	yes	no	-	-	Y	shrub
Aspen	<i>Populus tremula</i>	yes	no	-	-	n	Copse of suckers.
Balsam Poplar	?	yes	no	18	1943	N	possible hybrid
Silver Birch	<i>Betula pendula</i>	yes	yes	13	1935	N	
White B.	<i>B. pubescens</i>	yes	yes	18	1914	Y	
Alder	<i>Alnus glutinosa</i>	yes	yes	16	1935	Y	
Hazel	<i>Corylus avellana</i>	yes	no	-	-	N	shrub
Beech	<i>Fagus sylvatica</i>	yes	yes	19	1899	Y	
Copper B.	<i>F. s. 'Purpurea'</i>	yes	no	18	1922	N	
Sessile Oak	<i>Quercus petraea</i>	no	yes	-	-	-	
Holm O.	<i>Q. ilex</i>	no	yes	-	-	-	
Wych Elm	<i>Ulmus glabra</i>	yes	no	22	1891	Y	
Hawthorn	<i>Crataegus monogyna</i>	yes	no	-	-	Y	shrub
Rowan	<i>Sorbus aucuparia</i>	yes	yes	-	-	Y	shrub
Swedish Whitebeam	<i>S. intermedia</i>	yes	no	10	1935	Y	
W. hybrids	<i>S. ?</i>	yes	no	-	-	Y	variations seen
Gean	<i>Prunus avium</i>	yes	no	-	-	Y	shrub
Cherries	<i>P. ?</i>	yes	no	-	-	N	various old plantings
Laburnum	<i>Laburnum alpinum</i>	yes	no	-	-	N	doubtful identity.
Holly	<i>Ilex aquifolium</i>	yes	no	-	-	Y	shrub
Norway Maple	<i>Acer platanoides</i>	yes	no	17	1939	N	solitary
Sycamore	<i>A. pseudoplatanus</i>	yes	yes	21	1863	Y	
Horse Chestnut	<i>Aesculus hippocastanum</i>	yes	no	14	53	N	cast off conkers?
Broad-leaved Lime	<i>Tillia platyphyllos</i>	no	yes	-	-	-	Record for Highlands ?
Ash	<i>Fraxinus excelsior</i>	yes	yes	21	1879	Y	

APPENDIX 1.

1.0.HISTORY.

1.01.GENERAL.

1.01.1. The Council read the OS maps as showing Achvarasdal House as a ruin in the 1870s and later in 1906 (p2,para2.4, ref.1). This is plainly contradicted by the Buildings Of Scotland Trust entry; "Much gabled and gabled shooting lodge built for Sir Robert Sinclair of Murkle c.1870", (Ref.2).

1.02.TREE HISTORY.

1.02.1. The earliest planting can only be speculated on. The 1872 OS map shows wide avenues; one along the present main drive, and the other following the East wall then continuing down to the Isauld Burn. If the trees follow the pattern of planting

on other avenues in Caithness, they would have included Beech, Sycamore, Ash & Wych Elm. Some support for this belief comes from crude estimate of age based on measurements of girth. This also suggests that Sitka Spruce was planted in the late 19th century. It would be likely that these trees would have a much shorter life than their southern expectations. However they would have supplied plenty of seedlings, which could be selected for replacements. There would also have been the seedlings of forest edge trees or shrubs, that would invade any land in the North of Scotland, if it is fenced against live stock. These might have included Birch, Alder, Elder, Hawthorn, Holly, Gorse, Wild Rose, Raspberries, Brambles and Willows. Their survival would have depended on how rigorously they were weeded out, or if the land was grazed. Further evidence of the early avenues are the remains of Laburnum hedges, following both their original lines. This curious practice (bearing in mind it is poisonous to livestock) was at the height of fashion in the 1850s (Ref.3). The exact identification might aid the dating (see appendix 2).

1.02.2. Evidence alone from girth measurements suggests that there was a lot of tree planting in the inter war years; continuing to some extent until the land was given to the Church in 1949. Again just walking the woods reveals what an interest was taken in tree growing by the unknown person(s). Their foresight gave the groups of Scots Pines, Beech varieties and Maple; now mature and enhancing the present character of the woods. They collected various hybrids of the Whitebeam; a happy choice of a fine Scottish tree. They experimented with impossible trees which would still be against the advice of contemporary experts. Some paid off like the Maritime Pines; low in stature but with shapely defiant crowns. They also planted some stands of forest trees, like Larch and Sitka Spruce; no doubt influenced by government aid. These trees suffered from a lack of thinning at the optimum times.

1.02.3. By the time that the Church took over in 1951 the cost of labour must have risen to the extent that little work could be done. They would scarcely have managed to maintain the drive and gardens, with the grass cutting. As for the woodlands, there is a period of almost fifty years of neglect. It is remarkable how little the woods have suffered; and indeed there are extensive signs of natural regeneration. So at least they must have managed to exclude livestock. There is the hypothetical loss from neglecting the thinning of forest trees. This could only be evaluated from the current market value of good quality timber, assuming the mature trees had been treated perfectly and finally clear felled. These neglected trees present problems for future management.

1.02.4. The only known recent planting was in 1989, following the wind blow in the winter. This mainly affected the tall Sitka Spruce; possibly because the land was soft and water logged, whilst all the deciduous trees had lost their leaves. There was one solitary conifer standing amongst the debris: later identified as a Monterey Pine (*Pinus radiata*). It had survived the gale possibly because of its native tenacity and lack of side branches. Whatever its qualities it didn't survive the chain saw in the later tidying up operation. It was ring counted to be planted in 1932. No other three needle pines have been found in the woods.

1.02.5. The later planting, organized by Highland Regional Council, soon succumbed to the next stiff breeze, which toppled the plastic guards designed for the south of England. With subsequent re-staking a surprising number of trees have survived (up to 80% in some groups, with about 20% overall): though they have not done so well as the natural regeneration of mainly Birch, Ash, Rowan & Sycamore. The planting appeared to consist of a wide selection of native broad leaves, including Oaks which should be a welcome sight in another five years.

1.02.6. In recent years the church has permitted some private gap planting of individual trees, shrubs and plants. These have mainly followed the drives or path edges, considerably enhancing the pleasure of the walks for garden lovers.

1.02.7. In 1996 a clearance and planting contract was arranged by the Highland Regional Council with Fountain Forestry. As reported by the Council official, the intention was to remove some of the Sitka Spruce on the West side which had never been thinned and were expected to fall with the next gale in that quarter. In particular they were to concentrate on trees that would endanger the West boundary wall and fence. The cost of the operation including a certain amount of firewood for the home and some re-planting should have been covered by the sale of good timber. Modern equipment was used to remove timber and smaller firewood. Some but not all the hazardous boundary trees were removed. The large harvesting vehicle worked very quickly, but did a lot of damage to surrounding deciduous trees and left behind large amounts of brush wood. This damage was attributed to windthrow in the Council report (p23 Description, Ref.1). No trees were planted.

1.02.8. Along with the tree work, some new paths were opened up, with signs and an interpretive display. The signs and display were well made, and are still serviceable. There is a good path going to the East from the entrance, and a rather muddy and uneven one to the West. Nobody could claim that the path building has been cost effective. The overall impression remains of a management system for control over all the contracts which was too remote.

APPENDIX 2.

2.0.OBSERVATIONS ON THE CURRENT TYPES OF TREES.

2.01.GROWTH LIMITS.

2.01.1. The usual explanation for the limited stature of Caithness trees is the climate (see p3 ref.1). This is clearly disproved by the much taller trees in Borgie Forest; which has a similar climate. In fact the most critical limitation is the trees' high water requirement in the growing season. This is where the Old Red Sandstone bed-rock limits the root penetration, and hence the water uptake. This is clearly shown by windthrow trees of all types; with their attached disk of shallow roots. The trees can grow well enough in early years, but will reach their terminal height earlier than those whose roots can penetrate down to copious summer reservoirs. The same must be true of girth increases; so the age must be proportionally under estimated. The only way to correct this would be to make periodic measurements for a wide range of tree types and ages. Without knowing the correction, all ages quoted over about 60 years, must be assumed to be underestimates. A feeling for the extent of this error can

be deduced by the experience of trees in more favourable soils: whose girth growth rate decreases to about half the optimum rate as they approach climax height. If the same is true of Caithness trees; then a tree with an estimated age of 100 years, might have a true age of 140 years. To avoid possible confusion, all dates and ages quoted in tables and text are not corrected. Also there are a lot of trees, which gardeners might call shrubs, that do not have single stems. There is no easy way of estimating their age. Nevertheless the uncertainty tends to reinforce the concept of the origin of The Woodlands dating back to at least the middle of the last century. Apart from the obvious commercial forestry stands, a high proportion of the trees pre-date the Pilkington purchase in 1917.

2.01.2. Aside from the world of measurements, the perception of The Woodlands is not unduly influenced by their growth limits. Most of the trees are well proportioned and can appear as handsome to an un-calibrated eye. The appeal of mixed woodlands comes from the juxtapositions of all ages and types. Even the ancient gnarled and distorted remnants of the western seaward avenue have their fan club.

2.01.3. The tallest tree found is a Sitka Spruce, growing near the boundary to the south of the house, born in 1890 and 24m high. However a comparative youngster from 1913 appears to be overtaking it. It is isolated on rising ground nearer to the west corner of the house; and obviously its roots have almost exclusive use of deeper soil. Any youngsters (human type) reading this should keep an eye on it over the next fifty years or so. The oldest tree found is a Sycamore to the south west of the house, dating from 1863. It appears to have cheated by being coppiced some time near the turn of the last century. Two poles must have grown up from the stump, and one must have fallen about twenty years ago, leaving a rather jagged break.

2.02.TREES FOUND.

2.02.1.Sycamore.

This has many characteristics depending on treatment. At its best in deep rich sheltered soil it can be a magnificent tree: the Plane of Scotland. It can be found just hanging on at the seaward edge of woodlands. It is frequently a weed in good garden soil. All these guises, at all heights and ages, are found in the woods. The city sin of dropping clairtie honeydew on cars can be excused. It has a more serious tendency, if allowed, to spread its boughs until they break under their own weight. Against that is the smile it can bring to beekeepers in a good year. I have been called out to deal with a swarm, only to find a massed choir of Bumble Bees in an isolated Sycamore. It is not a native but has been around for so long that it has collected its own distinctive wildlife. The wild seedlings can be assumed to be naturally selected to be ideal for the local conditions. The only treatment required would be resolute irregular thinning.

2.02.2.Ash.

This is a good companion to the Sycamore, being close behind in seaward defence. It is a native, does not clairtie, or spread its boughs so excessively and its late Spring greenery is very striking. It is not so prolific as the Sycamore, but it regenerates well, with all ages found. Some irregular thinning might be required. A small proportion of the trees have heart wood rot; apparently started when young. Expert advice would be needed to determine how serious this could be.

2.02.3.Beech.

This is even further from its native range in the south of England. However it is often the backbone of the older woods found in Caithness; as well as being the main constituent of hedges. It is not usually recommended for sea defenses; though some can be found in the North West corner, standing alongside Sycamore and Ash. Certainly the dump of salt grit, beside the junction of the main drive and the East Drive; was an effective weed-killer against the clump of mixed varieties of Copper Beech, that must have been deemed to be growing too well. They must be the most successful second generation deciduous tree in Caithness, because of the seedling's tolerance of shade; where they might also escape poisoners. They are regenerating well from a smaller base in The Woods in certain areas. There is a good case for planting to get more even distribution.

2.02.4.Wych Elm.

This is a well established Caithness native, with their early spring flower & fruit show. It is not immune from Dutch Elm Disease, but sparsity of hosts has limited its spread in Scotland. It is among the earliest inhabitants of The Woodlands, and has been regenerating. It would be worthy of further planting.

2.02.5.Birch.

The White or Downy Birch (*Betula pubescens*) is a good native pioneer on poor soils in Caithness. The Silver Birch (*B pendula*) grows well enough, but does not appear to regenerate as well. Both are good for wildlife because of their combination of shelter with light shade. Eventually their numbers must diminish as second generation trees are nursed by them to become established. To retain Birch, it might be necessary to thin out the opposition. Silver Birch might need planting: indeed it is probable that the scattered old trees have all been planted. It should be possible to retain Birch far into the future, by allowing mainly natural regeneration of open areas. That would apply to parts of the forest plantations, when they are felled deliberately or by gales.

2.02.6.Alder.

This is a good native pioneer tree; that has the unique ability to fix nitrogen from the atmosphere, with its roots in wet acid soils. There is no easy way of knowing when they first came to The Woodlands. It tends not to age gracefully; and multi-poled stools makes it fib about its true age. It is not so prolific as Birch or Rowan, on better drained soils; so if further numbers were wanted,

it would be necessary to plant. Young trees are more attractive, especially when they are transforming a derelict area. There are signs that it has been coppiced extensively in the past.

2.02.6.Scots Pine.

This is not recommended by the experts for planting in the North of Scotland. It is thought to be outside the range of the original Caledonian Forest. This ignores the evidence of finds in the bottom of Peat banks, and the success of earlier plantings that lacked the benefit of expert advice. They have certainly been successful in The Woods, with splendid mature trees and all ages of regeneration. There should not be any need of irregular thinning; rather the need to weed out lesser trees, and plant more in other areas.

2.02.7.Sitka Spruce.

This being an alien forest tree, could be considered as out of place in amenity woodland. Perversely its very success in a hard climate might be what would offend most people. However when viewed as a solitary tree, one can see why the Victorians wanted it in their collections. It attracts birds, particularly Warblers, and its increasing spread in the North of Scotland gives hope for the survival of the Red Squirrel. The skyline view from outside would be drastically changed if they were removed, and it is doubtful if many people would want that. In fact some might approve of a few younger trees as replacement for the inevitable future wind losses. However they are seeding vigourously so determined irregular thinning would be required. It might be worth experimenting with a few of modern selections to suit the relatively low Caithness rainfall.

2.02.8.Other Pine.

There has been some experiments with other foreign Pines. The most successful has been the Maritime Pine, which are scattered in the area east of the Main Drive. They produce the occasional cone but there is no sign of regeneration. Only one Monterey Pine has been seen; and although it seems to stand up to gales, it's not very hardy against chain saws. Both trees are way outside of their climatic range. The puzzle is the tree that The Council calls Mountain Pine. Certainly their straggly appearance is like the dwarf form (*Pinus mugo*) rather than the forestry selected *P.uncinata*. They produce lots of cones: often in opposed pairs, pointing down from the tip of the twig, and lacking the typical hooked tips of the scales. They most resemble *P. contorta* 'contorta', probably of an extreme northern provenance. Some seedlings have been appearing over the last decade; and they divide between upright and almost prostrate forms. The nearest Forestry plantations of mature *P. contorta* are about three miles away. They do not appear to have much merit except as nurse trees.

2.02.9.Sorbus: Rowans and Whitebeam.

The Rowan travels as well as the Birch to colonize protected open land. It is respected in folklore, but the free tree that grows up in one's garden might not have the desired tidy growth. It fits in well into a Birch wood with sufficient light for fruiting. It crosses in warmer climes with the much rarer Whitebeam: producing self fertile handsome hybrids, which are much more common. Somebody must have been fascinated by these trees in the past; and has left them around the SE and S boundaries, with a fine one N of the Broch. Some of the character of The Woodlands derive from these trees and their seedlings: making them worthy of preservation.

2.02.10.Laburnum.

The remnants of hedges are found along the old avenues. It would be interesting to obtain exact identification from leaves, flowers and seed pods. The main species planted in Scotland was *Laburnum alpinum*. However there is a hybrid with *L.anagyroides*, called 'Vossii', which would have been planted somewhat later.

APPENDIX 3.

3.0.WILDLIFE.

3.01.CHECK LISTS.

3.01.1. These are the check lists known of fauna and flora other than trees. Where possible they include more accurate lists from known enthusiasts for specialist subjects. The ideal would be to identify species which are dependant on the special habitat of The Woods. However the lists must include many that would only make a passing use. The former case is highlighted when known.

3.02.FLORA.

3.02.1. Flowering Plants.

These include many woodland and wayside species; with the surprising absence of Lily-of-the-valley and Wild Garlic. They do include the wild Blue Bell- fortunately not mixed with garden escapes.

3.02.2.Ferns.

The surprising absentee is Bracken Fern (observed from an office in Inverness).

POLYPODIACEAE:

Blechnum spicant- Hard Fern;
Asplenium ruta-muraria- Wall Rue Spleenwort;
A trichomanes- Maidenhair Spleenwort;
Phyllitis scolopendrium- Hart's-tongue Fern;
Dryopteris filix-mas- Male Fern;
Polypodium vulgare- Common Polypody.

3.02.3.Fungi.

These are particularly important in woodland because of the complex parasitic or symbiotic association between mycorrhiza and tree roots (p207, Ref.4). The most important finding is that the lack of the dreaded Honey Fungus- Armillaria mellea. On the other hand the actual success of many trees will depend on having the right fungi present: which is more likely in old woodlands. The following list is unfortunately rather limited by gastronomic influence.

BASIDIOMYCOTA:

Cantharellus cibarius- Chanterelle;
Hydnum repandum- Hedgehog Fungus;
Piptoporus betulinus- bracket;
Amanita phalloides- Death Cap;
A muscaria- Fly Agaric;
Russula emetica- Sickener;
Lactarius torminosus- Woolly Milk Cap;
Boletus edulis- Cep;
B aestivalis Summer Cep;

3.02.4.Feral plants.

Gardeners often find the policies surrounding old abandoned houses fascinating for the escapes and survivals from the gardens. In the case of The Woodlands, some escapes could be quite old, because they are commonly found on any waste land around the county; others seem to be a deliberate introduction. There is an interesting collection of Primulas on the outside of the Broch; with Primroses, Cowslips and the hybrid Oxslip. They must have been introduced by an enthusiast, and it is surprising how they have hung on in just that area. The Church had a system of mowing and removal of herbage in the spring. Daffodils are not as common as they might be, given the Daffodil Day event. It could be that the mowing regime alongside the drives has not favoured any introductions. It would be nice to see some of the old green daffodil varieties, that must have been popular long ago in Caithness. There is also a need for some late flowering varieties, that could be present on the open day. London's Pride has found an almost exclusive home in some areas. Giant Hogweed was introduced to Scottish Estates late in the last century: long before gaining its Triffid reputation for zapping children. Some clear escapes are Solomon's Seal, and the many varieties of Snowdrops (including broad leaved ones). Less certain are the soft fruit bushes (Gooseberry, Raspberry, Black & Red Currents); Flowering Current and Fuchsia. Others may be reverting, like Columbine and Monkshood.

3.03.FAUNA.

3.03.1.Birds.

Although these are just passing vagrants; in a relatively tree free area, The Woods must seem like Heathrow Airport. My favourite is the Tree Creeper, and I trust that they will long have ancient trunks to explore.

3.03.2.Mammals.

Some will be just visitors, but others like Rabbits and Hedgehogs are based in the woods. Observations have been: Roe Deer (but no Red), Fox, Hares, Moles, Weasel, Stoat and Bat. The feral Ferrets that have been observed as road casualties are reverting to Polecat genotype. It is unusual to find a breeding group from escapes; so there has to be the possibility that they are breeding with wild Polecats- well outside their reputed range.

APPENDIX 4.

4.0.MAN MADE FEATURES.

4.01.ARCHEOLOGICAL & HISTORICAL REMAINS.

4.01.1.Broch.

This has suffered from the usual Victorian tarting up treatment. It was marked as a flagstaff on the 1st ed. OS map. Mowing and trimming has kept it in fairly good condition in the past.

4.01.2. Non-standing Stanes.

These are a puzzle because there does not appear to be a socket for a genuine Neolithic or Bronze Age monument that had later fallen. If ancient they might have been abandoned before use; or they could have been intended as part of the much later Broch. There are similar erratics on part of the Achvarasdal farm; which would have been close to the continuation of the Western Avenue.

4.01.3. Windmill.

This was marked on the 1st edn. OS map in the SE corner of the land. There are confused remains of foundations mixed with builders rubble. There is also some heavy Wrought Iron (partly enclosed by the base of a 40 year old Sycamore) that could be a shaft and sail socket. It would be worth finding an expert to investigate.

4.01.4. Iron Ore Quarries.

This were marked on the 1st edn. OS map just outside the SE corner and outside, close to the main road entrance to the drive for the E Gate. It is possible that the winter pools are also the site of old quarries. There were said to be three shallow pits (along the NNE line of a crush fault just E of Achvarasdal) operated from 1870-3 (p19, Ref.5)

4.02. BUILDINGS AND ARTIFACTS.

4.02.1. Out buildings.

The buildings are rightly excluded from the lease. However the presence of The Woods has an influence on them. The outbuildings consist of The Gardeners Cottage at the main entrance, The East Cottage at the east gate and The Bungalow just east of The Broch. Somebody, probably The Church, would have to make sure that trees do not encroach on the buildings. The easiest way is to weed them as seedlings. Where there is grass this would only need cutting once per year.

4.03. GARDEN FEATURES.

4.03.1. Gardens.

There are remains of fine gardens, mainly on ground to the South of the house. These are excluded from the land leased to The Council. However in their report they talk about the planting of exotic trees (p15, para.2.10.6, Ref.1). The Church's wish in this respect needs to be clarified. This would also apply to any attempt to rescue the gardens, which would be a very expensive project.

4.03.2. Inner dykes.

There is an extensive system of dykes around The Woods that do not appear on any maps. They are drystone with a wide base and extreme batter: scarcely more than a loose piling. They follow roughly along the main avenue, with other lines to the south. It seems unlikely that they would have been stock proof, unless there was some form of reinforcement. There is a small enclosed portion to the South East of the house that has the remains of Chestnut Paling along the top. It is possible that they may have been used for plant protection. Whatever their purpose or historical significance, it would be prudent to avoid their destruction. The Council plan for the area West of the main drive would appear to require the destruction of the dyke together with mature avenue trees (p22, Ref.1). These are referred to as, "over-mature birch of poor form": where there is a mixture of trees; but with very few Birch of any condition.

APPENDIX 5.

5.0. INTERVENTION OPTIONS.

5.01. MOTIVES.

5.01.1. Any discussion of active tree work that involves a lot of effort, and could have considerable consequences; demands first a clear appraisal of the reasons. Preferably these should be easily explicable to everybody interested.

5.02. NEED FOR TREE CLEARANCE AND METHODS.

5.02.1. Safety.

This must be the first concern. It would be wise to assess all trees close to the drives or inhabited buildings, at risk of falling in gales. In some cases it might be necessary to remove overhanging branches, in others it could be better to fell the tree. It would be best to keep a strip alongside the drives clear of seedlings. Possibly even more important is concern for fire safety. The object here would be to create firebreaks, clear of inflammable material, to limit the spread of fire. All concerns for safety should coincide in reaching the same plan for clearance.

5.02.2. Boundary Care.

Next must be concern for the boundaries. It is a mistake to have tall trees close to a permanent boundary, because ultimately some must fall across it. Where it is a drystone dyke, the sway of a nearby tree in a gale is sufficient to do some damage. In some cases seedlings can root between the stones and pull the wall down. Unfortunately nearly the whole length of the bounds of The Woodlands are under threat from the trees. This must necessitate first the clearing of seedlings and saplings, then ultimately the felling of over mature trees.

5.02.3. Irregular Thinning.

This is the main method for controlling a mixed woodland. The aim is to select and retain the best trees, at the ideal spacing, by removing all others. This is best done at the sapling stage, when they can be uprooted with the least damage to surrounding trees. However there must inevitably be a certain amount of felling of larger trees: where defects are found later, and more space is required. This method could be extended to gap planting: where the aim would be to increase the diversity of trees. Age diversity would be achieved by continuing the practice indefinitely at regular intervals.

5.02.4. Clear Felling.

This is the most cost effective method of harvesting commercial forests. It is usually inappropriate (indeed it is almost an oxymoron) for mixed woodlands. This is because the principle is to avoid all the trees being of the same age and species; and thus falling at the same time. Partial clearance of mature trees can be almost as bad; because the adjacent trees have only put down a root system which is commensurate with perceived exposure. When the exposure is suddenly worsened by the gap made by the clearance; their roots will be found wanting, and there will be cumulative windthrows.

5.02.5. Unfortunately the effect of neglect on an over mature area, where all the trees were planted together, can be as bad as clear felling; with none of the advantages of cost effective harvesting of timber for sale. The Council report correctly assesses this to apply to the Larch plantation. The plantation of Sitka Spruce in the SW corner are in a similar condition; and worse they are a threat to the boundary fence.

5.03. INCOME DERIVED FROM THE WOODLANDS.

5.03.1. The ideal would be to derive some income from the timber. In practice the cost of harvesting and transport usually means a diminishing return for small stands of timber; especially when the price is low. This could mean delaying any clear felling until the price improves. This should not apply to the same degree for small local supplies of firewood (surplus to The Home's requirements) and mulch chippings. These outlets could make use of regular supplies of windthrow trees, surgery off-cuts and coppicing. There is also likely to be a small demand for special timber, suitable for craft carpentry, which is more likely to require hardwoods.

5.03.2. The lease leaves control of felling with The Church; and their local employee is a trained operator. It should be possible to set-up an authorization system that would cover routine outlets. The first requirement for emergency work could probably be covered by The Church. If further assistance is required, it would be helpful if local staff could arrange it. The supply of small timber is likely to exceed The Home's requirements, and demand too much labour. It would be desirable if staff could arrange with local contractors for routine small scale work. It would be desirable if the local management body could be consulted, in the first instance, for advice on any non emergency felling.

5.04. INTERVENTION BY TREE SURGERY AND COPPICING.

5.04.1. A lot could be done to prolong the life of some of the finer trees by surgery and coppicing. There are indications that it was routinely practiced in the past; when the necessary skills were widely taught. It is much better to remove a bough before it falls: threatening life and property, and leaving large scars on the trunk. Coppicing offers a much quicker regeneration than re-planting. Both techniques can be more dangerous than simple felling. It also requires a deeper knowledge of trees. A good use of funds (possibly from CASE) would be to encourage a local contractor to take the necessary course.

5.05. INTERVENTION BY TREE PLANTING AND CHOICES.

5.05.1. Gap planting.

The object would be to plant special trees in suitable gaps- or if desired to create gaps. The reasons for the trees being special would mainly be subjective. It might be required to increase the number of backbone trees, like beech or Scots Pine; in an area with mainly Birch. There might be a desire to increase the diversity of native trees. There might be somebody who wants to experiment with a single exotic tree. Like with irregular thinning the merit of the method would emerge only if it was practiced a few at a time, to maintain a mixed woodland.

5.05.2. Shelter Belt Planting.

This is the ideal method for providing a screen to enable future clear felling of forestry plantations. Without this precaution the clearance is liable to cause a funnelling of winds and a lot of damage to adjacent trees. If possible it would be better to make use of natural regeneration, because it is quicker. However it could happen that this would not result in sufficient variety at the optimum spacing. The usual mistake is to plant tall saplings with the forlorn hope that this will be quicker. Plastic shelters rarely give the same benefits as reported further south. A common sight is to see dead leaders at the top failing to emerge from

the protected greenhouse. The youngest available seedlings on well cultivated soil grow steadily within the capacity of their root structures. They would easily overtake saplings in shelters, and have good roots for later life.

5.05.3.Hedge Planting.

This could be decorative or it could be the outer defence of a wind screen. The latter would serve best the common age plantation, which has lost all its lower foliage. The same is true for planting as for the shelter belt. The ideal soil preparation is ditching and banking; as for traditional enclosure fields. If there is no critical width restriction, a lot can be gained by using trees like Sea Buckthorn, Elder and Escalonia as first defence; with Beech and Hawthorn as the backbone. It would also be popular if the old tradition of incorporating Sweet Briar (*Rosa rubiginosa*) could be continued. If possible enough room should be left for a tractor mounted flail trimmer to be used. The best growth and wind resistance is achieved by cutting to a tapered shape, rather than the easier flat top. Recessed gaps at intervals could provide sight lines through the hedge.

APPENDIX 6.

6.0.THE BOUNDARY THREATS TO THE WOODLANDS; AND HENCE LIVES AND PROPERTIES.

6.01.GENERAL THREAT.

6.01.1. It is generally assumed that the Caithness climate renders tree growing impossible except for a few hardy forest trees. Certainly seaside winds anywhere will stunt growth, and the gales even inland will limit the economic age of harvesting. However countless gardeners have proved the fallacy of the general assumption by planting seedlings, or not having the heart to remove chance weeds. As sure as hair loss and the failure of Lottery tickets, after ten years there will be a monster peering in the windows.

6.01.2 The explanation for the generally treeless aspect of Caithness, must be that it is man made; depending on historical agricultural developments. Most Caithness farming is closer to the ancient tradition of burning to provide grazing land. This method extends to much more land than Heather moorland; and includes most rough grazing consisting of thick grass and rushes, with encroaching Whins. It tends not to be a precise tool, especially when help is limited to one boy and a box of matches. Consequently the burn for a bite for the sheep is likely to include fences, trees, electricity poles, houses or anything else left carelessly around.

6.01.3. Paradoxically the consequences of fire can be worse where it is not practiced regularly. It frequently happens that shortage of labour can mean that burning is abandoned. The previous management favours thick grass and rushes which will stand dead from year to end, stifling further growth. An accidental fire especially in the summer will burn much hotter, and do much more damage.

6.01.4. Consequently, an island of trees requires a boundary that will repel fire and the grazing animals that follow. The most serious threat comes from sheep mainly because of their numbers. They are usually good at defeating fences; with the most adventurous being Lambs and Hogs. They are hardly any threat to fully grown trees, but they will eat any seedlings, thus preventing any regeneration. All other animals, such as, Deer, Hares and Rabbits, could be a more serious threat depending on their numbers. There has been a long term decline in Hares, and Rabbits are cyclically controlled by Myxomatosis and predators. Only Roe deer have been seen in recent years. Their numbers appear to be controlled by new forestry plantations to the south and frequent road deaths.

6.02.PRESENT STATE OF THE BOUNDARY.

6.02.1. The actual condition is considered without reference to legal responsibilities. This information is needed as a precursor to negotiations with neighbouring landowners

6.02.2.Walls.

This extends for over half the perimeter, on three sides. It is a good example of the dry stane craft; and worth preserving in its own right. It is constructed in the Sutherland style from partially dressed Freestone rather than the usual Caithness Flagstone waste. Gate pillars and corners are more finely dressed, mortared and capped. On the north side by the road, the wall is in good condition. There are a lot of trees growing too close to the inside, but so far they have not done too much damage. The threat appears to be more serious on the eastern part. Along this side the trees are growing close on both sides; with some fallen across, and seedlings growing into it. It has been badly breached in several places. There would also be a considerable risk of fire spreading from this side. The western length of wall appears to be in good condition but it would be wise to gradually reduce the number of trees growing near the inside. There is an urgent priority to have the walls inspected by experts to estimate the repairs required, and how many trees need to be removed. There are good local contractors available to deal with the necessary repair work, using the correct stone.

6.02.3.Fencing.

The boundary on the South side consists of five strand fencing of uncertain age. It is doubtful if it is lamb proof at present; and will soon be useless. It would be better to replace it with Woven Wire Fencing (e.g. Ryelock). The south west boundary fence is new Ryelock; replaced by the farmer. However it is under threat from a small stand of close spacing mature Sitka Spruce; which could fall across it in the next gale.

6.02.4. Gates.

The main gate in the north wall appears to be recoverable with some effort. The road surface at this point has risen with the periodic addition of road metal; so it is left permanently open. The Main Drive is used frequently by road vehicles, and it is doubtful that the chore of using a manual gate would be tolerated. Some form of gate closure is necessary now that straying livestock are tolerated on the main roads. A cattle grid would be the best solution. The NW corner gate has rotted away, and needs replacing. The E gate is tubular steel and sound; but the wooden gate post (that was inserted to fit) is rotten. The W gates are maintained by the farmer in sound condition.

6.02.5. Fire belts and safety.

There is no indication that this was considered necessary in the past. The growth of trees close to the inside of the bounds, pre-date the period of The Church ownership. Some of the oldest trees are found close to the walls and fences. It is possible that the previous owners could dictate the husbandry outside of the boundaries: and hence ensure that there was no fire risk. However it is clear now that there is a need for boundary fire belts; especially where the adjacent land contains a lot of inflammable material. This is particularly true along the east wall. It might be worth considering a boundary path inside the wall, cleared of trees and undergrowth (see also appendix 7). There is also a need to consider internal fire belts, especially to protect the buildings. Where possible these could coincide with the provision of paths. There is also a need to consider access for fire fighting and evacuation of The Home; bearing in mind that the east entrance has become an unofficial land dump. All this would be outside of the remit of any Woodlands management body. However it would be pertinent to inform the Church and Council, because lack of action would render any future management pointless. It would also be a mistake to exaggerate the risk and create unnecessary anxiety. The best means of evaluating the risk would be to consult the Fire Service who would be expected to be involved.

APPENDIX 7.

7.0. PATH BUILDING AND MAINTENANCE.

7.01. HISTORY.

The recent history of path building through The Woodlands have not been very successful. This could partly be caused by the changes in local authorities responsible; but there is also a tendency to endorse new newfangled methods. The Highland Regional Council began building in 1989 with two paths going east and west from the main drive. Initially they were just formed by clearance through the undergrowth. They then laid planks and sleepers over the boggy ground to the east. This was quite acceptable for the able bodied, except in winter when they became very slippery. They also were not suitable for wheel chairs. A new contract was started in 1995, taking about a year to complete. First the planking was removed, and a canal was dug along the route of the east path. The dredged material was removed and the work then stopped. Much later the work was completed by filling the canal with quarry chippings, topping with quarry fines, and rolling. A culvert and drain were made at the lowest level near a seat. It did not work because there was no lower level sump for water to run to. No further work was done on the east path, and it became increasingly muddy. There was not even an attempt made to patch up the worst parts with gravel, because nobody had any responsibility for maintenance.

7.02. PROBLEMS.

The main difficulty was the remoteness of the management. There was apparently no means of ensuring that a contract was carried out in a reasonable time. This was exacerbated by the funding that required the fiction that a path can be created like a capital asset, that requires no routine maintenance. This probably also explains the expensive concern with foundations; more appropriate for a roadway with high load bearing capacity.

7.03. TRADITIONAL TECHNIQUE.

It might be sensible to consider methods that have been used for millenia up until late in this century. The first job was to dig broad parallel ditches, with the spoil deposited between to form an embankment. This was either compacted by use, and frequently repaired; or better by initial rolling or compacting. If the land was boggy a floating raft of graded logs and brushwood was laid first. The surface was formed of rock chippings and blinding; preferably obtained nearby from the ditches, or a roadside quarry. Culverts and bridges were formed to cross water courses as necessary. The initial work could be done by any local contractor with a tapered ditching bucket and a roller. A novel way for routine repairs, would be to provide walkers with strategically placed dumps of road metal and scoops. Nobody could then complain that they were not involved.

7.04. BOUNDARY PATHS AND FIREBREAKS.

If, as is likely, expert advice would call for fire breaks; then they would make the ideal route for more paths. A path just inside the boundary, with an annual removal of sward on a controlled strip, should give good fire protection, and encourage a diversity of wildlife. It might also be an ideal running track. Absence of trees alongside the wall and fence should lengthen their life, and mean easier maintenance. Unfortunately there are some fine mature trees that might force detours, but all young trees could be removed.

APPENDIX 8.

8.0.WILD LIFE ENHANCEMENT.

8.01.GENERAL AIM.

8.01.1. Most creatures and plants inhabit the earth in spite of mans' efforts to the contrary. If anything is done to support any plant or animals it will also likely be at the expense of others. As a general rule one could choose to aim for the greatest diversity of wildlife. If so there are several projects of differing costs that could be attempted. Perhaps the help of local enthusiasts might be used to advise and monitor the result.

8.02.WATER FEATURES.

8.02.1. There is a lack of water features. There is no stream running through the land. There are boggy ponds near the NE boundary, which fill up in the winter and mostly dry out in the summer. One is closely ringed with trees and the other is fairly open. It is possible that they were the site of earlier quarries, though nothing was marked on the early maps.

8.02.2. A well managed pond would considerably enhance the amenities, and doubtless would be popular with visitors. The benefits to wildlife are obvious to anyone who has made a pond in this area. Water insects become established in the first Summer. Toads, Frogs & Newts will use it for mating in the first year. Ducks, Heron and Bats soon find it. A number of native water and margin plants will soon establish themselves. Others can be introduced from local ponds.

8.02.3. There are however many caveats that should be considered. The first concern must be for safety, especially with children. This is best dealt with by making gently sloping margins: which is also most beneficial to wildlife. Then trees and water rarely mix well; with shading killing the pond life. A good compromise would be to use the present pond areas, which should not require much clearing to ensure enough light. Again water features can be quite expensive with landscape designers happily thinking in tens of thousands.

8.02.4. The cheapest and possibly most rewarding plan would be to use a local drainage contractor (a farmer with an excavator) to dig and grade the pond sites in the dry season. It has been my experience on nearby land that, providing the depth is below the Summer water table, then some open water will remain in the driest seasons. The effectiveness of this treatment will depend a lot on the base rock. It will almost certainly be necessary to remove some layers of flags; which should be easy enough, providing a large enough area is worked on, and the rock is sufficiently fissured. Otherwise it may be necessary to resort to explosives or hydraulic drilling. The spoil could be used to grade the underwater bottom and the surrounding land. Any surplus could be built into an adjacent mound, which could be used as a planting feature. With care it should be possible to retain some of the bog area to increase the diversity of plants. This treatment would need repeat excavations of mud at intervals of about ten years.

8.02.4. Another benefit that might emerge from this treatment would be if the ponds acted as a drainage sump for surrounding properties. Whatever the extent of this effect it should alleviate some of the local flooding, that has resulted mainly from the nearby road ditches and culverts. The more expensive alternative of using artificial waterproof membranes, could worsen the flooding on to adjacent properties.

8.03.WILD FLOWER ENHANCEMENT.

8.03.1. There are some open areas; beside the Main Drive, and around the Broch and the Cottages. Perhaps other areas, such as some path margins, could also be partly cleared. These could be managed to encourage more wild flowers. A single late annual mowing and removal should effect more diversity. The mowings could be used for a mulch for young trees. Notices could explain the policy to those who might worry about the perceived untidiness.

8.03.2. The area surrounding the Broch has occasionally been mowed like this in recent years, usually in the early Spring. This has been very effective in supporting the wild Primulas. It might be the ideal time to allow the dispersal of seeds.

8.03.3. This policy could be made to fit in with the need for fire belts. The mowing and removal would help to stop the spread of fire. After a time the land would become relatively starved of nutrients. This would have the effect of suppressing grass, and encouraging a diversity of wild flowers. This would in its turn also reduce the main fuel for ground fires (see appendix 6).

8.04.LEAVING FALLEN AND OLD STANDING TREES, AND BRUSHWOOD.

8.04.1. There can be a general assumption that it must be desirable to tidy up after tree clearing or wind falls. This makes sense where the timber is valuable, firewood is required, or the increased fire risk cannot be accepted. Also it makes any later tree planting easier. It is harder to justify, if it is done just for tidiness sake. It is hardly appropriate to regard woodland like a formal garden. The slowly rotting wood encourages fungal growth, and ultimately provides nutrient for the new trees. The loose heaps provide shelter for the seedlings; with refuge and nest sites for a wide range of mammals and birds. There are even sanctuary woods where some logs are piled up to provide ideal sites for fungal growth, and crevices for small mammals, insects, and hence birds. Presumably if this is done with partially rotten boughs, then it would not be so tempting to firewood gatherers. The long period of neglect has resulted in a lot of rotting and hollow trees. This is particularly true with Birch, which have a shorter natural life. These provide many nest sites, and Fungus supports. The sea wind stunted trees also provide many useful crevasses. It would be regrettable if a renewal of vigorous management resulted in a loss of wildlife.

APPENDIX 9.

9.0. THE COUNCIL MANAGEMENT PRESCRIPTIONS.

9.01. GENERAL AIM.

9.01.1. These have a definite aim, to be achieved over a period of about 20 years, of converting to a mainly native broadleaved woodland. There is no mention of native conifers, or preserving the best of the past. They have divided The Woodlands into sub-compartments with different plans for each. The same naming system is used for easy cross referencing.

9.02. SUB-COMPARTMENTS.

9.02.1. Sub-compartment, 1a (SW corner).

Clear fell the remaining Sitka Spruce, and plant a conservation shelter belt. This would include the planting of a hedge. The principle appears to be sound, but the choice of species should have been checked for suitability in Caithness. *Prunus spinosa* does not thrive, whereas *P. avium* and *P. padus* do. The choice of broadleaves is unnecessarily limited.

9.02.2. Sub-compartment, 1b (Mid.W, N of W gate).

This appears to be confused with another area, because it talks of, "over-mature birch of poor form with heavy regeneration of sycamore."; Whereas it mainly consists of mature avenue trees, with just a few Birch. There would scarcely be room for the proposed hedge planting, unless these fine trees were sacrificed.

9.02.3. Sub-compartment, 1c (E & N of 1b).

This correctly identifies the Larch stand as near the end of its life, and needing the creation of a windfirm edge. It mentions a hedge but gives no details. It implies that the Larch should be clear felled, because it gives re-planting details. The choice of plantings are sound but rather limited. It is a pity that no consideration had been given to achieving a mixed age stand (see appendix 5).

9.02.4. Sub-compartment, 1d (between 1c & the main drive).

This also appears confused, because it talks of being, "exposed and consists of over-mature birch of poor form.". Whereas it is mainly composed of well sheltered mature deciduous avenue trees and Sitka Spruce. It proposes the creation of an avenue by removing Birch. To achieve the necessary space, would require sacrificing fine healthy trees. The choice of replacement trees lack local knowledge. *Acer drumundii* (presumably *A. platanoides* 'Drummondii') is better suited to a city park in the south. *Prunus pissardii* (presumably *P. cerasifera* 'Atropurpurea') is another cherry which is grown too much in southern suburbs. Hornbeam would be worth growing as specimens, or in a mixed sheltered hedge; but it cannot be relied on to thrive as well as Beech. It does thrive on clay soils in the south of England; and the sandy soils of Caithness are often called clays by folk who have never seen the genuine article.

9.02.5. Sub-compartment, 1e (NW corner & W avenue N of 1b).

This is described as, "poor quality and showing areas of windthrow". This is the area where harvesting of Sitka Spruce did all the damage that is falsely attributed to windthrow. The prescription to plant a screen and hedge to allow future felling of the Larch in 1c; appears sensible. However there should not be any need to remove more trees. The choice of hedge is the same as 1a, and is likewise unsuitable. It would be better to choose native trees with a proven salt wind resistance.

9.02.6. Sub-compartment, 1g (S of Home & garden, and E of 1a).

This is the land excluded from the lease to the Council, so there appears to be some confusion over responsibilities. It is described as, "mature mixed broadleaves"; whereas it includes some of the oldest Sitka Spruce. The prescription is the most sensible, as it calls for a tree survey. Perhaps this would overcome some of the errors, inherent in the rest of the prescriptions; especially if local people were consulted.

9.03.1. Sub-compartment, 2a (E of Main Drive up to E Drive).

This is said to, "consist of mainly mature birch of poor form.", and also, "a small area of mountain pine". In fact it also includes fine mature Maritime Pine, Sycamore, Ash, Beech, Wych Elm, Sitka Spruce, Alder, and Rowan. There is some regeneration under the light canopy. There has also been some privately donated planting, authorized by The Church. The prescription, of selective felling and scarifying areas for natural regeneration, appears sound in principle. However past experience has shown that the contractors brought in for the work, would have little respect for sound trees already growing there. There would also be a loss of wildlife habitat with the mature Birch (see appendix 8). The light canopy also encourages the only site of wild Bluebells. There is really no need for any other intervention than irregular thinning (especially of Sitka Spruce) and limited gap planting. What they call Mountain Pine (see appendix 2) has little amenity value (except as a hide n' seek area that excludes adults). It could be trimmed back as they suggest.

9.03.2.Sub-compartment, 2b (E of 2a up to E boundary).

This is said to be, "an area of wetland interspersed with birch and alder". In fact it also includes many other trees as for 2a. It is also regenerating and includes private gap planting. The prescription, to restore with Willows and Alder in groups, is sound but limited. This is the area suggested in appendix 8 for a water feature, which would increase amenity value and wildlife diversity. It also has a serious fire threat from the East boundary, and probably needs a firebreak (see appendix 6&7).

9.03.3.Sub-compartment, 2c (S of 2b up to E Drive).

The description deserves a full quote: "Past management with this sub-compartment has resulted in the removal of mature sitka spruce and the introduction by planting of: birch, alder, oak, maple, rowan and beech. Natural regeneration of birch is now proliferating throughout the area." In fact it was the site of heavy wind and tidying up damage in 1988 (see appendix 1). The regeneration includes many species and was much more successful than the planting. The only added species, actually observed, were Sessile Oak and Wild Gean. The prescription to, "remove birch to reduce competition for planted species", sounds ominous. Past experience would indicate that everything would be cut down to preserve mainly empty plastic shelters. The fire risk is also ignored, as for 2b.

9.03.4.Sub-compartment, 2d (S of 2c & along the W garden wall of the E cottages).

The description and prescription is similar to 2c, with the same defects.

9.03.5.Sub-compartment, 2e (between E Drive, Main Drive & 2d).

The prescription is to remove Sitka Spruce, thought to be at risk of windthrow and to remove a seed source. This is rather puzzling since the trees are not a serious hazard and not the worst seed source. This is the area where salt was successfully employed as a weed killer against Copper Beech varieties. The prescription recommends moving on to Glyphosate. In fact the main future problem would be the fast growing cedar hybrids recently planted too close to the drive.

9.03.6.Sub-compartment, 2g (S of E cottages & 2d, between E wall & S fence).

There are no woodland objectives, and no mention of fire risk from east boundary.

9.03.7.Sub-compartment, 2h (Along the NW of Main drive next to Home).

This talks about a, "recent broadleaved-planting programme" and "reduce competition between planted species by removal of willow herb and bramble". The only trouble is that this area is a slope with old tall avenue trees.

9.03.8.Sub-compartment, 2i (N of 2h; & bounded on W by Home, NW by W Drive & NE by Main Drive).

This has the same description and prescription as for 2h. In fact the planting in this area looks fairly successful and should hardly need much attention. They also mention, "to remove invasive weeds & trees around and within broch area". They do not say how, but it could involve herbicide. Do they regard the Primula collection (see Appendix 3 & 8) as invasive weeds?

MC 96 - 2 005

IN THE MATTER OF THE ANCIENT MONUMENTS ACTS, 1913 AND 1931.

To Alan Douglas Pilkington of Achvarasdal and Brubster, Achvarasdal,
Reay,

the owner of the Monument known as the Broch (or brough) occupying a circular area of ground measuring 40 yards in diameter, the southmost point of said area being situated 20 yards north by east of the north corner of the main building of Achvarasdal Lodge, 310 yards south by west of the road between Thurso and Reay at its nearest point and 290 yards south-south-east of the south-east corner of the lodge at the entrance to the avenue leading from said road to Achvarasdal Lodge,

being the subjects indicated in red colour on the annexed plan and being part of the property known as the lands and Estate of Achvarasdal

situated in the Parish of Reay and
County of Caithness.

In accordance with the provisions of Section 6 of the Ancient Monuments Act, 1931, the Commissioners of His Majesty's Works and Public Buildings hereby give you notice that it is their intention to include the Monument above specified in a list of monuments to be published by them under Section 12 of the Ancient Monuments Consolidation and Amendment Act, 1913.

Dated this Twenty-fifth day of May, 1938 .

By Order of the Commissioners.

Patrick Duff

Secretary.

I, Henry Everett (Officer in Secretariat) in the Office of the Commissioners of H.M. Works and Public Buildings duly authorised by them in that behalf hereby certify that the notice of which the foregoing is a duplicate together with a copy of the plan annexed and signed as relative hereto was served on the before named **Alan Douglas Pilkington**

by posting on the Twenty-fifth day of May 1938

between the hours of nine o'clock and ten o'clock forenoon at the
Edinburgh

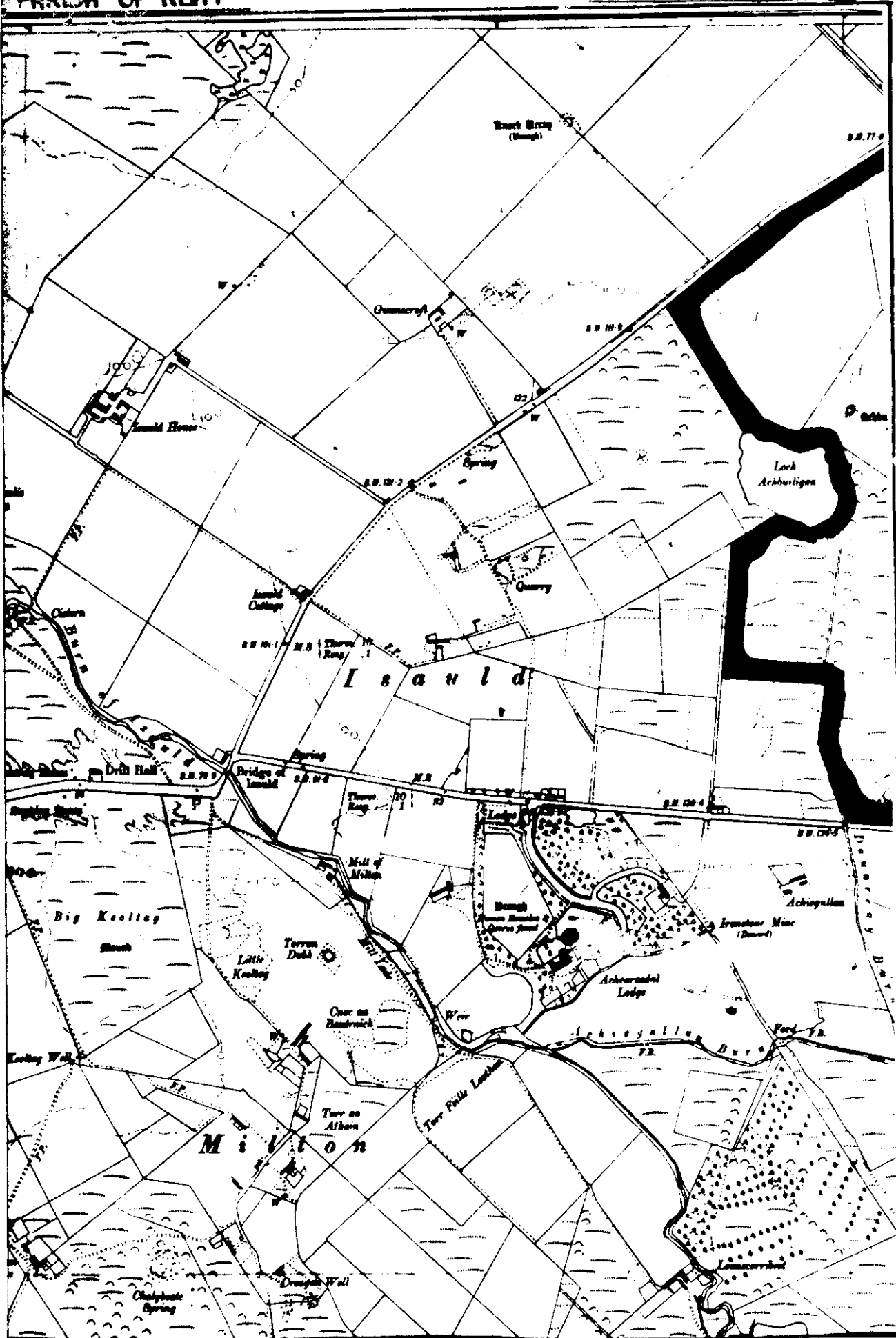
George Street Post Office, ~~London~~, a copy of the same to him

in a registered letter addressed as follows:— **A.D. Pilkington, Esq., of Achvarasdal and Brubster, Achvarasdal, Reay, Caithness.**

Henry Everett

Register on behalf of the within named Commissioners of His Majesty's Works and Public Buildings in the Register of the County
of Caithness.

W. S.
W. S.,
Edinburgh, Agent.



YARDS 100 200 300 400 500 600 700 800 900 1000 YARDS.

BROCH, ACHVARASDAL.

Handwritten signature: J. H. S. Duff

H.M. OFFICE OF
W.S. & S.