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Report

on

Visit to Waterford Golf Club on 17th February 2016

Pat Suttle B.Agr.Sc

View from the course over the city

Introduction

This was my first visit to Waterford Golf Club. I did not realise that the club had such an illustrious history having been designed by Willie Park and James Braid. With the likes of Jack Nicklaus being hailed as both a great golfer and golf course designer nowadays it is very advantageous to have the names of former British Open Champions and golf course designers of world renown attached to your golf course.

The course on superficial inspection seems to be satisfactory. However, I was examining a course that had not been played in 3 months. One would expect near perfect surfaces where there had been no wear.

The Golf Course

The course still retains the veneer of a quality course. However the veneer is wearing thin and major problems in the facility will become apparent to all members and visitors if remedial action is not taken in the immediate future.

1. **Course Overview**
   The course is very attractive. There is a feeling of sufficient room even though the course has been developed on a small area of 87 acres. The outcrops of rock and the extensive areas of gorse leave one with the impression of a heathland type course which is most desirable from a marketing viewpoint.
   The views both within the course, out over the city to the south and up into the countryside of Co. Kilkenny to the north are excellent. The boundaries are for the most part secure.
2. **Greens**
   The greens are in reasonably good condition but the maintenance programme has had to be curtailed over the past few years with the result that there is an urgent need to engage in intensive maintenance over the next 20 months in order to ensure that there is not a sharp deterioration in playing quality.
3. **Tees**
   The tees are good with reasonably firm surfaces. There is a need to modify some of the tees to increase the playing surface and to facilitate maintenance
4. **Bunkers**
   Numerous bunkers throughout the course had ponds of water present on the day of my visit. There was gully erosion on the sides of many bunkers where the rainwater had washed the sand off the sides of the bunkers. There are no drains in the majority of the bunkers. I would expect that due to low staff numbers it is difficult to maintain a high standard of finish on the bunkers even in the summer
5. **Fairways and Rough**
   Huge swathes of the course have not been cut for the past few months due to the wet weather with the result that it was not possible to assess the condition of the fairways and rough with any degree of certainty. However apart from serious drainage problems they seemed to be satisfactory
6. **Tree Stock**
   There is an excellent collection of trees on the course which delineate the holes and provide screening for aesthetic and safety reasons. However there is a substantial amount of work to be undertaken to thin and prune the current collection which is not possible due to staff shortages. Poplars should be removed except where essential for use as screens in the short to medium term.
7. **Irrigation**

   I am not sure if there is another course in Ireland which does not have an operational irrigation system. There should be an automatic irrigation system in place for both greens and tees. The lack of an irrigation system is not only damaging to the quality of the greens but it is hugely wasteful of staff resources. When there are even short periods of dry weather 30% of all staff resources are tied up manually watering the greens. The manual watering is uneven and haphazard even with the best trained greenkeeping staff.

   The most deleterious effect of having no irrigation system is that the need for irrigation occurs in high summer just at the time when the staff are most needed for course maintenance and presentation.

There is an irrigation storage tank in place which is adequate. The well and submersible pump supplying water to the tank are operating satisfactorily.

8. **Drainage**
   I visited the course following a period of very wet weather and the wettest winter on record which may have given me a false impression of the drainage situation. There seem to be drainage problems which need to be addressed throughout the course. The drainage situation needs to be reviewed over the next few years. Fortunately there is a good outfall (point at which drainage water can exit the course) which will allow most parts of the course to be drained to a high standard.

Other Facilities

I did not linger in examining non golf course facilities due to time constraints.

Clubhouse

The clubhouse appears to be in excellent condition and to have been constructed relatively recently. Clubhouses on the busiest courses in the country break even in terms of income and expenditure. For the remaining courses it is a matter of keeping the costs as low as possible while marketing the clubhouse for non golf activities – funerals, weddings, parties, meetings and conferences as well as the normal reliables such as bridge clubs. It is important to ensure that the regulations in relation to drinks licences are not being contravened in opening up to "outside" groups. The possibility of using the facility for preschool education/crèches could be considered especially if areas within the clubhouse can be cordoned off.

Maintenance Building

The building which houses the machinery is adequate. There is a concrete slab on which the machinery is washed and the sprayer is filled. There is no percolation area beside the slab. This should be put in place.

Machinery Stock

The machinery stock should be evaluated annually to ensure that the club is including a sufficient depreciation figure in its accounts. There are standard straight line depreciation figures for the majority of the main machines used on golf courses which are accepted throughout the sector.

I would expect that the club should be including a figure of €35,000 – €40,000 in its accounts to ensure that machinery can be replaced in a timely fashion.

The consequence of not replacing machinery is a situation where the club is facing large repair bills and long periods of downtime when machines break down.

Staffing

Waterford Golf Club has a full time staff of three with a seasonal worker employed for the April – October period. In the circumstances they are doing a good job. The lack of an irrigation system has resulted in the staff being diverted from the main summer tasks to water greens manually. At this point in time volunteers are an option for those tasks that the staff cannot get to on a regular basis especially in the summer

There is a need to put a plan in place to ensure that the staff are used much more efficiently. This requires investment by the club.

Main Recommendations

1. Attention to playing areas of the course
    - Greens: intensive maintenance required – see appendix 1.
    - Tees: modify some of the tees to increase the playing surface and to facilitate maintenance
    - Bunkers: deflect water from heavy rain entering the bunkers by using appropriate contours – swales. This should cut down on the sides of bunkers and reduce maintenance. Some drainage may be needed in the long term future.
    - Fairways and Rough: have an annual agronomy programme in place. Need a soil test to establish fertility.
2. Start the process of installing a **new irrigation system**. The work can be undertaken in stages.
   Phase 1
   i. Install a main pipe connecting all greens and tees back to the irrigation tank. The pipes used are MDPE Class C (diameter will vary but is normally in the range 63 – 100mm)
   ii. Install a cable with the main as this will be required in future years to automate the system
   iii. Install a circulation pump
   iv. Fit a valve box, valve and quick clip joint at each green

   The greens can now be watered by connecting a hose and free standing sprinklers at each green. It entails one staff member going around to each green, putting the sprinklers in place and allowing the green to be watered. The greenkeeper can rake and edge the bunkers while the green is being watered.

   This is better than filling the slurry tanker with water and travelling to each green with a heavy machine and setting up for watering

   Phase 2

   i. Install a ring main around each green
   ii. Fit pop up sprinklers (4 – 5 sprinklers per green)

   The greens can now be watered by simply opening the valve at the green.

   Phase 3

   i. Install a decoder and solenoid valve at each green. Connect to the cable that was installed in Phase 1
   ii. Install a control board up at the maintenance building. It will now be possible for staff to set the watering period and the time of watering automatically without the need for any further staff input The system can be set up to be operated from a computer. An automatic weather station can also be installed which can input into the control system.

The project as set out above can be undertaken over three years with no extra costs over installing in a single year.

See appendix 2 for detailed specification on irrigation installation.

3. Machinery Stock

See attached Machinery Stock List. This is by no means a comprehensive list. It is a list of the basic equipment to maintain a golf course in good condition. I would suggest that the machinery stock be upgraded over a 5 – 7 year period.
Ger Farrell will be able to prioritise a replacement programme. The main objective should be to eliminate those machines that will incur substantial maintenance and repair bills first.
The financing of such a programme should be examined carefully.

a. In an ideal world finance would be cash from within the annual budget of the club
b. Leasing machinery – the main golf course machinery manufacturers have financial subsidiaries (just like the car manufacturers). Your local bank may also be willing to lease equipment on your behalf

There are three major manufacturers of golf course equipment

i. Toro (Lely Ireland, Nurney, Co. Kildare)
ii. Jacobsen/Textron (Broderick Grass Machinery, Rathcoole, Co. Dublin)
iii. John Deere (Dublin Grass Machinery, Castleknock, Dublin)

For the main grass cutting machines I would not stray away from the major manufacturers.

Local Suppliers

Tennyson Grass Machinery, Piltown, Co. Kilkenny

Geaney and O'Neill, Glanmire Cork (a large company well worth contacting)

It is well worthwhile informing the suppliers that you will looking for new equipment over the next few years. It often occurs when new models are being introduced or the manufacturers wish to reduce their inventory the will inform all their national agents and sell at greatly reduced prices.

Drainage and Bunkers

There are numerous areas of the course that were very wet on the day of my visit. There is a need to put a drainage proposal in place to ensure that the course remains open all year round except in the most exceptional of circumstances. I have walked two courses in the past week that were totally playable. In a worst case scenario it should be possible to have a 9 - 12 hole course payable at all times. This ensures that members(especially those who only play at weekends) have a course available to them(I would also recommend that a number of winter greens be prepared so that a course is available even in frosty weather).

Drainage is expensive. The objective should be to list all the problem areas.

Those areas that are critical to the playing of the course should be tackled first.

Areas that are wet but mostly out of play should be left until the end of the project

It may be possible to raise pathways to bring then above the wetness without have to drain the whole area

The standard method of draining golf courses is to –

a. Install or excavate a main drain to connect to the outfall
b. Install collector drains at 6 – 10m centres
c. Trench/Sand Slit the area at 1.00m centres
d. Topdress the area with 50mm of topdressing sand

Not including the cost of installing the main drain, the cost of drainage is c. €5.60/m^2

Because the bedrock is near to the surface it may be possible to reduce the costs in Waterford GC

Bunkers

Ponding in Bunker - drain

The main problem with the bunkers is ponding. The bunkers can be drained at the same time as nearby areas are being drained. The cost of installing drains is c. €15.00/m of bunker base + cost of bringing a collector drain to a main drain (€9.50/m).

There are a number of bunkers we looked at on the day of my visit that do not come into play which could be closed.

Trees

The trees are a very attractive element of Waterford GC. There is a very substantial amount of work to be done to maintain the quality of the trees on the course

1. Thinning out of plantations that were planted 30 - 40 years ago. For instance there are a large number of Lodgepole Pine copses at the upper end of the course that need to be thinned out.
2. Raising the crowns of Trees. This entails removing all the low branches of the trees up to a height of c. 3.00 metres. This has three benefits –
   i. It allows players to play(and have a back swing) out from under trees
   ii. It allows grass to grow under the trees so that players have a good surface to play off
   iii. It stops the staff from getting hit on the head from overhanging branches when they are cutting grass
3. Tree Surgery. The club has a large number of mature and overmature trees that require work such as
   i. Removal of overmature dangerous trees
   ii. Removal of heavy limbs to lessen the load in the tree canopy
   iii. Thin out the branching system to allow more light in on to green surfaces and lessen disease pressure

   Tree Surgery is very expensive. I would recommend that the amount spent is limited to essential and emergency work only until the finances are more stable

Ideal Spinney for Thinning

Volunteers

Many clubs have been pleasantly surprised to find members volunteering to undertake maintenance tasks on the golf course during the recession. It may interest your members to know that there are many golf courses in New Zealand where **all** the maintenance is undertaken by members !!!!.

I would recommend that members could become involved in the following activities –

i. <u>Gardening.</u>
   The course staff do not have the time for gardening. Their first priority must be the course.
   Beds can be installed at a small number of tees where members are inclined to be held up on busy days.
   Because Waterford in on a heathland like site it would be good to have 2 – 3 small heath/heather beds on the course (make sure to plant the correct species). I would suggest Erica harbacea(carnea) cultivars,

Daboecia cantabrica and Calluna species and cultivars – the second and third recommendations only if the pH is below 6.2
There are some nice shrub beds in place at present which could be "adopted" by a number of members.
There is the beginnings of an alpine bed beside the entrance road which has potential to become a very attractive feature.
The beds at the clubhouse could also be maintained by volunteer gardeners.
It is very important to ensure that members do not become too enthusiastic and take on more than they are capable of maintaining.
John Walsh and Michael Gaffney are doing sterling work on the gardening on hole 10.

ii. Spraying under Trees

This is a task that needs to be undertaken twice a year. The herbicide is applied using a knapsack sprayer. Only members who are qualified to spray can do this task

iii. Watering Greens

Ideally the greens should be watered at night or early in the morning. If it was possible to set up a rota of volunteers this might be a task that volunteers could participate in.

iv. Divotting Tees

Tees should be regularly divotted to maintain a quality surface. Unfortunately it is one of the tasks that is dropped when staff are too busy All the above are merely suggestions.

Environmental Policy – This can be a distinguishing feature of your club.

- Diversity of well kept trees
- Zero tolerance for litter – no dust bins – take home your waste!
- Well kept strategic shrubberies
- Partake in the "Pollinator Plan"- Consider wild flower meadow.

Particular Items arising from the Course Walk

Greens Maintenance

At present the greens are not being aerated as the programme that is being followed is based on Disturbance Theory. This involves minimising the amount of nutrients being applied to less than 100kgs Nitrogen/hectare/year. This has the effect of altering the grass species cover from Annual Meadowgrass dominated playing surfaces to greens where there is more Bentgrass and Fescue than Annual Meadowgrass. There are two main benefits to this programme

a. Lower nutrient inputs results in lower disease pressure. This is very important as the cost of a single application of a fungicide for Fusarium control is c. €800 for the 18 greens
b. Faster playing surfaces

In order for this programme to work there is a need to topdress the greens with sand (400 – 600kgs/green) every 3 – 4 weeks during the growing season. The staff have not been able to topdress as often as is required. I would recommend that the club continue with this programme for the moment. It is essential that the staff get to do the topdressing as the playing surfaces were good on the day of my visit. See appendix 1 for detailed green maintenance.

2nd Tee

It is logical to make one teeing area from the two tees in place at present. It is a straightforward process.

1. Strip the sod off the two teeing areas

2. Strip off the topsoil
3. Regrade the subsoil to bring the area to a single surface. Grade the subsoil level across the tee and at a grade of 1: 100 from front to back
4. Replace the topsoil
5. Fertilise with 35g/m^2 24 – 5 – 12
6. Replace the sod
7. Topdress twice with 12mm of topdressing sand

If this project is to be undertaken I would recommend mid September as the ideal time

Main Drain

The drain across the 2nd,4th,5th and 6th holes has great potential. It may be well worthwhile opening it again as an open ditch in the future both from a playing viewpoint and also as a large outfall drain for the entire area

The outfall drain that crosses the public road on the 6th fairway is excellent. Very important to ensure that this regularly cleaned and remains open at all times

5th Tee/6th Green/7th Tee

Shots off the 5th tee could potentially pose a hazard to players on the 6th Green and 7th Tee. Screen planting using large Griselinia littoralis hedging plants should be planted at 600mm spacings.

Gorse Plantings

Gorse is a very attractive characteristic plant of heathland and links courses. It should be retained wherever possible. However on the approach to the 12th green I would expect that a substantial number of high handicap players are caught in this area. I would recommend that 2 – 3 "clumps of the gorse that are near to the fairway are removed and that the area is maintained as light rough.

Leather jacket problem – treat with a chlorpyrifos product

13th Green - Install drains into the bunkers and bring the drain to the nearby area of gorse where the drainage water can leak out into the surrounding area

Please refer to Golf Course Maintenance Programme – Pat Suttle Guide – supplied as a separate document.

And finally my thanks to Jim O'Mahony, Ger Farrell and Ger O'Keeffe for the great welcome I received

Pat Suttle B.Agr.Sc. 13th March 2016

Appendix 1: Essentials of Greens Maintenance

1. Cut to produce a playing surface with a speed that members can cope with and which can be speeded up for special events. If you do not already have a stimpmeter (instrument that measures green speed) purchase one. The speed of the greens is a tool for the head greenkeeper to use – the speed of the greens should not be posted up on the board in the locker room.
2. Decide on a management programme
   a. Disturbance Theory programme – minimal aeration and scarifying
   b. Annual Meadowgrass programme – hollow core aeration twice a year and regular verticutting

   I would favour the Disturbance Theory programme as it leads to traditional type greens which are a mixture of Bentgrass, Fescue and Annual Meadowgrass. The main elements of the programme are

   i. Regular topdressing with small amounts of sand (300 – 400kgs) every three weeks from the commencement of the growing season(e.g. early – mid April) until late September – early October. This will produce smooth playing surfaces and dilute any buildup of organic matter (thatch etc.) in the surface of the greens
   ii. Overseeding of the greens with a Slender Creeping Red Fescue/Bentgrass mix in late August – Early September. Overseed at a rate of c. 20g/m^2. Hire a dimple of slit seeder for this task
   iii. Apply Primo Maxx growth regulator as per the manufacturers recommendations (usually 5 – 6 times in a growing season. This increases the sward density and encourages Fescues and Bentgrass at the expense of Annual Meadowgrass
   iv. Apply minimal amounts of water. This will again favour the other species rather than Annual Meadowgrass
   v. Apply minimal amounts of nutrients. I would recommend that soil test be undertaken to get a clear picture of the nutrient status of the greens. Normally I would expect to see Phosphorus levels of 4 – 12 mg/litre and Potassium levels at c. 100mg/litre. We can develop a programme to alter the levels if necessary.

      In relation to Nitrogen I would recommend rates of between

90 – 140 kgs N/hectare /year. The applications using liquids for the Nitrogen are to be recommended

vi. Heights of Cut: The greens should be cut 6 times per week in the summer so that members have a quality surface at all times. Reduce frequency of cut for the remainder of the year. It is very important to have the greens cut for weekend golf as this is when the majority of members are playing.

The greenkeeper is the best judge of the height of cut required to produce a green speed that golfers will be happy with. Normally the height of cut should not need to be below 4.0mm even in Summer. In winter the height of cut may rise to 6.0mm.

vii. Keeping the cutting heads in good condition through annual grinding on a specialist grinder(your machinery company can do this) followed by the application of grinding paste and reverse the cutting heads on c. 2 occasions during the growing season

viii. Application of Iron Sulphate from late September through to late March at a rate of c. 5g/m^2 every 4 – 5 weeks should keep disease outbreaks to a minimum

ix. A wetting agent should be applied to the greens starting in mid – late March as per the manufacturers recommendations to ensure that the greens allow irrigation water through the surface and prevent the development of dry patches during the summer

x. Aeration of the greens should be undertaken c. 5 times during the main growing season. I would recommend using 6mm diameter solid round tines. Normally aeration of the greens should not be required more than twice during the dormant season

xi. In the long term a greens roller should be used on the greens during the main growing season (late March - late October) to produce fast surfaces without the need to cut low. Use of the roller should be limited to no more than twice a week

xii. The rootzone should be inspected regularly (easiest time is when changing hole). The moisture content of the soil/sand can be assessed as well as root depth, presence of thatch build up. The rootzone should be smelled to ensure that anaerobic conditions are not building up.

Ultimately it is the head greenkeeper who decides how greens are maintained. The greenkeeping team are on site each day and can decide what tasks are needed to be completed rather than a consultant that is 160 kms away. The consultant can be contacted by mobile for an opinion but the person on the ground is usually best placed to make decisions. Below are some general suggestions that I would make as a guide to producing quality greens

Appendix 2: Basic Requirements: Irrigation System Waterford Golf Club

1. Reservoir/Tank
2. Submersible Pump
3. Circulation Pump
4. Main to carry water from green to green . Estimate: 3,500 metres
5. Run from main to rear of green (c. 40 metres/green) x 19 = 760 metres
6. Cable to be installed at the same time as the main 4,260 metres
7. Irrigation valve box at the rear of each green(i.e. 19 required) to hold the quick clip connection(x 19) for the flexible hose
8. Hosing (100metres) to connect sprinklers to the irrigation box at the rear of the greens
9. 4 x free standing impact drive or gear drive sprinklers

Tank

The Tank and Submersible Pump are already in place. The remaining equipment will need to be purchased and installed.

Pipework

The pipe should be MDPE or HDPE (medium or high density polyethylene) – do not use PVC piping.

The size of the pipe is usually in the range of 63 – 100mm diameter. The size of the pipe depends on the pressure required to pump water to the highest and furthest points of the course. Thepipes should be installed at c 600mm deep to minimise the chances of damage by later projects

The pipes should be butt fused rather than using connectors as it eliminates leaks

Circulation Pump

Size depends on the pressure required to pump water through the course and deliver sufficient pressure to operated the pop up sprinklers that will ultimately be installed on the course (usually 4 per green). The output required is usually c. 200litres per minute.

Cable

The cable is normally installed in the same trench as the main pipework. As the cable is relatively cheap it makes sense to install the cable at the same time as the pipework as it saves on trenching in a cable at a later date

Irrigation Box and Quick Clip Joints

The plastic boxes which can take the load of a tractor or mower passing over them is used to accommodate the quick clip connection for the hose. In the future it will be used to house the solenoids and decoders to operate the system automatically

Hose and Free Standing Sprinklers

Normally c. 40mm diameter flexible hose (main type used is called Acriflex) and free standing sprinklers are used. The pressure in the supply together with the sprinklers should be capable of watering an area 20 metres wide. 2 sprinklers will normally be required per green