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 attract 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, allowing the reconstruction of 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 wish to take the course forward and a growing reputation from the links of Andy Cole of the ISTS who was urging the club to address this worsening situation. The 35-year-old had previously spent six years as a Deputy Head Greenskeeper 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 high level of over 60mm, a serious black layer problem, heavy reliance on fungicide applications and a reduced drainage potential due to water logging of between 20 and 30 days each year. A Clegg Humidor 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 Garden Sand Injector and limited aeration work. Even after just six months of rain, water would remain on the surface for over a day with prolonged bare soil leading to complete loss of turf.”

Planning and Approval

Soon after commencing work as Course Manager, Andy made a presentation to the club, highlighting problems and there was a strong desire to address the issue with the greens for all time.

After the inevitable questions were raised from the membership, the full committee took the decision to appoint a plan of action to address the issue with the greens once and for all.

In Detail

During the running of 2009 approximately 2000 linear metres of 300mm pipe were installed along excellent and high-tech flood flat banding material was installed into various areas for future manning and tee construction.

With dry ground conditions, there was minimal drainage and once the lines were back-filled with sand and top soil, all lines proved to be very functional. The total cost of phase one was around £45,000.

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 surfacemakers for the dino mate form the course to be used for irrigation water. The next requirement was to provide a series of main drainage lines at between 1.5 and two metre spacing followed by sand banding at 0.5 metre at between 1.5 and two metre spacing.”

This has provided a permanent matrix of drainage lines throughout key drainage channels which can move water quickly from the playing surface and into the drainage pipes properly installed. Shredded dunes were added to mix the greens during the main season.

The contractors worked fast, borders consisting of large sheets of geotextile to protect the greens starter from damage. Details are shown below. Once the bands were installed the main drain lines, sand banding was consolidated and the turf re-established using a temporary greens re-establishing. Stole mulch was then taken from boards to allow draining the most especially the edges. Once complete, all trench lines were

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.

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Cargo Hills One is grazed by Andy Wood and Robin Hood GC for their support in producing this article.

Greens Drainage Info:
Preparation
- Turf cut & rolled
- Spacing...
- Depth...
- Filling...
- Method...
- Spacing...
- Depth...
- Filling...
- Method...
- Spacing...
- Depth...
- Filling...

Sand Banding...
- Spacing...
- Depth...
- Material...
- Spacing...
- Material...
- Spacing...
- Material...
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Like many courses formed over a century ago, Robin Hood Golf Club in Batley is not blessed with a naturally 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 venue for the Open Championship.

Challenges

With greens drainage in particular being the weakest aspect of this course, a report was commissioned in 2001, along with the reconstruction of 18 greens. The project was completed in 2002, but in 2009-2010, the greens gradually accumulated a greater level of thatch, which led to a worsening drainage situation. By 2009, the greens were considered to be a problem that was not going to disappear.

Enter Andy Wood, a young Course Manager with the ability to take the course forward and a growing reputation from the ranks of Andy Cole of the R&A was urging the club to address this concerning situation. Andy had previously spent six years as a Deputy Head Greenkeeper at The Bath 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 a frequent 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 GI Sand Bander and limited aeration work. Even after just four months of club, sun and water, growth 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 recommending a plan of action to address the issue faced with the greens once and for all.

The plan included installing a permanent matrix of drainage lines and drains which would allow drainage water to be quickly removed from the playing surface and into the drainage pipes, which were already in place. Connected drains were added to link the greens draining into the main drainage lines. The contractors switched from installing the main drain lines and sand banded gravel into large sheets of plywood which protected the greens during their installation.

In detail

- In the summer of 2009, approximately 1,200 line metres of 300mm pipe were installed using an excavator and pipelayer. Soil material was then seeded into various areas for future mounding and re-landscaping.

- With dry and wicked conditions, there was minimal drainage and the turf was killed with liquid nitrogen and rootzone treatment, all lined up for early May 2009. The final cost of phase one was around £47,000.

- In the autumn, temporary greens were installed on the main lines and drains were added to link the greens draining into the main drainage lines. This has provided a permanent matrix of drainage lines and drains which would allow drainage water to be quickly removed from the playing surface and into the drainage pipes, which were already in place. Connected drains were added to link the greens draining into the main drainage lines.

- The club’s drainage work took approximately five weeks complete from March and April and was completed by the end of the year.

- The plan included installing drainage lines at between 1.5 and 2 metres, and two metre spacing followed by sand banding at 300mm at between 300mm apart, or to be reused for temporary greens.

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“Of the 15 greens, 3 were completed in one year, 6 were completed in two years, and the other six were completed in three years.”

Table: Greens Drainage Info

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Spacing</th>
<th>Depth</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preformed .....</td>
<td>5m (36ins)</td>
<td>50mm (2ins)</td>
<td>Laser Guided</td>
</tr>
<tr>
<td>Rootzone .....</td>
<td>150mm (6ins)</td>
<td>20mm (3/4ins)</td>
<td>Sand Banded</td>
</tr>
</tbody>
</table>

Final thoughts

Andy Wood, Course Manager at the Robin Hood Golf Club in Birmingham, states 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.
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.

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 outstanding success. Andy hopes that by sharing his experience it will help other clubs faced with a similar challenge. The club now has a small but healthy waiting list.
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Following extensive airdrilling, 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.

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