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BUDE AND NORTH CORNWALL GOLF CLUB

Advisory Report on the Golf Course incorporating the STRI Programme

Report Date: 27th August 2021
Consultant: Steve Gingell

Bude & North Cornwall Golf Club

Date of Visit:	Tuesday 17th August 2021
Visit Objective:	To undertake the first inspection of the golf course incorporating the STRI Programme.
Weather:	The weather had been moderately cool but relatively dry with heavy shower events.

Headlines

- The weather of 2021 has been considerably challenging with particularly cool periods in the spring delaying growth followed by a relatively cool and wet summer. The net effect at Bude was to mean the links have remained relatively green and not to the normal burning out associated with the summer period. The greens were also relatively green.
- This was the first visit to Bude by the STRI and represented the first investigation using the STRI Programme which aims to measure a number of key perimeters on golf greens to direct longer term strategy and record progress.
- The greens were true links in their nature with deep profiles and good rooting although there was some layering within some of the profiles. There was a moderate amount of organic matter which would be anticipated due to the historic use of more organic based topdressings. Overall the performance measures were good although green speed was relatively slow and this was probably due to the moderately high height of cut.
- The greens supported good levels of fescues although a particularly coarse native bentgrass and meadowgrass caused some blemishes. The 1st green was very dry, possibly with evidence of fairy ring or hydrophobic soils.
- The greens whilst looking slightly patchy rolled reasonably well and were particularly true at the current green speed.
- The strategy was aimed at improving the greens by increasing uniformity, increasing the fescue species as well as giving a slight increase to the performance particularly on green speed.
- The main change to maintenance is the subtle reworking of the nutritional inputs and looking at slightly lower heights of cut.
- Many of the tees are moderately small and were suffering from quite a lot of wear damage and the plan to widen and enlarge some is fully supported.
- The fairways were struggling a from the high level of divot damage and recovery and a change of strategy may be required with regards to top dressing and divot mixes. There was also a fault on the Bareness Mower probably as much to do with the age of the mower.
- We discussed a number of plans for reshaping of holes etc.

Key Actions

- The key action is to see whether the areas of high coarse bentgrasses/ryegrasses are related to historic dry patch and whether a subtle change in wetting agent or addition of different wetting agents could make the areas more conducive to fescue development. The introduction of fescue through potting methods should continue particularly towards the end of the season as conditions will be more able to support germination and growth.
- The height of cut would benefit from being lowered to no lower than 4mm adjusting over the winter period to avoid any scalping. This would be supported by occasional rolling.
- The upper profile would benefit from slightly enhanced organic removal and dressings.
- The nutrition potentially needs to be slightly higher to encourage good level of density on the greens but still well within the links range of no more than around 50kg/ha of applied nitrogen. This would typically be using a granular or lawn sand type material.
- The tees will be slightly adjusted with nutrition to give higher levels of recovery without excessive growth and this is via an autumn/winter controlled release and slightly higher levels of liquid N.

- The fairways would benefit from a subtle change of dressing to add some compost greenwaste type material into the divot mix to provide better health and possibly also the pre-germinated seed mixture. Those areas of redevelopment that are currently relatively weak should be further tined with fescue being sown as a pre-germinating mix into the tine holes and additional nutrition and fertiliser as per the tees.

Objective Measurements

Measurement	Average	Target Range
Soil Moisture (%)	14 % (range 10-19)	10-24%
Hardness (Gravities)	107 Gravities (range 105-110)	95-125g
Smoothness (mm/m)	21 mm/m	<25 mm/m
Green Speed	8 ft 4 in	8ft 6 in -10 ft 6 in
Organic Matter 0-20 mm (%)	8.7 %	4-6%
Organic Matter 20-40 mm (%)	7.9 %	<4%
Soil pH	7.1	5.25-7.5
Phosphate (P_2O_5)	39 mg/l	>10 (mg/l)
Potassium (K_2O)	84 mg/l	>30 mg/l

Key: In Target | Marginal Variance | Out of Target

Figure 1: The course was a typical links although moderately green for the season. There were areas of weakness particularly mounds and these in places had attracted bird pecking for grubs.

Figure 2: The 1st green was the most patchy of those assessed with a blend of fescue, weak meadow grass, coarse bentgrass and some ryegrass. The profile was deep rooting with a little thatch. There was a distinct rich Fendress layer.

Figure 3: The 1st green was moderately weak with some anthracnose visible. The green height of cut was 5 lowered to 4.5mm. Around 60t of dressing would be applied and to date 30kg/ha N.

Figure 4: The 8th green had been added to many years ago and was moderately variable in the firmness. There were visible different areas.

Figure 5: The 8th green profile was different below 100mm. The Fendress layer was noted. The left core was from the upper section and showed a variable fill layer.

Figure 6: There were areas around the course of weakness particularly from the works following a challenging spring.

Figure 7: The 11th green had the most uniform profile and deep rooting.

Figure 8: The 11th green had the best coverage of fescue. There were visible aeration holes. The surface was moderately smooth. The green had been only cut.

Figure 9: The 2nd green was treated with Laser and much of the meadow grasses died back. The late spring resulted in poor fescue development and weak meadow grass regrew.

Figure 10: Many of the tees were relatively small and only just coping with the level of play, particularly the short holes.

Figure 11: There was plan to reshape the righthand side (left above) of the 2nd green to give spoil to enlarge the 1st tee.

Figure 12: There is a plan to reshape the 12th hole away from the houses.

Recommendations

Greens

- The greens are true links for the main part except the rear of the 8th green which is discussed further in the report. This means that there is a good build up of sand material which allows deep rooting and very low levels of organic matter development. This is particularly pleasing. There were however a few layers particularly relating to historic use of Fendress which is naturally slightly more organic material which will benefit from being diluted with columns of the sand from the current top dressing.
- Currently the level of top dressing is around 30-60 tonnes per year equivalent to around 70 tonnes per hectare at the maximum level. This is relatively low but because there is no need to actively build the profile deeper it is probably adequate. However, with the aim to dilute the organic layers further then it is likely that a further additional load just over the 100 tonnes would be of benefit. This would also have the benefit if used as a light dust dressing filling any of the blemishes in the surfaces particularly where tine holes have not filled totally over time. This will also help to keep the organic matter levels well blended and low.
- The upper profile would benefit for continued and enhanced dilution to reduce the organic levels. This will promote enhanced drainage, retention and development of the finer grasses and further promote the true links surface. It should be noted that whilst the organic levels were higher than most links the organic is humic and well decomposed rather than being a developing layer.
- The process to reduce the levels would be optimise the solid tine and hollow coring over the year with holes filled with sand or low amendment dressings. The aim would be to target around 10% of the surface area per year using small sized tines to around 60-80mm depth.
- The level of nutrition at around 30kg/ha of nitrogen to date is very acceptable and potentially this is a good level for fescues. However, meadowgrasses will be particularly weak at this level and there is a danger that anthracnose will continue to be seen. There is also benefit of fescues needing slightly higher levels of fertility particularly through the year to maximise growth and recovery and also make it as competitive as possible. It is therefore suggested that the target would be just over 50kg/ha of nitrogen and could include additional lawn sands as per the programme seen.
- The greens were moderately patchy and the very coarse bentgrass and some ryegrasses creating an uneven surface with those greens with the higher level of this grass being the least performing. The grass is difficult to remove although laser would effectively achieve this but would be used under extreme care as described below. However, the initial thoughts are that these grasses are surviving in areas of slightly more hostile ground i.e. particularly with regards to dry patch or fungal fairy ring activity meaning the fescues are unable to germinate and colonise well. There would be merit in talking to Aquatrols to see whether there is a subtle change perhaps using Aqueduct to help clean the profile over a year or so in addition to the Revolution Programme. This would be supported by a range of aeration that is currently done, the use of the Poa buster reel and brushing may assist. Some greenkeepers use the sweep and fill brush as well. Care should be taken to avoid over disturbing the fescues particularly when under stress.
- The strategy to continue to introduce fescues into the greens is fully supported and the potting method probably one of the most effective. Early season application of seed was not successfully mainly due to the weather conditions and the understanding that additional water resources would be necessary to create a germination of the seed. To some extent pre -soaking the seed in perhaps a seaweed mix or a mycorrhizal type mix can have some benefits as long as the seed can be either surface dried slightly so it is able to have got into the tine holes or is hand spread into any weak areas accordingly.
- The effect of the laser on the 2nd green was quite dramatic hitting a very large area of meadowgrass effectively removing it to bare ground before the meadowgrasses recovered either from root or from re-seeding. The overseeding of fescue was particularly poor probably mainly due to the season. The

immediate action of the 2nd green would be to slightly increase the fertility with additional liquid feeds to bring on the meadowgrass to recover ground whilst continuing to oversow with fescues as a matter of urgency.

- In the future laser should not be treated over whole areas but targeted to patches and once there is clear evidence of fescue within the patches.
- In order to increase the amount of top dressing dilution the use of a more standard round tine hole for a period when top dressing occurs is supported with the chisel tines used when the greens are only aerated.
- The use of the brush/verticut is supported as long as it is not over-disturbing and not when fescues are particularly weak. Bear in mind that following a brush the greens surfaces would not be particularly smooth and may take a number of cuts to bring them back into condition. The use of the roller has been shown to be very effective at increasing green speed but could at a cost impact the fescues reducing their competitive nature. The height of cut could be lowered to no lower than 4mm. The aim is to give the greens a slight pace increase but not to make them over fast. It is difficult to achieve moderate green speed even on a fescue dominant sward at the current heights. The height should be varied to suit conditions and surface softness to avoid scalping or promoting undue stress.
- The rear of the 8th green is particularly challenging as this is of quite different construction and hence wetter and this would benefit from more aeration and dressings over time. There were also a number of dips that hold water on many of the greens that are showing much higher meadowgrass content that would need further both deeper aeration and shallower aeration and much more top dressing to help to reduce the surface moisture.

Tees

- The tees generally around the course were just coping with the level of wear although the use always of White tees means that a significant area of the teeing grounds are not used. For non-qualifying competitions then the white tees should be avoided form much of the time or the Yellow and White perhaps brought together to reduce the wear around the course.
- It is supported for the enlargement of the 1st tee but this should also extend to the slightly wider area to create a much more impactful start of the round.

Fairways

- The fairways were very typical of many links with many mounds, some of which were burning out, and quite significant ball collection points where divoting was quite high. Currently the use of dune sand on its own is relatively slow to recover and therefore it is recommended that a compost mix is considered and perhaps using a proprietary one from a company such as Mansfield Sand or a more local one that needs more screening. I am sure the current supplier of top dressing would be able to advise on a suitable compost mix.
- The weak areas where ground had been reshaped would urgently benefit more aeration potentially the use of the compost as discussed or additional fertility such as a controlled release fertiliser. Further oversowing with either a super dwarf ryegrass or adding fescues into the mix will be fully supported.
- Any area showing the large plates of bentgrass developing would benefit from significantly increased aeration to maximise the wear tolerance of the fescues. This would also be supported by perhaps low level liquid controlled release type fertilisers.

Projects

- There were a number of projects around the course being planned and this is particularly desirable to develop the course. A full plan would be needed to ensure that the health over the longer term can be maximised and that any works do not infringe environment agency or planning regulations. There may be some merit in the future of considering a golf course architect to review the course to perhaps provide some strategic plan for the future for its development particularly as golf technology increases the length of shots.

Signed

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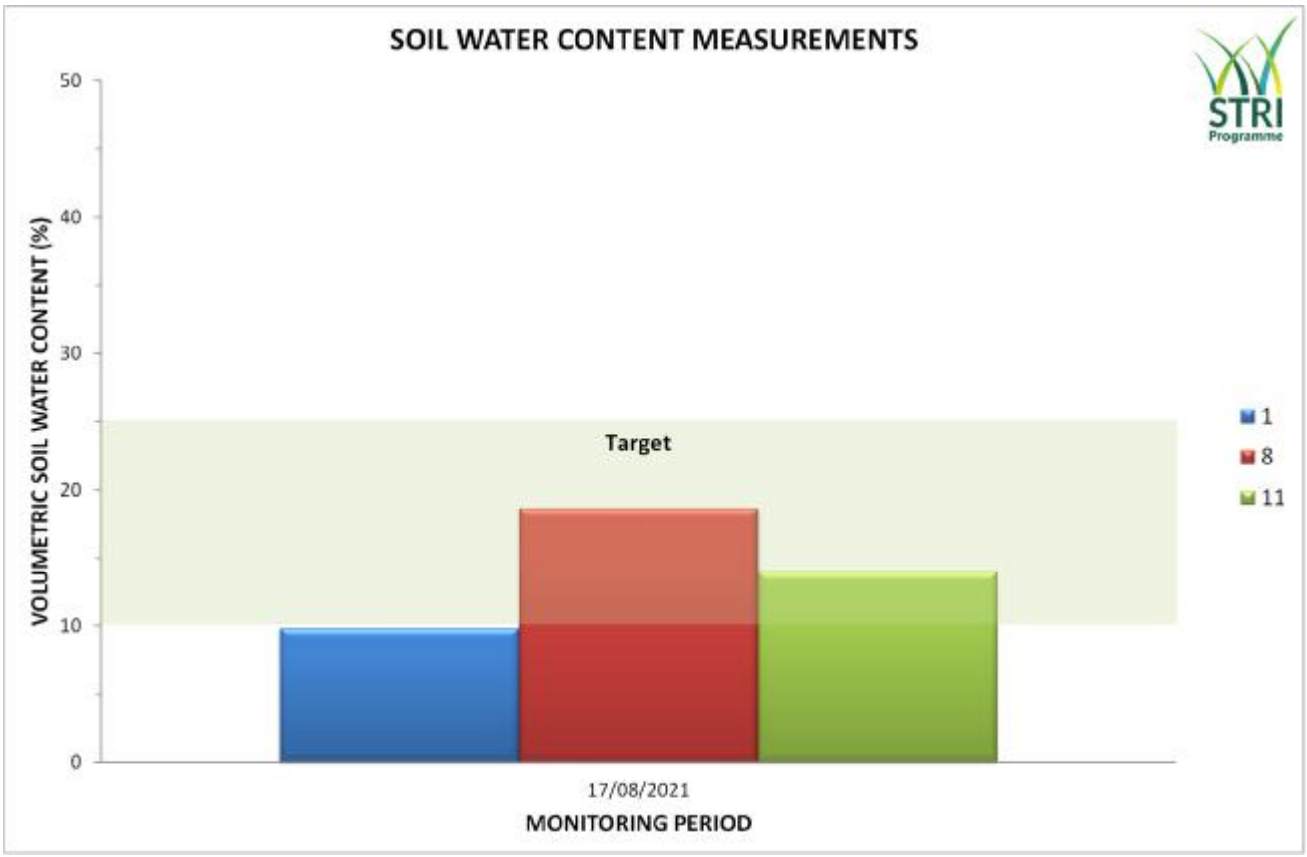
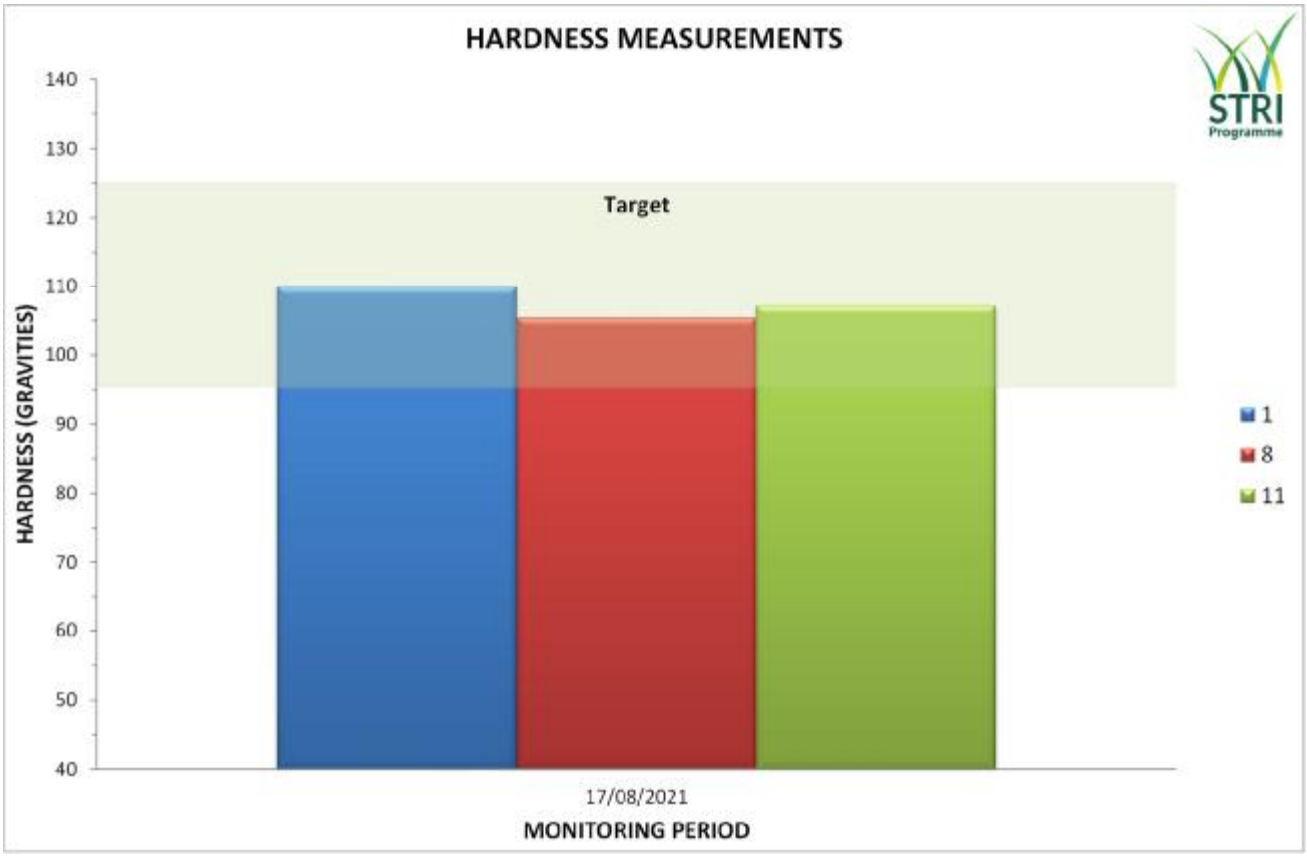
Objective Data

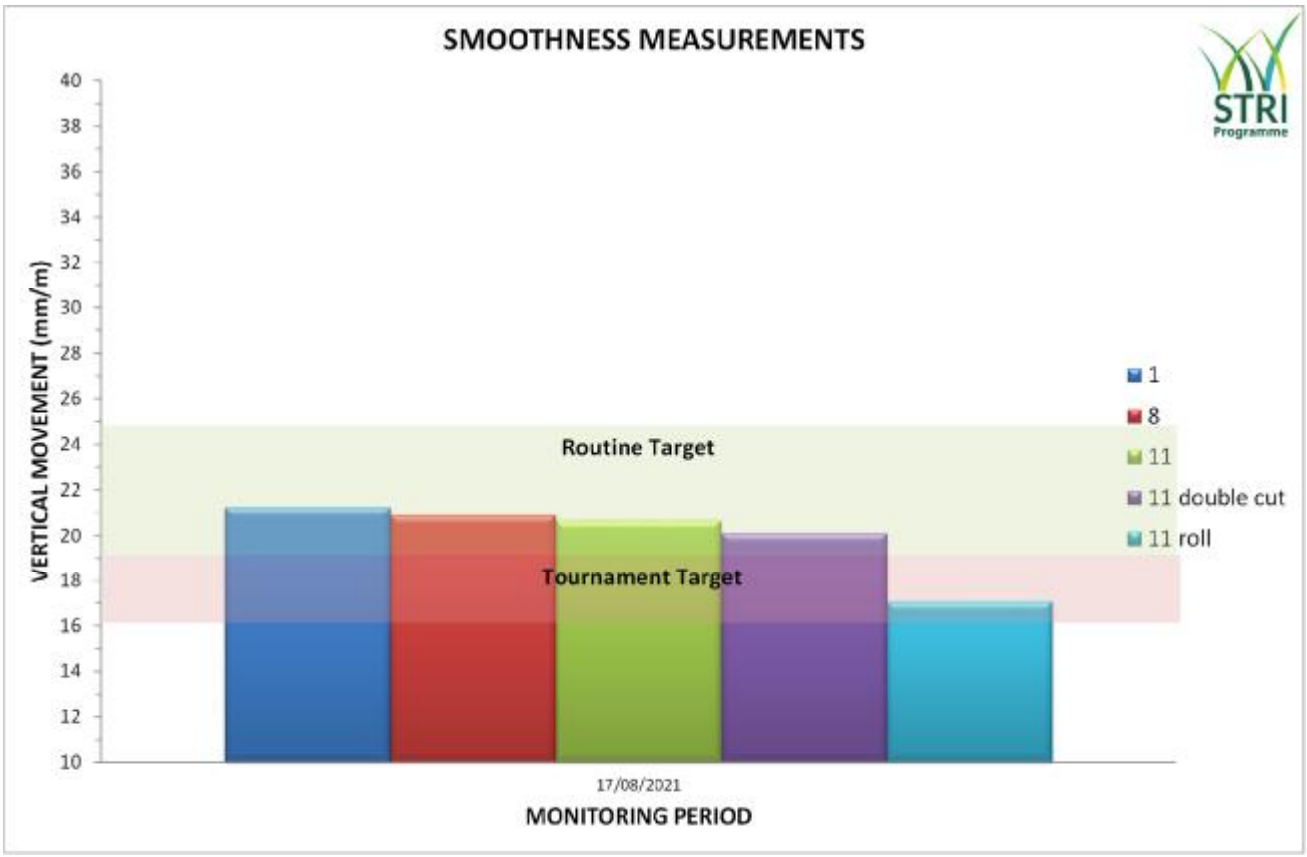


Objective Data Graph 1: The moisture levels were all on target although the 1st was very dry and at risk of becoming hydrophobic. The 8th was the wettest partly from the added upper rear section being high and a central dip holding water.



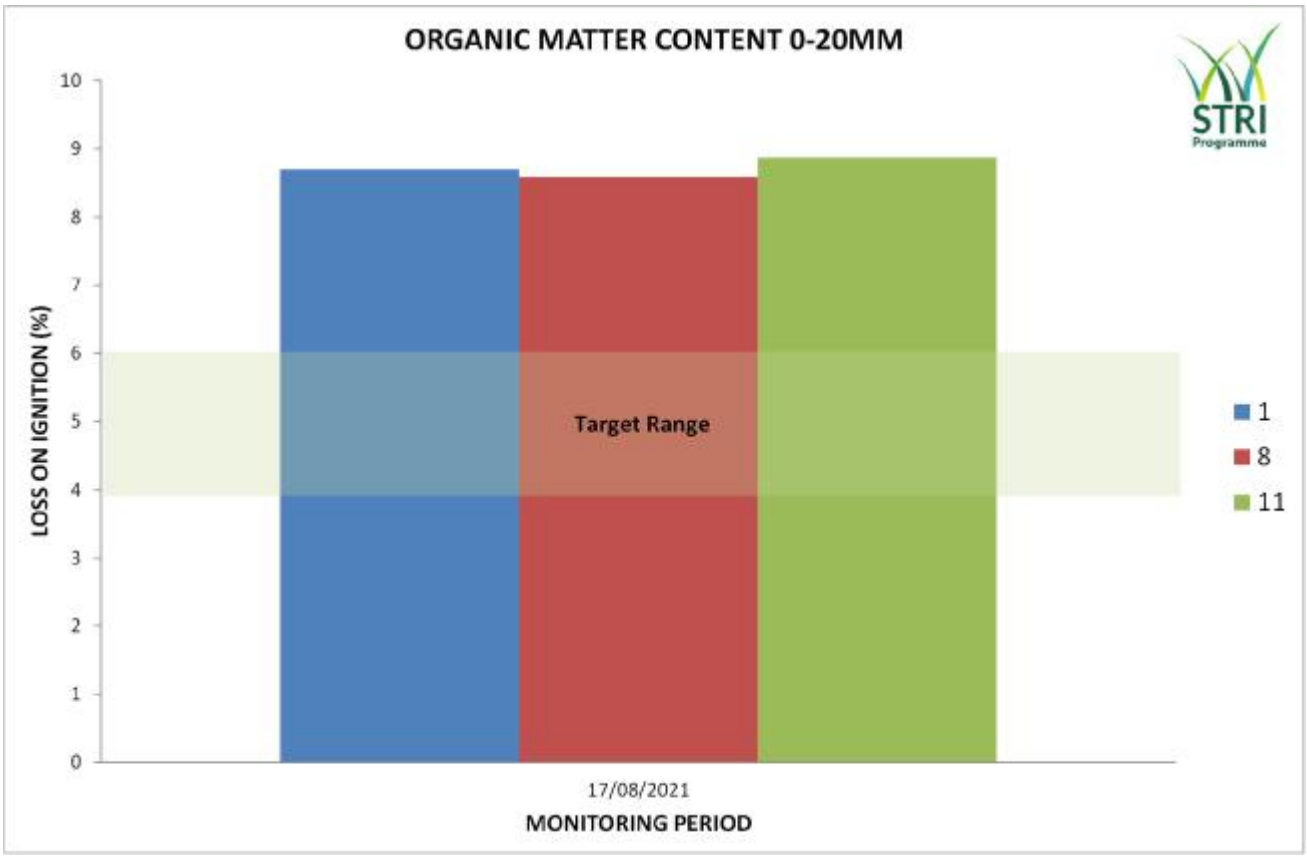
Objective Data Graph 2: The firmness was on target and at a good level to be receptive but giving the links "bounce, check, roll out" ball interaction. The 8th was inconsistent with low and high reading due to the added rear section.

Objective Data (continued)

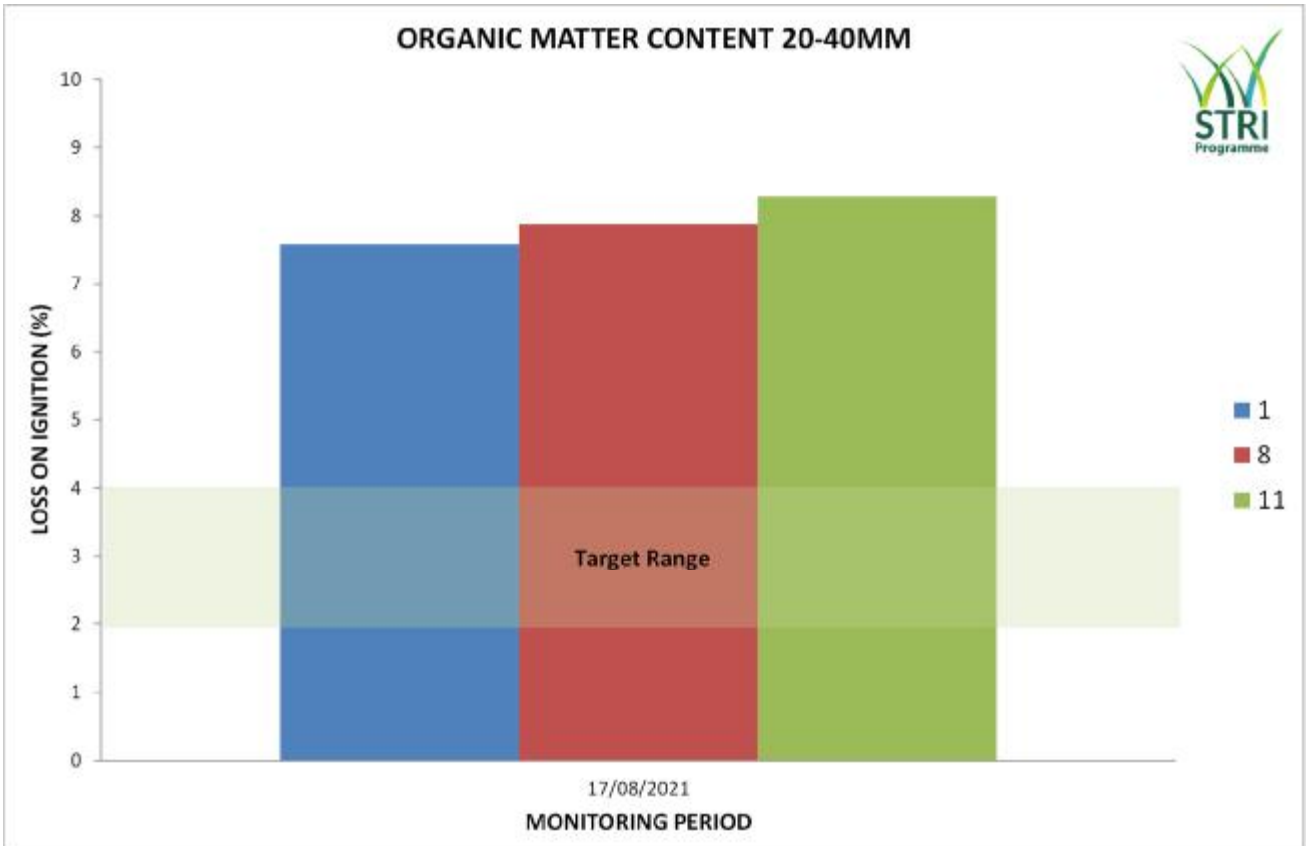


Objective Data Graph 3: Smoothness is a measure of vertical deflection of a ball off the surface. The lower the number the smoother the surface. The greens were moderately smooth for a links surface with good fescue levels. However, this did not relate to fast greens probably due to the 4.5mm height of cut. The 11th was the smoothest with the highest fescue content. After a second cut there was little improvement but following a roll a significant improvement was noted.

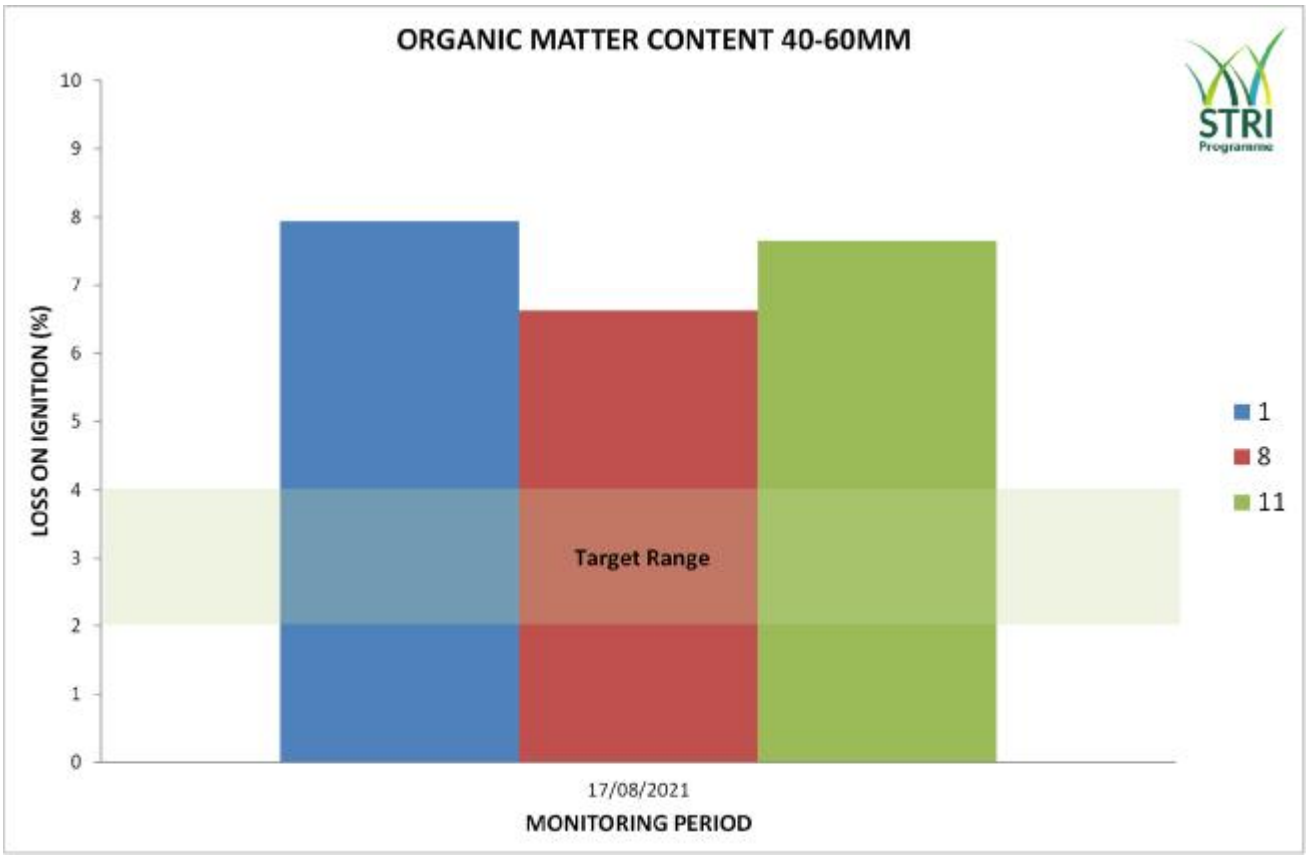
Objective Data Graph 4: Green speed was not fast except for fescue rich 11th . There was little increase after a second cut but a roll brought the results into target.



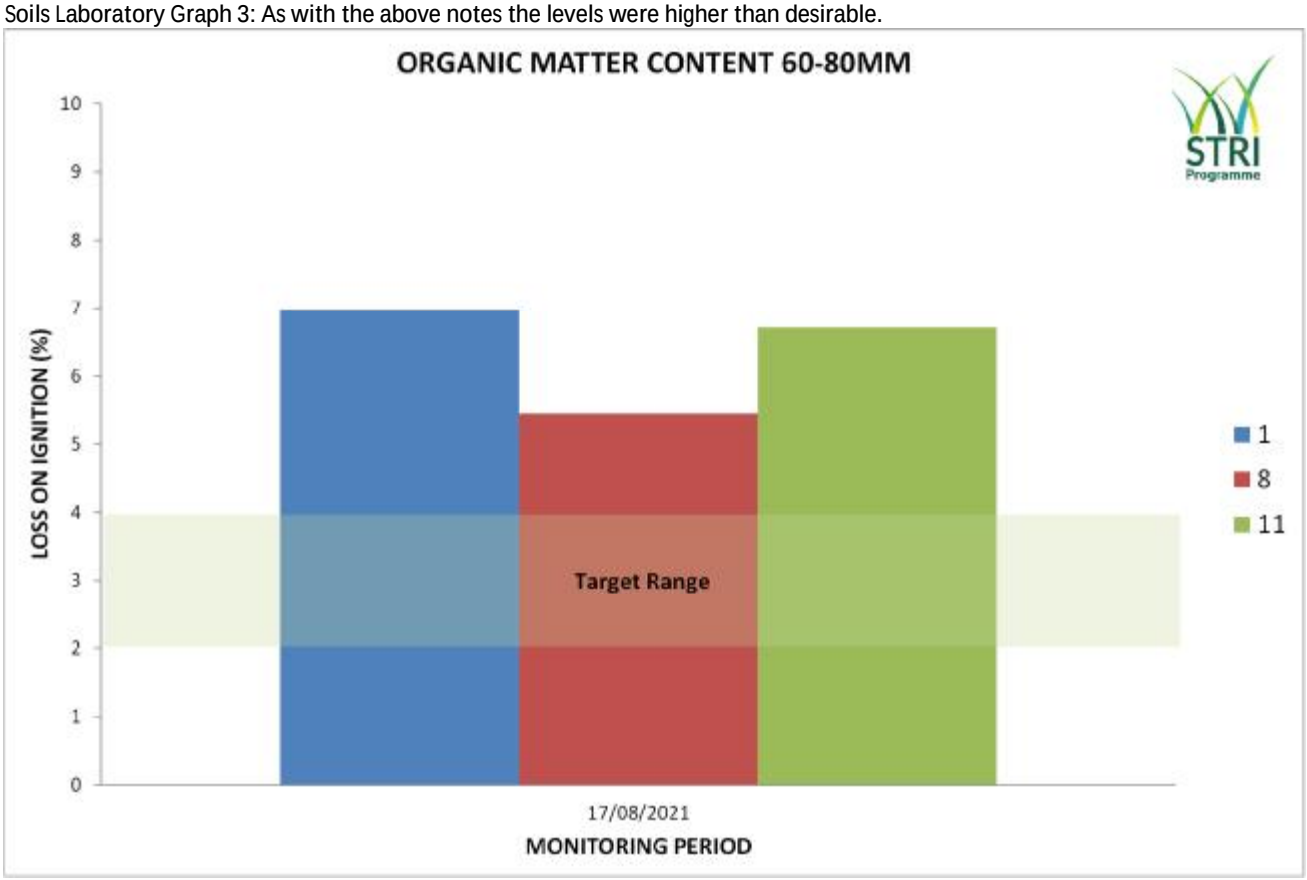
Laboratory Data Graph 1: The upper 20mm was moderately organic and would benefit from being lowered over time. The historic use of richer dressings will give higher values and whilst the levels are not causing excessive performance issues, they would be best lowered.



Laboratory Data Graph 2: The 20-40 mm layer and below has a lower target for organic matter as this gives the best overall performance. The results show a similar level as the surface layer and higher than ideal due to the historic dressings and thatch accumulations. The organic matter would be humic in nature and not cause too many performance issues.

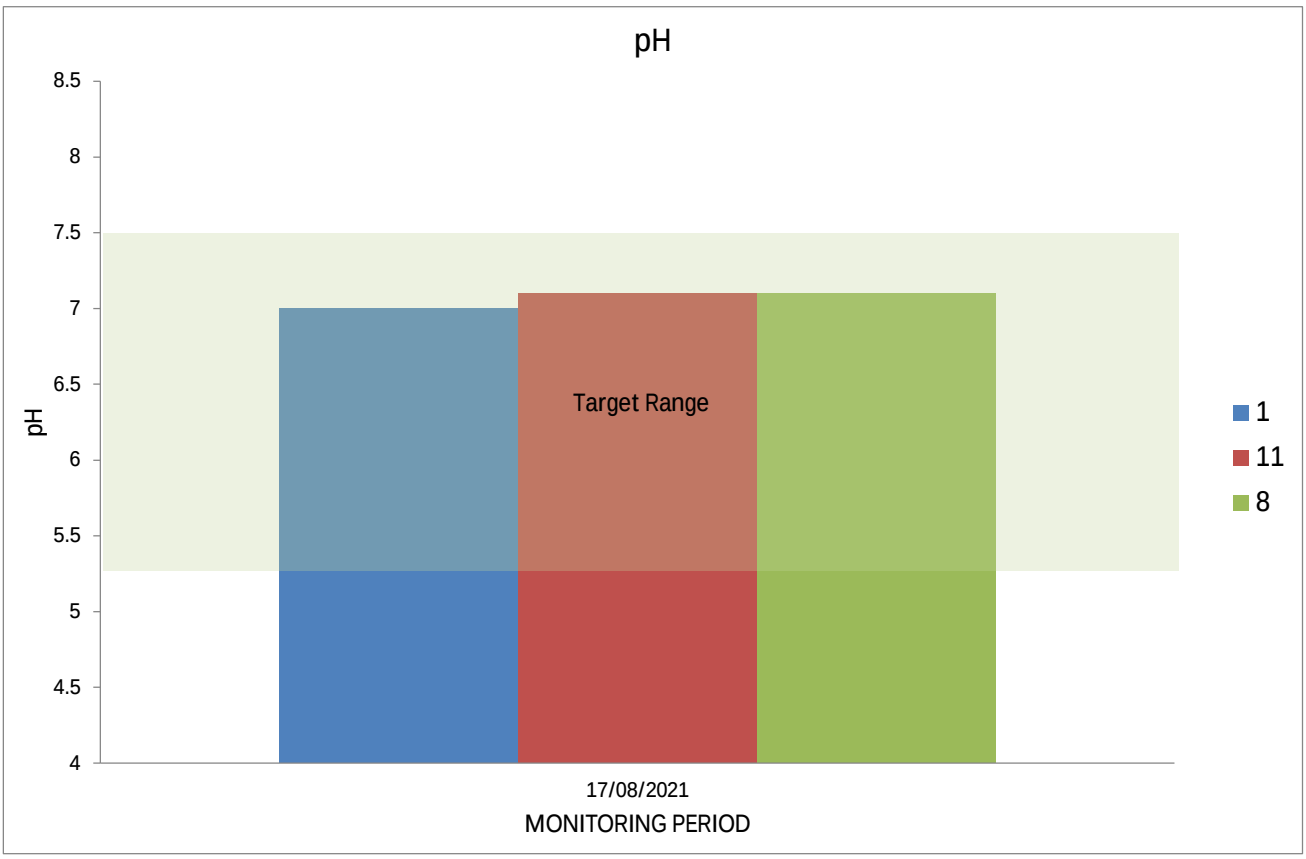


Soils Laboratory Graph 3: As with the above notes the levels were higher than desirable.



Soils Laboratory Graph 2: The 60-80mm leaves were still high but were lower than the upper 40mm. This is often found in sand profiles.

Soils Laboratory Data (continued)



Soils Laboratory Graph 3: The soil pH was typical of a calcareous sand links being neutral or just above. This will mean nutrients will be fully available and the soil health will be able to reach its maximum potential. Both available soil phosphate and potash were as a consequence of pH fully sufficient.

STRI

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ORGANIC MATTER CONTENT

CLIENT: BUDE & NORTH CORNWALL GC

ADDRESS: BURN VIEW,
BUDE,
CORNWALL, EX23 8DA

DATE RECEIVED: 23/08/21

DATE REPORTED: 26/08/21

RESULTS TO: SJG

TEST RESULTS AUTHORISED BY:
Michael Baines, Laboratory Manager

CONDITION OF SAMPLE UPON ARRIVAL: MOIST

SAMPLE NO	DESCRIPTION		LOSS ON IGNITION (%)*
A19258/1	1	0-20 mm	8.70
		20-40 mm	7.59
		40-60 mm	7.94
		60-80 mm	6.98
A19258/2	8	0-20 mm	8.59
		20-40 mm	7.88
		40-60 mm	6.62
		60-80 mm	5.45
A19258/3	11	0-20 mm	8.88
		20-40 mm	8.28
		40-60 mm	7.65
		60-80 mm	6.71

* ASTM F1647-11 (2018) Standard Test Methods for Organic Matter Content of Athletic Field Rootzone Mixes (Method A)

ACCREDITED
Testing Certificate 2159 - 01

THE RESULTS PERTAIN ONLY TO THE SAMPLE(S) SUBMITTED AND TESTED

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SOIL CHEMICAL ANALYSIS

CLIENT:

BUDE & NORTH CORNWALL GC

RESULTS TO: **SJG**

DATE RECEIVED:
23/08/2021

Lab No.	Source	pH	P_2O_5 (mg/l)	K_2O (mg/l)
A19258/1	GREEN 1	7.0	37	89
A19258/2	GREEN 8	7.1	39	87
A19258/3	GREEN 11	7.1	42	76

Mr M A Baines, Soil Laboratory Manager

THE RESULTS PERTAIN ONLY TO THE SAMPLE(S) SUBMITTED AND TESTED.

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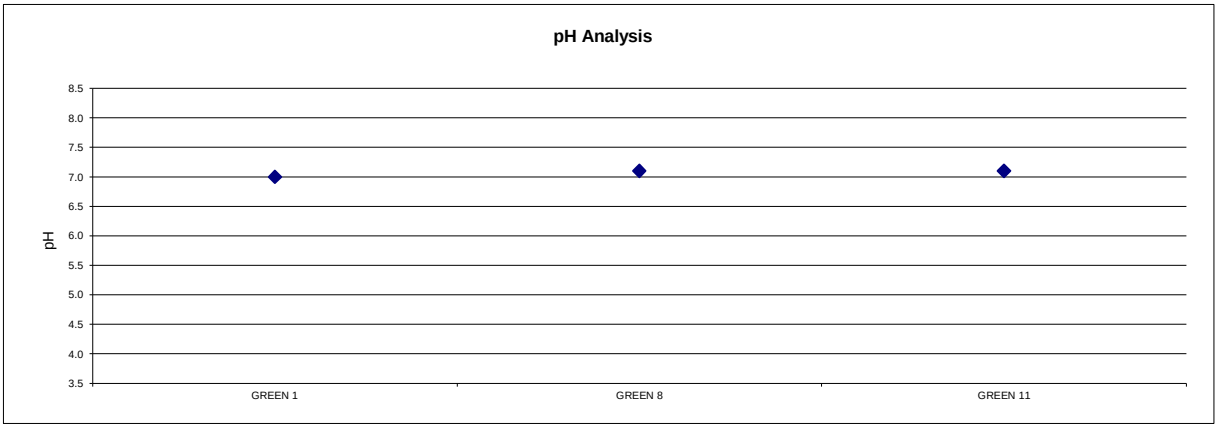
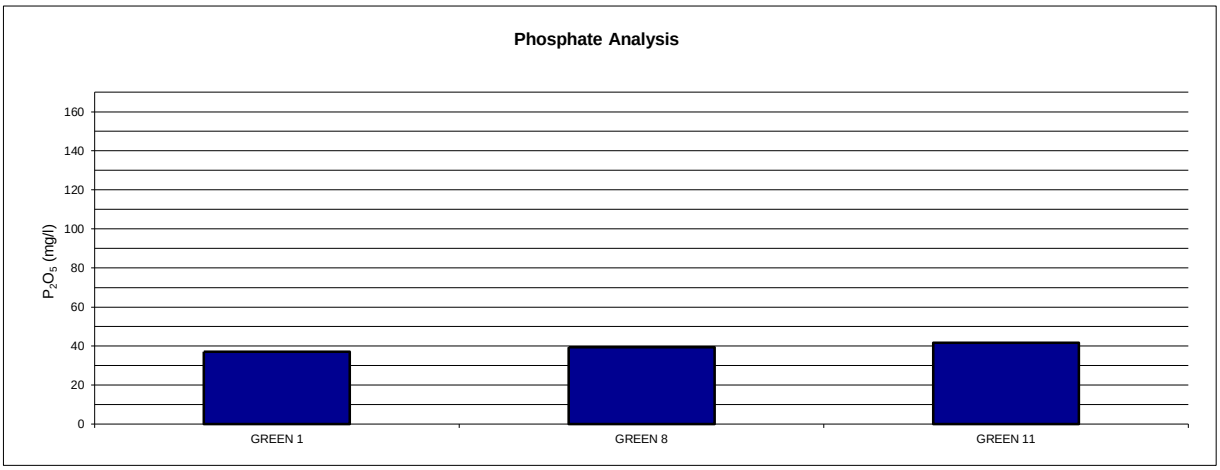
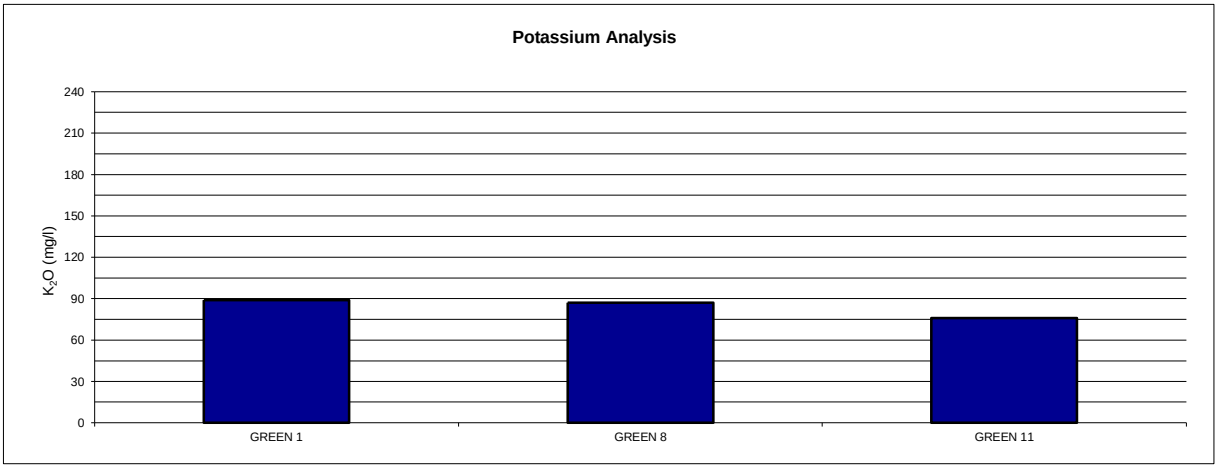
SOIL CHEMICAL ANALYSIS BUDE & NORTH CORNWALL GC Date: 23/08/21







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