

Cambridge City FC

An assessment of the current quality of the community pitches at Sawston

November 2022



1.0 Introduction

There is an ongoing discussion between Cambridge City FC and Sawston Parish Council over the handover of the community pitches to the Council. To assist in progressing these discussions an assessment of the current pitch quality of the pitches has been made. This includes key safety measurements relating to stones and surface evenness.

2.0 Assessment methods

Measurements of key pitch quality parameters were taken at eight locations over the community pitches area. The approximate location of each test point is shown in Figure 1. The measurements made and methods used are detailed in Section 2.1.

2.1 Assessment methods used:

2.1.1 Quadrat.

BS 7370-3: 1991: Appendix A.A6

A standard 1 m² quadrat was used to assess sward density and quality. These were used to assess grass cover, bare ground, disease incidence, grass type, moss and weed incidence.

2.1.2 Core samples.

BS 7370-3: 1991: Appendix A.A7

Eight 50 mm diameter core samples over the community pitches area were taken to assess rooting depth and thatch depth.

2.1.3 Surface evenness

BS 7370-3: 1991: Appendix A.A6

Surface level variation under a 2m straight edge was measured using a tape measure at the same location as the previous assessments.

2.1.4 Sward height

BS 7370-3: 1991: Appendix A.A3

Measured using a prism or tape measure where sward length was over 40 mm, at the same test locations used for the previous assessments.

Figure 1. Pitch layout and sample points



3.0 Assessment results

The results of the assessment are presented in Table 1.

The purpose of this assessment is to measure elements of current pitch quality against the GMA Performance Quality Standards for football in the non-playing season (Appendix 1). The GMA “Good” level is used by the Football Foundation as a guide for the minimum standard a new pitch should comply with.

3.1 Results

Table 1. Variation in pitch characteristics for CCFC Community Pitches (Nov 2022)

Turf Characteristic	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Mean	St Dev	CV (%)
Bare areas %	22	20	14	22	29	23	20	21	21.38	4.14	19.36
Desirable grass %	99	100	98	99	98	98	99	100	98.88	0.83	0.84
Undesirable grasses %	1	0	2	1	2	2	1	0	1.13	0.83	74.18
Ground cover %	78	80	86	78	71	77	80	79	78.63	4.14	5.26
Weeds %	1	1	2	1	3	6	7	6	3.38	2.56	75.85
Moss %	0	0	0	0	0	0	0	0	0.00	0.00	0.00
Height of cut mm	91	94	105	93	88	98	127	91	98.38	12.69	12.90
Surface evenness mm	17	13	16	14	19	13	21	12	15.63	3.20	20.51
Pests and diseases											
Fungal diseases (%)	0	0	0	1	0	0	1	1	0.38	0.52	138.01
Soil profile											
Rooting depth (mm)	130	105	95	150	145	115	150	95	123.125	23.75	19.29
Thatch depth (mm)	0	0	0	0	0	0	0	0	0	0.00	0.00

GMA PQS class: Elite Level, High Level, Advanced Level, Good Level, Basic Level, Poor, (taken from the PQS tables for Football out of season).

Stones over 25 mm were assessed when taking the 50 mm cores from the ground during the assessment and no stones over 25 mm were found in the upper 50 mm of the soil. To check for oversize stones more widely the site was walked along 4 transects (north to south) with 15 points tested per transect. The points were checked by pushing a spade blade into the soil. If the blade was stopped on a stone the depth to the stone was measured and recorded if it was less than 50 mm then the stone was excavated, measured and removed.

3.2 Discussion

3.2.1 Surface quality – key issues

Grass length

The only quality criteria that was lower than the “Good” level was the length of the grass. With a mean of 98 mm this was classed as being at a “Poor” quality level. This is easily explained by the wet and warm autumn which has allowed excellent grass growth. The poor drainage status of the area has, however, prevented regular mowing as not only

would clippings clump together killing any buried grass, but the soft surface may well have been rutted by the mower.

This is a simple element to correct but the ground conditions must be dry and firm before mowing takes place. The key consideration when reducing grass length through mowing is to gradually reduce the height of cut to avoid stressing the grass. No more than one third of the leaf should be removed during any mowing operation and the grass should be given at least 5 days to recover prior to mowing again. The grass is so long it could take 5 cuts with a gradually reduced height of cut to bring the sward to the required length. Clippings should be collected and disposed of on site until the required length is reached. The area should then be mown regularly to maintain the grass between 30 and 50 mm.

Grass cover

Though grass cover is good, mowing the grass shorter will result in reduced ground cover and in places it could slip to below 70% and fall out of the “Good” level. This is likely to be only temporary as regular mowing at a shorter length will encourage the grass to tiller and thicken from the base. This will create a stronger sward and better wearing capacity.



Figure 2. Typical quadrat assessment area, note the good grass cover but excessive grass length.



Figure 3. Typical soil core – note the good rooting depth.

Weeds

Weed content was low on average but as is typical for weed content in sports pitches, the weed cover is patchy and some areas have much higher weed content than others. The lack of mowing has allowed some weeds to develop more leaf area. Mowing will control some of the weeds present but it is likely that come Spring 2023, the area will need spraying to control the weeds. If the club currently employ groundstaff they could be given time over winter to hand-pull the worst of the weeds as they are easy to remove by hand. If this is done, the efforts should concentrate on removing the rosette type weeds as these tend to kill off the grass around them due to the spreading nature of the leaf system and if left to mature will leave bare areas once killed by spraying.

Rooting depth and thatch

The rooting depth was very good but was also quite variable with a standard deviation of 23 around the mean of 123 mm. This reflects differences in soil compaction and soil wetness. In the wetter areas the rooting depth and grass length was less than elsewhere.

The soil was most likely wetter due to it being more compact in those locations. A decompaction operation in mid to late spring 2023 will help to alleviate this issue.

There was no thatch on the surface at any point due to how young the grass cover is. Likewise, moss was not present anywhere on the surface but this is likely to change over winter as the area sits wet, giving moss a chance to develop.

Surface evenness

The surface levels were excellent with no points more than 25 mm under a 2m straight edge, the value beyond which a surface can become unsafe for use.

Stone content

Though stone content and size is not part of the normal PQS assessment it is part of the assessment for new sports pitches. The GMA recommend that there should be no stones over 25 in the upper 50 mm of the soil though on stony sites such as this some will be present as it is impossible to remove all such stones. This was checked for in each core removed and no stones over 25 mm were found in the upper 50 mm of the soil at any of the eight test locations. To assess the site more broadly 4 transects over the area were walked, checking stone content at 15 points per transect. This was done by pushing a spade into the soil. If an oversize stone was felt the depth to the stone was measured if it was less than, or close to, 50 mm. At only 1 point in the 60 tested was an oversize stone found (a large flint 150 mm in diameter covered by 30 mm of soil). This stone was removed and the hole made good. This is a very low hit rate and as a result the area is deemed to be safe to use on the basis of oversize stones within the upper 50 mm of soil. Once the grass is shorter it may be easier to see whether larger stones are present on the surface and the areas should be walked and checked.

There was a moderate amount of gravel sized chalk and stone on the surface. Though not a major injury risk and certainly not enough to class the surface as unsafe for use, the application of some top-dressing sand would help to blind-off these smaller stones if they become an issue. Sand top-dressing would be recommended as part of the annual maintenance works for most football pitches, so this is not suggested as extra works but as part of ongoing maintenance of the area.

Given the very high stone content of the topsoil noted during the first visit to the site, the contractor is commended for the excellent work carried out to remove the stones to create a safe surface at this visit.

3.2.2 Drainage

Though no formal infiltration measurements were made, the area is poorly drained in places, particularly towards the southern half of the site. The visit took place after a period of above average rainfall and the day after a day of persistent and heavy rain. Though large areas of the site had standing water present, it tended to occur in shallow depressions where water collected from the surrounding areas.

If there is a desire to use the area through winter then drainage would be required to ensure play is possible regardless of the rain. There seems to be no such requirement in any of the planning conditions and thus it is uncertain as to whether having drained pitches is part of the handover requirements. The cost to install drainage in this area

would be very high and given the propensity of the soil on site to shrink on drying, installing drains could create issues with surface levels through the summer in prolonged dry periods. This can be a significant issue on clay soils like this and can make an area unsafe for use unless it can be watered in summer and top-dressed with sand to maintain an even surface. If winter play is required, some form of field drained will be needed with the design of the drains adapted to minimise risk of settlement and with a higher level of ongoing maintenance required.



Figure 4. An example of standing water in a shallow depression.

Figure 5. An example of the gravel sized stone and chalk fragments present at the surface.

3.3 Maintenance recommendations

The following works are recommended to form the basis of an ongoing maintenance programme:

- Maintain sward height between 30 - 40 mm in season and between 30 and 50 mm out of season. Cutting should be frequent enough to avoid any build-up of clippings, using self-mulching mowers where possible. Mowing should not take place in wet conditions to avoid clippings forming clumps which will kill off the grass below. Once a fortnight mowing regimes are not suitable during periods of peak growth in spring and autumn – mowing will need to be weekly at these times.
- Decompact using a Vertidrain, Wiedenmann or similar machine should be carried out in spring and again in early autumn. This should be done only when the soil is dry and friable and just soft enough to allow the tines to penetrate to full depth. Depth of decompaction should be varied between 150 mm and 250 mm to avoid the development

of a cultivation pan and should be carried out with heave. The spring operation should be part of the end of season renovations

- Treat for weeds using a qualified, certified contractor using a suitable selective herbicide to keep weed content below 10%. This should be timed ahead of overseeding operations to avoid impacting young grass and to kill off weeds enabling new grass to close any gaps in the sward.
- Overseed any worn areas at a rate of 35 g m². The seed used should be a high-quality blend of at least 3 varieties of perennial dwarf ryegrasses. Seed should be drilled with a specialist seed drill designed for sports turf such as Vreedo or similar. Drilling should be carried out in at least 2 directions.
- Top-dress the pitches with the sand to create a firmer surface and blind-off some of the smaller gravel sized stone at the surface. A typical rate would be 40 tons per adult pitch. The dressing should be applied when the sward is dry and growing strongly. The sand should be spread then brushed into the sward in several directions to work it into the base of the sward.
- Fertilise as required to maintain a strong and healthy sward. This is likely to be a combination of a controlled release spring feed topped up with conventional feeds as required and followed by a further controlled release feed in late summer. Ideally the fertiliser regime should be determined following a soil analysis which should be repeated every few years.
- Mark as required.

4.0 Conclusions

The site is generally compliant with the GMA “Good” Level in respect to surface quality. The exception is that the grass is too long. This can be easily improved through regular mowing but this can only be done when the surface is drier and firmer.

The area is deemed safe on the basis of the presence of oversize stones in the upper 50 mm and the evenness of the surface.

The drainage is poor and use of the area is unlikely to be possible for extended periods in most winters. This can only be remedied by installing a drainage system which will then require more intensive maintenance to avoid issues with excessive droughtiness in summer and the settlement of drains and loss of safe surface levels. It is uncertain whether the requirement for year-round use is part of the planning requirements. If not, the area would be fit for use during spring, summer and autumn but unfit for play during prolonged wet periods through much of most winters. This may improve over time as soil structure recovers following the construction works.

Appendix 1 – Performance Quality Standards for football								
Performance Standard	Unit		Elite	High	Advanced	Good	Basic	Poor
	Length of grass/cutting height	mm	Range	22-30	25-35	25-50	30-60	30-70
Total ground cover	%	Minimum	95	90	80	70	60	<60
Desirable grasses	%	Minimum	98	90	80	70	60	<60
Undesirable grasses	%	Maximum	2	10	20	30	40	>40
Bare Areas	%	Maximum	5	10	20	30	40	>40
Weeds	%	Maximum	0	3	5	10	15	>15
Pests & Diseases	%	Maximum	2	3	5	10	15	>15
Thatch	mm	Maximum	0	3	5	10	15	>15
Root depth	mm	Minimum	100	100	90	85	70	<70
Rootzone / soil profile*	mm	Minimum	200	150	125	100	90	<90
Hardness	g	Range	35 -200	35-200	35-200	35-200	35-200	>
Stone size in upper 50 mm of topsoil	mm	Maximum	25	25	25	25	25	25
Pitch surface levels/evenness	mm	Maximum	5	10	15	25	25	>25