INTRODUCTION

Constructed in the early nineties as a high end members club, the course at Aldwickbury Park was constructed to a fairly high standard, however a lack of investment and poor management meant that the course slipped in both quality and reputation through its formative years. Burhill Golf & Leisure acquired the course in June 2006 and have since engaged the services of Mr. Langhorn as Course Manager. A tremendous amount of effort has been put into restoring the course and I (on my first visit to the course) am impressed with the standard presented.

The course provides a challenging round of golf on excellent turf surfaces throughout the 18 holes, played through a visually attractive and diverse landscape. The member or visiting golfer is offered a round of golf that may appear punishing at the outset due to the presence of high rough and numerous bunkers etc., but is actually rather forgiving on the high handicap golfer. The small team of six green staff do exceptionally well to maintain the course to such a high standard and I am particularly pleased to see that management attention has been given to the out of play areas and not just the priority tees, greens and fairways.

THE PURPOSE OF THE SITE VISIT AND REPORT

The rationale behind my recent visit to Aldwickbury Golf Club and the purpose of this report is to discuss the ongoing management of the 18 hole course and provide recommendations for future improvement regarding its ecological diversity and landscape value.

All ideas and recommendations are set against the primary land use as a quality golfing venue and take into account the current staffing levels and budgets etc., whilst also considering the high levels of play that the course receives.

Much of our discussions held on the day and therefore recommendations contained herein are directed towards golfing and ecological gains and therefore work involving woodland clearance etc. will hopefully result in an improved golf course and benefit to the local environment.
BACKGROUND TO STRI

The STRI was established in 1929 by The R&A as a research and consultancy facility but has since developed a strong multidisciplinary advisory and consultancy expertise in ecology, architecture and agronomy. Our portfolio of skills is wide ranging and embraces all aspects of survey, design, planning, construction and long-term management. The STRI supports internal CAD facilities and use the most up to date information technology and communications.

The STRI Ecology & Environment Unit is the largest and most experienced Ecological Consultancy acting within the golf industry across the globe. Having worked on the worlds top golf courses across Europe, USA and Asia our consultants are experts in marrying the disciplines of golf course construction and management with ecological and environmental improvement. Our ecologists act as official ecological advisors to The R&A Championship Committee and have prepared Management Plans for several new build and existing golf courses on SSSI designated land. STRI are retained Ecologists to the majority of the UK's top 50 golf courses including several Scottish Links sites (St. Andrews, Carnoustie, Troon, Turnberry, Muirfield, Prestwick, Montrose etc). In addition we have also guided the ecological elements of the construction and grow-in of many of the most recently built golf courses in the Scottish region (The Renaissance Club, Castle Stuart, The Castle Course) and are currently actively involved in other high profile developments.

SITE DESCRIPTION
With the 18 holes on the course being constructed at a similar time across a typical Hertfordshire agricultural landscape there is continuity through the entire site. The overriding landscape features are the stands of mature trees with scrub which also demand the most management intervention. The greens staff have done well to retain a manageable level of high rough across the course which adds strategy, but predominantly aesthetic value and again this habitat demands exacting and specific management.

The course appears to be much more mature than its true age and this is largely due to the incorporation of stands of mature pine (Pinus spp.), oak (Quercus agg.), ash (Fraxinus excelsior) and beech (Fagus sylvatica) into the design. There are countless numbers of feature trees dotted around the course, however many of them have been lost over time through natural establishment of surrounding scrub and quicker growing tree species. Their restoration and exposure will form part of the green staffs future workload.

The land is undulating without being overly hilly or steep throughout most of the course and therefore although the high rough may appear daunting at first, is typically sited well away from play and does not hinder the majority of golfing traffic. The stands of diverse rough however do contribute tremendously to the overall visual impact of most holes.

**GENERAL MANAGEMENT RECOMMENDATIONS**

**WOODLAND/TREE MANAGEMENT**
The greens staff have already begun in earnest with the programme of scrub and tree management in recent years. The work that has been undertaken thus far has been completed to a high standard and most of this directly in line with my own thoughts on the course.

To date work has been concentrated on the clearance of dominant scrub species from the woodland perimeters and has involved removal of elder (*Sambucus nigra*), bramble (*Rubus agg.*) and elm (*Ulmus* spp.). Work so far has been undertaken successfully, however the job is not yet complete. The majority of the removed species (particularly bramble) have a tendency to re-grow at an alarming rate following cutting/coppicing. The task now will be to return to these areas and eradicate the remainder of such aggressive species, using a combination of physical and chemical techniques. Initially I suggest a foliar spray is used to apply a triclopyr based herbicide to these areas (as Triclopyr is an acropetal penetrant). This should be applied during the growing season in order that the product is translocated through the plant. This should then be followed up with a second physical removal, this time using the front bucket on the small Kubota mini-digger to physically pull the bramble (including its root system) from the ground. Thereafter, ongoing annual treatment will be required to control re-growth, involving physical pulling and spot treatment, again using a triclopyr based herbicide.

The aim through most of the areas is to restore an ecologically rich and aesthetically pleasing woodland floor, dominated by native wildflowers including bluebell (*Hyacinthoides non-scriptus*), dog’s mercury (*Mercurialis perennis*), foxglove (*Digitalis purpurea*), wood anemone (*Anemone nemorosa*) etc (all of which were noted on site).

A number of the planted copses around the golf course have been introduced in order to define holes and give definition to fairways. These areas vary between being visually and strategically important and being well away from play or perimeter copses. Nonetheless, each woodland will demand management at some point over the next 10 years or so due to the potential for semi-natural and planted woodlands to become overrun by quick growing weed trees and thereby loosing their strategic, ecological and visual interest.

However, the main areas of consideration with respect to the woodland/copse development programme should involve:

1. **Developing species diversity.** It will be necessary to encourage a greater range of species of appropriate types within and through the planted and self set areas.

2. **Developing structural diversity.** It is important to incorporate into any planting a degree of structural diversity, ie trees of different heights and ages using suitable understorey canopy and high canopy tree species (achievable by phasing thinning and restocking work over a long period of time).

3. **Developing a more natural structure to the woodland and woodland edges.** Using native trees and shrubs and where possible by the encouragement of a woodland floor habitat (by a reduction in grass cutting and litter removal). Greater consideration to exposure of sentinel trees and creation of a shrub/low canopy layer around woodland perimeters.
4 **Utilisation of appropriate trees.** Long-lived, native tree species usually offer the most practical properties as sustainable golf course trees that provide good colour and other desirable growth characteristics.

The wood edge habitat is by far the most diverse and therefore ecologically important area of any mature deciduous woodland. Here the opportunity for woody species diversity is optimised and the juxtaposition of grassland, scrub and woodland provides superb ecological habitat. Thinning of many woodland perimeters has been recommended throughout, the aim of which is to improve the visual and ecological gradation from fairway through semi-rough, deep rough, scrub, low woodland to deep woodland. The introduction of the thin, deep rough grassland strips along woodland perimeters in conjunction with thinning and restocking using appropriate shrub species will go some way to achieving the same.

**ROUGH GRASSLAND MANAGEMENT**

The majority of high rough across the course is in reasonable condition in terms of its aesthetics and playability. High rough at Aldwickbury Park Golf Course tends to be positioned relatively distant from play and the fairways are rather generous. Management however is still necessary through these areas to prevent future degeneration and loss of quality. The quality of the high rough is dependent upon the sward condition and therefore density. This in turn is a product of the soil conditions beneath, with pockets of heavier more nutrient rich and damp soils giving rise to tussocky, coarse bladed grass growth, whilst the more chalky, freely draining areas are dominated by the finer leaved bents and fescues. The aim of any future management is not to create a mono-stand of fescue or any other species, but to create a sward composition that is visually interesting, ecologically rich and strategically valuable dependent upon its relationship to play.

As a general rule of thumb, the finer grasses allow for more rapid ball retrieval thereby maintaining speed of play through the course, thereby avoiding aggravation from disgruntled golfers. Equally, the fine bladed grass species tend to allow for the development of wildflowers and other poorly competitive species, thereby improving the ecological and aesthetic value. Conversely however pockets of tussocky,
thick and coarse bladed grasses (perennial ryegrass (*Lolium perenne*), yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*) and false-oat grass (*Arrhenatherum elatius*) tend to trap a wayward golf ball, making it difficult to find, slowing up golfing progress. This type of grassland sward does have a place on the golf course, i.e. away from play, in order to deter golfers from entering an area and also for its ecological value, most notably for overwintering invertebrates and reptile cover.

Management of rough grassland is an ongoing concern at the club, as the majority of rough grasslands around the course (even the better quality areas) have the potential to become overgrown with competitive broad leaved grasses and weed species, much to the detriment to the aesthetically pleasing fine leaved grasses and wild flowers. Despite the ecological interest for over-wintering invertebrates and seed feeding birds such as goldfinch (*Carduelis carduelis*) given by scrub and thick grasses, the majority of areas around the course cannot simply be ‘left to nature’. They will inevitably follow the pattern of natural succession and become dominated, first by thick grass species such as cock’s-foot and Yorkshire fog and ruderal plants such as cat’s-ear (*Leontodon hispidus*), broad leaved dock (*Rumex obtusifolius*) and creeping thistle (*Cirsium arvense*), and eventually by low creeping species such as bramble, birch (*Betula pendula*), and other woody species before reverting to the natural climatic community of the area, in this case mixed birch/ash, woodland. It is therefore advised that any such rough grasslands well away from the playing line are cut using a flail mower on a two yearly cycle if possible followed by a total removal of all dead vegetation.

In some instances it may be prudent to increase cutting frequency to once or even twice per year, ie within the first 8 - 10 m of rough grassland adjacent to a fairway. If a change in character in grasslands is required more quickly, then a light scarification and debris removal in early spring will accelerate the rate of nutrient removal and will create gaps in the sward suitable for wild flowers and fine desirable grasses to become established and will reduce the need for management in the up and coming years. Any management that is to be performed in these rough areas should be limited to times outside the bird, small mammal and invertebrate breeding seasons ie April to August, and therefore carried out between September and March.

We discussed the trial use of the new selective graminicide release from Syngenta. Rescue is based on the active ingredient Pinoxaden and will remove many of the coarse grasses (predominently perennial ryegrass) from a fine leaved fescue/bent sward.

I suggest we start small with a trial on some of the out of play areas of rough before using the product more widespread. Initially why not try:

### GRASSLAND ROUGH MANAGEMENT PROGRAMME

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Preliminary Ecological Assessment
SPECIFIC AREAS FOR DISCUSSION

The recommendations below are simply a few examples of the projects that could be undertaken across the site, in order to raise the course to the next level of quality in terms of landscape and biodiversity. These ideas are by no means exhaustive and I feel it would be beneficial to implement a dedicated course walk to identify all similar projects required on a hole by hole basis and put together some form of priority table, perhaps in the form of a Management Plan. I am confident that following our course walk and with the in-house knowledge of the Burhill staff that this is something that could be implemented in-house rather than using external consultants.

WOODLAND RIGHT HAND SIDE OF 1ST HOLE

There is some anecdotal evidence that the woodland to the right hand side of the 1st is a designated Ancient Woodland. If this is the case then it is highly likely that the area is a certified Site of Special Scientific Interest (SSSI) or similar and therefore it is crucial that we clarify this prior to any works being implemented. As discussed on the day I suggested that you www.magic.gov.uk and type in the club post code where you would be able to find this information. I have since returning to the office checked the designation within this woodland and confirmed it is not a SSSI.

Notwithstanding the above the woodland is in need of some management for the betterment of the golf course, but predominantly the health of the woodland. There are a significant number of mature and outstanding specimen trees within the woodland notably beech and oak, the quality of which is being compromised by the presence of self-set ash and elm etc. The woodland has become dense within its central regions, lacking in any real structural diversity and would benefit from some general thinning
through the most part. I am however predominantly interested in the first 10 - 15 m away from the fairway edge, which would constitute a high priority. Here I recommend selection of a few of the better quality trees from within this band and implement a programme of thinning in their immediate surroundings. This would help to expose these better quality trees prolonging their life and making a more interesting undulated edge to the right hand side of the golf hole. In terms of the ecological impacts this would have a long-term positive effect through the creation of a more informal wood edge and an overall increase in its habitat (see my thoughts under Woodland Management for further information regarding the wood edge habitat).

**DEVELOPING ASH COPSE TO THE RIGHT HAND SIDE OF THE 2ND HOLE**

The small copse of ash to the right hand side of the 2nd hole lies within the cut-through in the main woodland. I have simply highlighted this as an area requiring management as it is a problem that is commonplace across the course. A lack of management in the past has led to these young ash seedlings developing unchecked, much to the detriment of the more ecologically rich rough grassland. A few self-set trees dotted around this area would be of benefit, as it provides natural stepping stones for wildlife and also give some structural diversity to the woodland edge. However, if left without management this area will rapidly become a uniformed stand of dense spindly ash of limited aesthetic or biodiversity value. My recommendation is therefore to return the area to rough grassland, via physical removal of the majority of the self-set ash, perhaps saving one or two and allowing these to develop.

Ash are not the best tree in terms of their value on the golf course given their tendency to crack and split, dropping large amounts of debris across in-play areas. I would therefore recommend retention of this species in areas well away from play.

**WOODLAND THINNING BEHIND 3RD TEES**

Again the problem here is one that is synonymous with many of the tees and greens across the course. The 3rd tees lies within the shade for much of the season, particularly within the winter months given its orientation adjacent to a dense woodland on its southern/eastern aspect. This does make maintaining a good quality teeing surface difficult. For these reasons I therefore recommend that the club create a ride through the woodland in a south-easterly orientation, perhaps measuring some 10 - 15 m wide, simply retaining three or four individual trees through this area. The primary aim of the project will be to allow a window of perhaps two or more hours of early morning sunlight to penetrate through to the teeing surface throughout the year, whilst also helping to restore some woodland edge habitat through the developing of two distinct copses. Following this project, the woodland floor will be maintained as outlined in my Woodland Management recommendations and restored to good health, dominated by native wildflowers.
The irrigation reservoir in its current state is neither ecologically nor aesthetically pleasing and furthermore water quality is most likely being compromised by the anaerobic nature of the area and presence of a thick duckweed (*Lemna minor*) layer across the lake surface.

In order to combat the above I suggest a continuation of the woodland thinning programme is undertaken, perhaps removing 20-30% of the dense crack willow (*Salix fragilis*) around the lakes perimeter in any given year. Each bout of management will need to be followed up by ongoing treatment of the regenerative alder (*Alnus glutinosa*) and willow. This will involve both ongoing annual cutting and also chemical treatment. Chemicals are best not applied in a foliar form here given the likelihood of spray drift and run-off into the water body, causing knock-on effects onto the golf course. Instead I suggest that each significant stump is drilled (using a 10 mm drill bit to a depth of 150 mm) and either a Timbrel or Glyphosate based herbicide applied directly to the stump. This will be best undertaken during the growing season, in order that the product is translocated effectively through the root system of the tree, thereby reducing the risk of the likelihood of re-growth.

In addition to the above, it may be worth considering in the long-term, the re-excavation of this pond to incorporate the use of a liner and aerator.

Also bare in mind that on the right hand side of the trackway from the course to the reservoir itself, the significant area of self-set oak provides an ideal tree nursery for the course. The majority of these trees are less than 2 m in height and would fairly easily transplant using the small Kubota mini-digger,
excavating a reasonable (50 cm diameter) rootball with each tree. These trees could be used strategically out on the course and would potentially save the club a large amount of money.

**TREES RIGHT HAND SIDE OF THE 6TH TEES**

To the immediate right of the 6th tees stands a copse of mixed oak, pine and ash. I am particularly concerned with the ash here, as their branches are overhanging the playing surface, and could in strong winds potentially fall, therefore posing a serious health and safety hazard. The area, similar to other copses around the course would benefit from a significant thin throughout and I therefore recommend that you implement a c.40-60% thin at the earliest opportunity, concentrating primarily on those closest to the teeing surface. If the retained trees are generally in good health then there should be no ill effects from future prevailing winds blowing trees towards the playing surface.

**VIEW FROM 9TH TEES**

The view from the 9th tees is relatively confusing for the first time visitor to Aldwickbury Park Golf Club. The dominant feature to the left is the set of stairs (on the 1st tees), whilst to the right the crack willow and alder beyond the bunker complex also catch the eye. The first time golfer could therefore be forgiven for miss-reading the shape of the 9th hole. I therefore suggest that a small copse of eight to ten trees is planted to the left hand side of the fairway, in order to screen the 1st tee complex from the 9th. This would accentuate the left to right dogleg around the bunker complex. In conjunction with the above, I suggest removal of the two self-set shrubs to the far right of the bunker complex (i.e. on the pond perimeter).
POND RIGHT HAND SIDE OF THE 9TH/SHORT COURSE

This small water body is of low value in its current state and given the obvious poor construction is perhaps beyond hope in terms of implementing maintenance sufficient to improve its quality. If the area is to be retained in the long-term, then I suggest a re-design of the pond with a more sloping gradient on the green side (short course) and perhaps utilisation of the liner to retain water all year round.

Should the above not be feasible, then in the short-term simply physical removal of 80% of the existing greater reedmace will improve the look of the pond in the short-term. However, be aware that this species will re-grow rather aggressively the year after.

WATER BODY RIGHT HAND SIDE OF THE 10TH CARRY

This water body does dry out considerably during the summer months, leaving a 50-75 cm exposed band of detritus/flint around its perimeter. In its current state (as viewed September 2009) it did not appear...
particularly attractive. In order to combat the above I suggest that the greens staff plant up around this 50-75 cm band using aquatic and semi-aquatic native species including marsh marigold (*Caltha palustris*), water forget-me-not (*Myosotis scorpioides*), monkey flower (*Mimulus guttatus*), bogbean (*Menyanthes trifoliata*) and branched bur-reed (*Sparganium erectum*). Such plants can be acquired relatively cheaply (less than 10p per plug) and planted in single species groups of six or nine. Isolated pockets planted around the perimeter would spread out naturally over time, creating a much more aesthetically pleasing and ecologically rich pond perimeter than in its current state.

**WOODLAND LEFT HAND SIDE OF THE 13TH GREEN**

The 13th is one of the most problematic greens on the course given that it lies within a hollow with a raised bank behind and a significant woodland to the left (south) side. Similar to the issues discussed on the 3rd tee, the ideal solution to this scenario would be to create a cut-through or ride in the adjacent woodland to allow sunlight and airflow across the putting surface. However, a little more care needs to be taken here given the presence of some larger and more valuable specimen beech trees within the woodland.

Felling of these trees would not be in line with the overall ecological improvement programme planned for the course and therefore care must be taken whilst we address this problem. I would initially suggest that the area to the front left of the green is subject to an 80% thin throughout, working in a southerly orientation. This area does not support any important or feature trees and is a mixture of self-set beech and ash, most of which are only semi-mature. An 80% thin carried out in this way would in fact expose three or four individuals to be retained, which will be allowed to develop into feature trees in the future.

Phase 2 of the project may involve selective de-limbing and crown shaping of the larger trees to the immediate left of the green, again to improve the agronomic management of the green and also develop more in the way of diverse woodland edge habitat.

Felling even the mid-sized semi-mature trees will require permission in the form of a Tree Felling License and I have included a leaflet giving more information.

During our time on site we also discussed the potential for bats to be present in some of the larger trees and if work is to be implemented through this area then it is crucial that a bat survey is undertaken, given that bats are a European Protected Species and are now heavily protected from disturbance and damage (I have included a Leaflet - Bats and the Law for your information).

**TREES AND ROUGH ON THE 14TH/15TH HOLES**

During the time of the course construction, the area around the 13th tees, 14th hole and 15th hole was obviously a relatively open and uninteresting field. In order to combat this the course designers have planted two or three groupings of mixed species trees to help create definition between the holes.

I concur that some separation is required through this area to give more shape and strategy to the course, however my thoughts are that the existing plantations are neither well placed or of a suitable species mix. Species used within the existing plantations are generally deciduous in nature, however do not mirror the
more natural and successful woodlands surrounding and internal to the course. Furthermore, the existing copses are rather densely planted and concentrated into two or three small areas rather than being staggered and spaced throughout the whole vicinity.

My recommendation therefore is to implement a 60% thin through these woodlands, re-stocking throughout thereafter and also introducing new staggered planted through the area between the 14th and 15th holes. This will then allow the rough to be shaped more naturally and effectively around the newly introduced trees and move away from the existing thin strip of high rough, which currently separates the two fairways and appears rather out of place. Tree species to be introduced through this area would mirror those in the clubs existing planting programme, based upon other successful trees in the vicinity, this may include Scots pine (*Pinus sylvestris*), oak, beech and hornbeam (*Carpinus betulus*).

**OTHER ENVIRONMENTAL ISSUES TO BE DISCUSSED**

As mentioned earlier in my report I was impressed during my time on site with the standard of course presented. This not only stems from excellent turf management, but also the attention that has been given to the out of play areas, including the development of high rough and woodland management. I would therefore urge the club to enter the 2010 Golf Course Environment Awards, in order that the greens staff can receive recognition for their efforts. Progression to the latter stages of the competition is not unlikely, particularly if some of the work outlined in this report is followed.
We briefly assessed the golf course maintenance compound during our course walk and everything appears to be in excellent order (as I have seen with all of the other Burhill Golf & Leisure sites I have visited) and I have no further recommendations for the area.

I feel an important project in the up coming year will be the production of a priorities document, particularly for the woodland management and perhaps further consideration given to the use of a specialist contractor for some of the more significant work.

From a purely ecological point of view there are other projects which would be of benefit, such as the erection of nest boxes for birds and bats around the course; retention of cut wood log piles in out of play woodlands and creation of underground rock piles as hibernacula for the numerous reptiles which will inhabit the site.

Signed

Lee Penrose
Ecology & Environment

Enclosed: Tree Felling Licence Leaflet
          Bats and the Law Leaflet