Andy Wood, Course Manager at the Robin Hood Golf Club in Birmingham, chats to Laurence Pithie of Turf Master One about the results of his drainage work on the greens, most of which was completed in 2009/2010

Greens drainage ...a case study

Like many courses formed over a century ago, Robin Hood Golf Club is not blessed with natural free draining soil. Originally designed by Harry Colt and opened in 1893, the club is located just five miles from Birmingham city centre.

Although surrounded by housing and a primary school, this parkland style course of around 6,500 yards is largely tree lined yet does not feel enclosed. The club is a regular host for local tournaments with a desire to act as a future regional qualifying venue for the Open Championship.

Challenges

With greens drainage in particular being the weakest aspect of this course, a report was commissioned in 2001, advising the reconstruction of all 18 greens. The club rejected this and for the next eight years, the greens gradually accumulated a greater level of thatch, which led to a worsening drainage situation. By 2009, the club was faced with the dilemma of having a shorter playing season, dissatisfied golfers and a gradual decline in membership numbers. It was in desperate need of a solution to a problem that was not going to disappear.

Enter Andy Wood, a young Course Manager with the vision to take the course forward and a growing reputation from the likes of Andy Cole of the STRI who was urging the club to address this worsening situation. The 35-year-old had previously spent six years as a Deputy Head Greenkeeper at The Belfry before managing and improving the Cosby course in Leicestershire for a further seven years.

Andy said: "Soon after arriving and taking various turf and soil samples, it was apparent that drastic action was required. The greens contained a thatch level of over 60mm, a serious black layer problem, heavy reliance on fungicide applications and suffered closure due to waterlogging of between 20 and 30 days each year.

A Clegg hammer reading of 48 was one of the worst ever recorded by the STRI.

Previous efforts to improve drainage and reduce the level of thatch included the use of the Graden Sand Injector and limited aeration work. Even after just 10mm of rain, water would remain on the surface for over a day, with prolonged rain leading to complete loss of turf."

Planning and Approval

Soon after commencing work as Course Manager, Andy made a presentation to the club, highlighting the problems and then recommending a plan of action to address the issue with the greens once and for all.

After the inevitable questions being raised from the membership on the effectiveness of the plan, level of disruption, timescale and cost, there was a strong desire to overcome the problem in the most cost effective way possible.

Andy was given full club approval to drain 15 of the greens over the autumn and winter of 2009 and 2010.

"The first step was to locate suitable outlets for the drain water to exit the course or to be reused for irrigation water.

"The next requirement was to provide a series of main drains that would allow connection from the greens and then entry into

Turf Master One Ltd is grateful to Andy Wood and Robin Hood GC for their support in producing this article.

the outlets. Due to the layout of the course and elevation changes, the course was split into three zones but with just two outlets, one into a brook which traverses the course and the other into a lake which can then be recycled. The third part of the plan was to drain the greens themselves. Following various quotations, Delta Golf were appointed to carry out all three stages of the work, with the greens staff carrying out the more intricate turfing and remedial finishing work".

In Detail

"In the summer of 2009, approximately 2,500 linear metres of 300mm pipe were installed using an excavator and dump truck. Spoil material was stored into various areas for future mounding and tee construction.

With dry ground conditions, there was minimal damage and once the lines were back-filled with stone, sand and root-zone, all lines were seeded in early autumn. The total cost of phase one was around £40,000.

"With temporary greens prepared in advance and an AFT Sand Bander and mini-excavator purchased for in-house project work and secondary drainage, work began on the greens during September and continued up until the end of the year.

The plan included installing drainage lines at between 1.5 and two metre spacing followed by sand banding at 90° angles at between one and two metre spacing.

This has provided a permanent matrix of drainage lines and channels which can move water quickly from the playing surface and into the drainage pipes previously installed. Connecting drains were added to link the greens drainage to the main line system.

The contractors worked from boards, consisting of large sheets of plywood which protected the greens surface from damage."

Details are as follows.

"Once the contractor installed the main drain lines, sand banding was completed by the greens staff using the AFT machine, again working from boards to avoid damaging the turf especially the edges. Once complete, all trench lines were again consolidated and the turf replaced in the order in which it was removed.

Contractor work took approximately five days to complete each green, with a further two to three days required to complete the in-house work.

The cost to drain the 15 greens was approximately £63,000 - around £4,200 per green. A further £25,000 was spent on installing connecting drains on the front approaches to link the greens with the main line system.

With various ancillary work completed by the contractors, the total cost of the project was in the region of £140,000.

"Soon after arriving and taking various turf and soil samples, it was apparent that drastic action was required"

GREENS DRAINAGE INFO..

Preparation	Turf cut & rolled
Spacing	1.5 to 2 metres
Depth	550mm (22ins)
Width	120mm (5ins)
Method	Laser Guided Wizz Wheel
Fall	1% Back to front
Pipe size	100mm (4ins)
Backfilling 1	2 to 6mm gravel - 250mm
Backfilling 2	Root-zone - 300mm

SAND BANDING...

Spacing	1 to 2 metres
Depth	200mm (8ins)
Width	25mm (1in)
Sand quantity	2 tons per green

Sand banding and subsequent top dressings was additional to this".

Surface reinstatement & ongoing surface improvement

"Much of the first winter was spent on reinstatement work whereby drainage lines were constantly being raised, levelled or adjusted to ensure a smooth finish. Coring, deep tining and sanding of the areas between the drain lines were completed along with other work which included rolling and brushing in order to bring the greens back into play as soon as possible. By April 2010, this was achieved after a period of between six and seven months of work and recovery".

During 2010, the greens and collars were sand dressed on average every two weeks, applying around 15 tons per application.

This amounted to almost 400 tons of sand being applied, followed by around 350 tons in 2011. At around £30 per ton, the cost in top dressing alone was £12,000 and £10,500 respectively for the two years. This year the amount is likely to fall to around 300 tons, reducing further to around 200 tons in 2013.

Unfinished business

Work on the 18th green had been deferred since other landscaping work to the bunkers and surrounds were required.

Before work started in September 2011, the club purchased an AFT Trencher which would allow the staff to complete all the necessary work in house.

Another member of staff was also employed since other project work was planned which included the reconstruction of the 16th green and the inclusion of a small timber edged lake.

The 18th green was drained in exactly the same way, the work was completed on time and the green brought back into play earlier this year.

The total cost of the project was around £2,250 inclusive of a connecting drain to the main line.

The remaining 6th green not requiring drainage had previously been rebuilt several years earlier to a modern sand based construction.

Nearly two years on from the initial work, the difference in playability and greens performance is remarkable.

The greens have drained very well with no standing water remaining after heavy rainfall.

Following extensive aerifying, top dressing, brushing, grooming and rolling, the greens are firm, smooth and consistent. Stimpmeter readings on the day of this visit averaged ten and this pace has been maintained throughout the summer.

Recent data taken by the STRI supports the transformation in performance and a substantial reduction in Organic Matter content as seen in the green profile photograph. Nutrient input has been lowered from around 130kgs Nitrogen in 2008 to 105kgs in 2011 and less is expected this year, probably ending with applying around 95kgs of Nitrogen per Ha and a lesser amount of Potassium.

"The club now has a small but healthy waiting list"

Fungicide applications have been reduced to three per year, two being applied as a preventative.

In financial terms, there has been a halt in membership loss and the club now has a small but healthy waiting list. Green fee income has improved, although it has stalled somewhat due to the exceptionally wet summer.

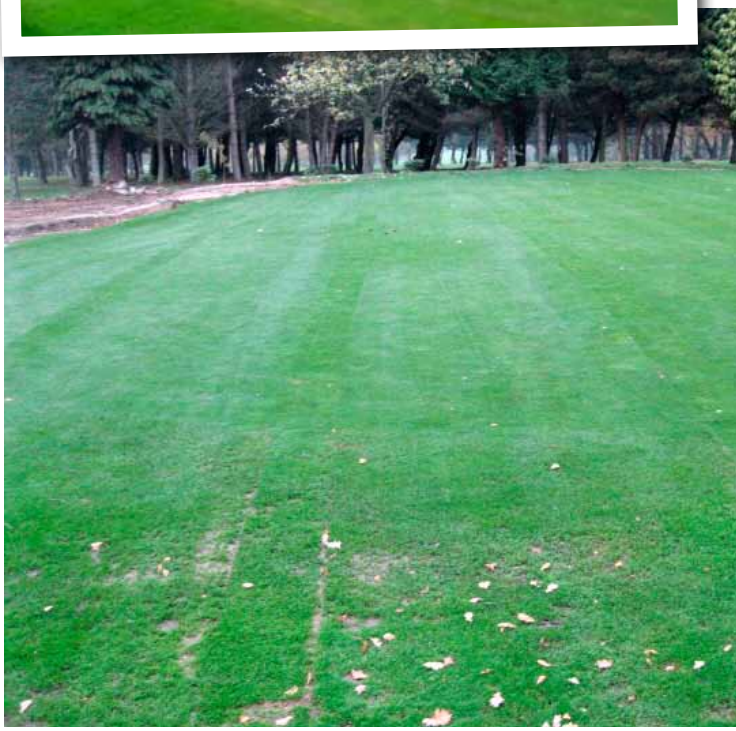
One interesting aspect is that a small band of members give some voluntary time on the course for work such as pond clearance, divoting fairways, tree trimming and so on. Pride in their course has been re-established and there is strong desire to make Robin Hood Golf Club one of the best courses in the region.

Conclusion

The challenge of finding a workable solution to draining soil based greens will be one that is familiar to many within the industry.

Andy Wood accepted this challenge and with the support and investment from the golf club and a great greenkeeping team alongside him, they were able to deliver on time and within budget, while also raising the performance of the greens to a standard not witnessed previously.

His enthusiasm and commitment from start to finish, from planning and presentation to implementation and communication has been an



ABOVE: Greens drained via Wizz wheel trencher

RIGHT: Sand slitting and drainage completed before turf is replaced

BELOW: Newly installed drain lines at 2m centres

ABOVE LEFT: Green profile on 17th

LEFT: Putting on 18th green 10 months after drainage