Frinton Golf Club

Sustainable Agronomy Report

Report by Paul Woodham

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FRINTON GOLF CLUB AGRONOMY REVIEW

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My report from last October's visit discussed various elements of sustainable golf course management at Frinton Golf Club. The second half of last summer presented challenges with prevailing wet weather but the consequence of drought and dealing with water security – sustainable drainage and water for irrigation – was still a point for future planning.

Our regional visits and wider agronomy work through the UK this year has documented the testing conditions with wet and often extreme weather conditions have dominated the climate during the past 12 months. Only since mid-June did we see short periods of settled summer weather although seeing other stress pressures quickly with heatwave conditions and the need for irrigation and turfgrass stress management at the start of July but the monthly rainfall stats at Frinton remain above average.

The Met Office stated that the 18 months to March 2024 recorded the highest level of rain for any 18-month period in England since comparable data began in 1836. It beats the previous record of 1,680.2mm, which had been set only the month before and covered the 18 months from September 2022 to February 2024. The third highest figure on record, 1,668.4mm, was set in the 18 months to January 2021. Add in the drought and heat stress conditions in 2022 and 2018-19 we can see the warnings for climate change being realised and the pressure this puts on courses.

The relentless rainfall and sustained wet conditions which persisted throughout the winter and presented numerous challenges to golf clubs and greenkeepers. A recent article from renowned golf course architect Tom Mackenzie is a good summary of the situation CourseManagerReflections On Winter23-24.pdf.

All clubs succumbed to the weather as the volume of rain overwhelmed the natural drainage capacity of the ground even where drainage is installed. My article in May – *Postage Stamp* - published for The Golf Club Secretary, commented on the impact of the conditions and what actions will be needed for many courses ahead of next winter. GCS_V21N5.pdf. In addition, the wet conditions leading into summer has fuelled strong growth potential with the warmest average temperature for May since 1885. All clubs have seen thicker than usual rough this year because of the conditions leading to tough conditions on the course. GCSN June.docx. My report will go on to discuss how this has come to fruition at Frinton and how you can best manage the impact and communications with members.

In response to the general calls for support, The R&A Sustainable Agronomy team collaborated with England Golf on a series of content which answers some of the most frequent questions from golfers on the challenges of maintaining a golf course during the winter months The R&A_England Golf Sustainable Golf Short Series_Final.pdf

The following notes are a summary of the visit and discussion with technical comments.

Overview

- The greenkeepers are clearly working hard on the upkeep of the course at a time when the climate has been particularly challenging. By climate we of course mean the weather and environmental conditions but also with reference to the political climate managing player feedback. No one will be more frustrated with the continued challenges posed by weather and growth than the greenkeeping team who have endured relentless pressures during the past year. Frinton golf club is a beautiful course but a challenging site to manage especially when needing to balance the presentation and playability of the course with the available resources and environment constraints.
- The nature, playability and maintenance of the rough was a focal point of the review. All courses have seen penal rough with dense growth in the base or the longer areas of rough. We discussed strategies for cultural management during this year and changes to the shaping of rough for next year.
    - The priority is to schedule a wide area cut and collect operation completed by the end of August. This would be earlier than normal but supported by advice from golf course ecologists. The work will ideally be contracted out as an agricultural 'cut and bail' operation to ensure the rough is harvested before the long grass starts to lay flat and leaches nutrients back into the soil. In any case, the rough would ideally need to be harvested by the end of September but the nature of this year's tough demands earlier work.
    - Trying to undertake all of the work with the loaned use of an Amazone flail collector will be an arduous and inefficient operation as there is simply too much material to manage within the target timescale. That said, the unit would be used to double-up and scarify / collect the key strategic in-play areas where the texture of rough is most dense. Further targeted work would be completed in the spring, and potentially as a periodic higher trim of the carry areas during the main season if required.
    - We discussed widening the bail out areas and shortening some sections of carry to improve the playability of the course for next year. Minor changes cutting localised areas down in the coming weeks for this year would generally be consumed within the wider areas cut and bailing project.
    - There is a clear process for undertaking a review and planning the adjustment of playing lines for next year. At all times, the evaluation of the changes must consider the available resources and implications for time management. The Course Manager, Club Professional, and Board / club representative, or golf course architect, should be the only ones in control of designing the changes.
- The clay soils remain moist at depth throughout the course and continue to fuel strong growth. This is leading to increased frequency of mowing operations across all of the different surfaces but particularly through the fairways and rough.
- The changing nature of the grass species is legacy of an exceptionally wet 12 months most notably with an increased presence and density of moisture loving grass species in the rough but we also see the legacy of repeated extreme wet and excessive dry soil conditions over the last decease which continues to create shrinkage and expansion movement in the soil which changes the surface levels. Work is ongoing with the smoothing out of minor and major depressions which are continually moving. The low spots in fairways and green surrounds have inevitably trapped and held water for much of the first half of this year causing saturated soil conditions and localised loss of grass cover.
- I am pleased to see the establishments and benefits of the last phase of drainage installed to areas such as the 2nd hole. The proposal to continue the in-house drainage

work to areas of the 4th, 9th (green side), and 10th should be upheld and noted that continued investment in drainage is a necessity.

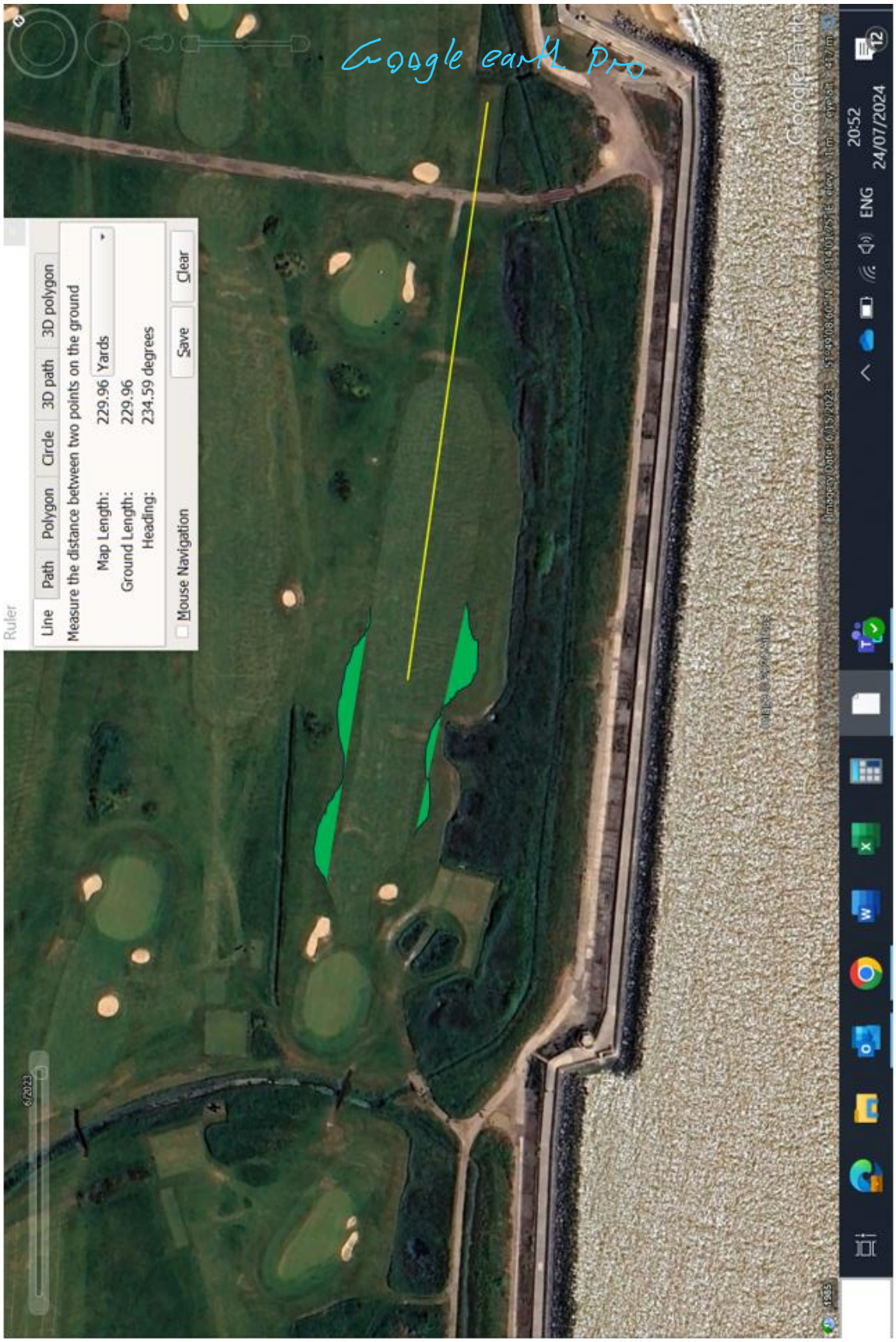
- I am also pleased to hear that there is support from Natural England who will now allow for the clearance of ditches with less constraints which had previously limited the work to just 200 meters of clearance per annum. This will greatly improve the flow and pipe outfall / groundwater drainage of the course with just 50 meter breaks needed within the agreement. It is however to big task for the greenkeeping team but important work.
- Greens complexes are very well presented and receiving great feedback. Soil sample results from last October recorded a reduction in organic matter content to 7.2%, which although was progress was still seen as above the desirable target and needing further control through aeration and cultural management. The forthcoming green renovation work planned for the start of September will be another opportunity to core, sand and seed the greens. The programme for routine maintenance has been disrupted so there is a concern that organic matter levels could increase if the overall schedule of work is further disrupted.
- The only blemish was localised development of Take all patch disease and the legacy of surface ponding in localised low lying areas which has resulted in the ingress of Poa annua. The following report discusses the Integrated Disease Management requirements for Take all. Any localised scarring will need targeted seeding (hand seeding) with fescue, in addition to the wider pot seeding work applied following renovation hollow coring, and spot overseeding using browntop bent.
- Additional deep solid tine aeration is needed through the low lying areas to alleviate any compaction. Ongoing monitoring will determine if the incidence of surface ponding is becoming too frequent. If so, localised drainage and / or minor surgery to adjust surface levels to shed water would be needed. This can be reviewed over time.
- We have previously discussed the potential for autonomous mowing using robotic units to cut areas such as the semi rough especially across the Kirby Course. Technology and the quality and accuracy of cut is advancing at pace and I see potential advantages for Frinton GC. I suggest the club looks more closely into this (Belrobotics and Husqvarna) and evaluate whether it is an option which would free up valuable time for the greenkeeping team especially as my last report discussed staffing levels.
- This report completes the current agreement for support from R&A Sustainable Agronomy Services having visited last October and July. Soil samples should be issued to ETL Laboratories in October for annual review. This is important to assess the impact of conditions and the maintenance operations in respect of controlling organic matter. My next review should be in the early-mid spring when the proposed changes to mowing lines are set and the winter project work is complete.
- In summary, changes can be made to the shaping of rough to improve course playability but the texture of rough will always be strongly influenced by the conditions of the year. It is important to effectively cut and harvest the rough earlier than normal this year and to do so with greater efficiency. Support needs to be maintained for the drainage work to continue and keep focus on organic matter control in greens. The climate has been exceptional and all greenkeepers have shown physical and mental resilience during the past year whilst working under pressure from relentless rainfall and difficult ground conditions.

Photographic Gallery and Comments

The density of rough running through the fairway carry areas is potentially the most challenging or intimidating aspect of the course set up. We looked at areas where the runway paths could be widened or where the rough could be feathered back (inset – 2nd fairway wider carry). The distance of the carry's would not normally be too difficult but some could be shortened. The fairways need to ideally follow and be widened and lengthened in selected areas and with the first cut rough also moving out. The changes need to be proposed and owned by a small group within the club's management.

The equipment for mowing is practical to a level but would not be able to manage much in the way of wider areas – nor should you be making wider adjustments which would drastically increase the area of rough mowing.

Below – The Amazone flail / scarifier / collector is loaned to the club. Although a slightly bigger unit may be available to the club, the lack of your own unit limits the opportunity for any regular use trimming the height of carry rough. The size of the unit is also limits what can be done. I would prefer to see wider area cut and bailing as described in the report.



An example of where minor strategic adjustments to the width of fairways could be planned using Google earth. Each hole should be assessed using ariel images and course walk reviews with a select group of professionals within the club.

Left side of 10th green where standing water suffocated the turf and has led to the soil de-structuring. Reparations are slowly taking shape but we look forward to the opportunity to deep aerate the profiles. We could also integrate gypsum soil amendment – granulated calcium sulphate - into the profile to help flocculate the soil to restore some structure.

Above – green sward showing a great blend of bent and fescue. I would like to plan a review from TCS turf (Tom Stidder) to look at any bespoke adjustments which can further improve the mowing quality and sward texture – with the aim of seeking further refinement of the bentgrass which can lay very procumbent especially during the early part of the season.

Below – Take all patch disease. This disease targets bentgrass leaving irregular shaped circles of bentgrass decline and typical invasion of Poa annua.

Discussion

Greens

- An increase in organic matter content (thatch) could be seen this year due to the long periods of strong growth and rainfall levels and the frequency of wet soil conditions which is well above the norm. Top dressing will remain as the single and most repeatable method for controlling organic matter by dilution but we should be mindful of the need to uphold the maintenance requirements for aeration and renovation work.
- Please make arrangements with ETL for soil sample analysis from the 7th, 16th and 18th as these are greens previously assessed. I can then provide further comment on any change in organic matter levels. Arrangements can be made as before by contacting sharon@etl-ltd.com
- There are localised areas where there is evidence of surface ponding – water held in low-lying contours. The impact is risk of increasing organic matter because of this spatial variance in moisture retention. We also see change in the grass species composition with ingress of Poa annua and, at the time of inspection, yellow tuft disease giving an appearance of Poa annua becoming very stunted and tufted in its growth and very pale in colour. This is a minor issue but more a sign that the ponding conditions need to be alleviated via localised work including additional deep solid tine aeration just in the low lying sections. The situation needs to be monitored to see what improvement can be found through targeted cultural management. We may need to consider minor changes to the contours which will allow the surface water to release. This is minor surgery with the turf lifted and replaced after changing the contours. This would be the preferred method before considering if a localised drain is needed.
- The greens continue to be a dominant blend of native bent and fescue. The spread of fescue in the turf base is impressive. The texture of the bent can be course and be lateral in its growth rather than upright. The main season texture of the sward is good but the procumbent growth can be more difficult to manage in other seasons. I would like to see the club seek support from independent machinery expert Tom Stidder tom@tcsturfequip.com – https://tcsturfequip.com/ . I have seen fantastic results where Tom has supported clubs with bespoke changes to the configuration of the mowing units for improved texture, surface performance and changes which are aligned with our objectives for reducing the physical pressure on the turf. I would strongly suggest connecting with Tom for a review next spring or before.

Take all patch disease

- It was interesting to note localised areas of Take all patch disease which had flared up in recent weeks.

  Take-all patch (Gaeumannomyces graminis)Although less common than Mlcrodochuim patch disease and Anthracnose disease, Take all is still considered to be one of the most serious diseases of GB & I due to its potentially destructive nature. Activity can occur in new and older greens. Take-all patch disease affecting the bentgrass element of a mixed sward leaving the annual meadow-grass present in the middle of the affected area. Initial symptoms of this root and crown disease are characterised by slightly depressed patches, often bronze in colour. The outline is sometimes slightly irregular but generally circular, while horseshoe shaped crescents can be found. Fresh activity is quite often indicated by a reddish golden edge. Initial patches may be a few centimetres in diameter before reaching up to 30cm quite quickly. Reactivity can occur outwardly from the same patches over the course of a season and from season to season. Patches may coalesce. Dark

brown to black fungal growth may be present on the stem bases, crowns and roots of the dead turf.

All bentgrasses are susceptible. Larger patches tend to be found amongst creeping bentgrass. Some cultivars of creeping bentgrass are more tolerant but annual meadow-grass can be affected too, particularly where pH is altered by alkaline materials. Infection occurs during the cooler and wetter periods of the spring, however symptoms are displayed through the summer into the autumn when temperatures are between 13°C and 24°C. Primarily a disease of new greens, but activity can be ongoing in rootzones of neutral to alkaline pH or where the irrigation water or sand topdressing are alkaline.

The Integrated Disease Management strategy for Take All can look towards a robust programme for manganese treatments.

I looked into the suggestion of preventative applications using azoxystrobin and treated as a root drench as it could be for type II fairy ring. Heritage Maxx is labelled for Take All and is preventative on take all. Once root infection has occurred that part of the root is dead. Its prevents root to root infection.

Whilst we would like to see the use of fungicide limited, I agree that a preventative strategy as part of an integrated disease management plan may be considered if you have concerns over the spread of the disease.

Technical references

Applications of manganese are thought to increase the plant's resistance to disease through synthesis of phenolic and ligneous compounds within the plant. In high pH soils, susceptibility to the disease is elevated because manganese is rapidly oxidised and made unavailable for plant uptake. Acidification helps to lower soil pH and increase manganese availability. The fungus itself oxidises manganese reducing the availability to the turf in the rhizosphere. *https://www.gcmonline.com/course/environment/news/manganese-fertilizer-turf-disease*

Under conditions where parent minerals are low in manganese, there is an alkaline pH or low organic matter and good drainage, inadequate supplies of available manganese are likely. Manganese insufficiency is a more likely problem than its toxicity. A two year study begun in 1999 examined the effect of manganese on the control of Take-all patch in creeping bentgrass. Treatments were made to supply elemental manganese at 1.02 and 2.04 kg/ha per application. Monthly applications were made during the growing season. The application of manganese reduced disease severity in both years depending upon the rate. Disease incidence was decreased from 20% on untreated turf to 5% with the high rate of manganese. Incidentally, the application of copper alone, or in conjunction with

manganese, did not affect disease development in this study possibly because it wasn't limiting. https://journals.ashs.org/downloadpdf/journals/hortsci/34/5/article-p891.pdf

A three year study was undertaken on a fairway diseased by Take-all patch. Manganese (as MnSO4) treatments were applied as single applications in either October or April of each year at 0, 2.25, 4.50, 6.75, or 9.00 kg/ha of manganese. Throughout the study, compared with untreated turf, manganese effectively reduced disease severity when applied either in April or in October. They found that the 2.25 kg/ha application rate was generally as effective in suppressing the disease as were higher application rates. https://acsess.onlinelibrary.wiley.com/doi/abs/10.2135/cropsci2003.1395 Because the fungus oxidises manganese, re-application is required when disease is still present.

Rough

- My earlier notes summarise the key points which may help with the ongoing management and presentation of the rough which has been difficult to maintain this year. There is a range of native grass and weed species which forms the rough habitat. The density of these grasses is what has caused many of the challenges this year following a wet twelve months. I expect that we will see these conditions also influence the density of the swards next year, particularly on a clay soil site.
- Discussion with golf course ecologist, Sophie Olejnik sophie@oleo.design supported our suggestion that it would be best to cut and collect the rough ideally by the end of August. It would be helpful to walk through the sections about to be cut to give any wildlife a chance to move out of the way.
- The first cut rough is regularly mown with the tractor trailed rotary deck unit. You could consider a second cut area which is infrequently mown at around 100mm height. This is seen in the image below from a heathland course but noting that this is a cut and collect operation using a flail collector unit similar to your Amazone.

- My final point is to reiterate that the Course Manager and small working group should remain in at the helm of the decision-making process for cultural management operations and agree on the areas to be maintained. The work must be achievable and correctly resourced.

Signed

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