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A Report to Birkenhead School

A Report into the Proposed Pitch Improvement Works at Old Parkonians Rugby Union Football Club

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Signed



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1.0 INTRODUCTION & OBJECTIVES

The development of an existing playing field located at Birkenhead School into a housing development requires the offset of sports provision within the local area. The scheme has looked at improving pitches in the local area to provide the additional capability of facilities which includes the main 1st XV pitch at Old Parkonians Association which is a multi-sports club which focuses on cricket and rugby union.

The proposed area for improvement is currently used as the 1st XV pitch and is located to the southwest of the main club house. The pitch is currently used extensively for both 1st XV matches and 2nd XV matches along with junior use.

The club has provided some history of the pitch which included information on previous drainage systems which had been installed. The main objective of the site visit and subsequent report is to outline the requirements to increase the usability of the pitch and also improve it for the use of the Club throughout the season.

The site inspected is located at:

Old Parkonians Association
Holm Lane
Birkenhead
CH43 2HU



PSD were instructed to update their 2019 pitch improvement work report, including revised budget costs, to provide a suitable standard of pitch for the Club and additional usage from the school when required.

The original site survey to assess the condition of the area was undertaken by Dale Frith and Craig Doyle of PSD on 30th May 2019. Subsequently, a topographical survey and assessment of the pitch's current condition was undertaken on 16 March 2023.

2.0 EXECUTIVE SUMMARY

| | |
|--|--|
| | 1. Site access for deliveries & materials storage etc. is good. |
| | 2. The pitch area meets SE/NGB Guidelines in terms of size, overall gradients and orientation. |
| | 3. The Club are able to maintain the pitches following the works and will need to engage the services of a specialist contractor to undertake annual sand topdressing. |
| | 4. The site is identified as being within flood zone 1 which is not prone to flooding. |
| | 5. Future usage of the pitch will need to be managed to prevent overuse and failure of the surface drainage. |
| | 6. Spoil arisings might need to go off site unless there is availability of land on site to create a bund. |
| | 7. There may be a requirement for irrigation if an adequate amount of rainfall isn't present during the establishment phase and following end of season renovations. |
| | 8. Restriction of working hours may apply due to the presence of surrounding houses. |
| | 9. There is an existing drainage outfall present to connect a new pipe a drainage system into. It is recommended that the relevant permissions to continue to use the outfall are checked prior to commencing with the work. |
| | 10. Current surface levels are unacceptable for formal use with topsoil importation required to improve localised levels. |
| | 11. The soil type, climate and usage level dictate that a pipe/sand slit, or sand groove system or equivalent be installed supplemented by sand topdressing. |

KEY: No action required Action may be required Action required

Recommended Option – Installation of pipe drains at 5m centres plus excavated sand slits at 1m centres.

Note:

- i) The costed option below is based on 1 no. pitch and run-offs with an overall area of approximately 8,500m². This pitch size is based on the current 1st XV pitch footprint and the completed topographical survey.
- ii) The costs indicated include items for the disposal of arisings and the importation of topsoil to improve levels.
- iii) The costs assume that the existing drainage outlet is functional to the south of the pitch. Appropriate permissions may be required.
- iv) The works will be dependent upon suitable weather during the working period followed by adequate rainfall during the establishment phase. Irrigation may be required.
- v) The work costs include a 5% contingency.
- vi) If temporary irrigation is required a budget allowance of 10K, exclusive of water and electric, should be considered.

In terms of budget costs, the following is anticipated:

| Old Parkonians RUFC | | |
|---|--|---------------------|
| Budget Costs for Lateral Drains at 5m centres, Slits at 1m | | |
| Item | Description | Cost |
| 1 | Prelims - site set-up, material testing, as built plan | £ 8,000.00 |
| 2 | Cultivation & Levelling of Localised Areas | £ 10,000.00 |
| 3 | Drainage -Mains/pipe drains @ 5m, chambers, connections, slits at 1m, spoil disposal off site | £ 75,450.00 |
| 4 | Sward Establishment | £ 3,500.00 |
| 5 | Sand Topdressing & Vertidrainning (2no.) | £ 12,000.00 |
| 6 | Est. & Maint. - 6no cuts, overseeding & fertilising | £ 6,500.00 |
| Sub Total | | £ 115,450.00 |
| Contingency 5% | | £ 5,772.50 |
| TOTAL (exc. VAT) | | £ 121,222.50 |
| Vat 20% | | £ 24,244.50 |
| TOTAL (inc. VAT) | | £ 145,467.00 |

Consultancy fees for design and tender and contract administration have not been included and will need to be added to the project costs. Spoil disposal on site would save circa £10,000.

3.0 SUMMARY OF FINDINGS

3.1 Existing Layout/Orientation

The existing layout comprises of the 1st XV rugby pitch to the south of the site and 1 cricket square and outfield to the north of the site which accommodates the 2nd XV rugby pitch. The layout can be seen on the aerial image below with both pitches being in a similar orientation to generally a northwest to south east direction.



Plate 1: Existing Site Layout

| Old Parkonians Rugby Union Football Club | | | | | | | | | | | | | |
|--|---|-------|--------------|----------|--------------|-------|-----------------------|-------------|--------------------|----------|--------------|-------|---|
| Existing Pitch Size Assessment | | | | | | | | | | | | | |
| Pitch | Dimensions (m) | | | | | | NGB Recommended Sizes | | | | | | Comments |
| | Pitch & Run-off Sizes | | | | Overall Area | | Pitch & Run-off Sizes | | | | Overall Area | | |
| | Length | Width | In-goal Area | Run-offs | Length | Width | Length (Min) | Width (Min) | In-goal Area (Min) | Run-offs | Length | Width | |
| 1st XV | 100.0 | 68.0 | 8.0 | 3.0 | 122.0 | 74.0 | 100.0 | 70.0 | 6.0 | 5.0 | 122.0 | 80.0 | Pitch size meets NGB recommendations |
| 2nd XV | 92.0 | 62.0 | 6.0 | 3.0 | 110.0 | 68.0 | 100.0 | 70.0 | 6.0 | 5.0 | 122.0 | 80.0 | Pitch too short and too wide for senior use |
| Key: | | | | | | | | | | | | | |
| | Denotes size within 0 - 5% of the guidelines | | | | | | | | | | | | |
| | Denotes size within 5 - 10% of the guidelines | | | | | | | | | | | | |
| | Denotes size over 10% of the guidelines | | | | | | | | | | | | |

Table 1: Pitch Sizes and Run-offs

3.3 Soil Profile



Plate 2: Approximate soil pit locations

Excavations were carried out with a spade and hand-held auger and together with laboratory analysis of the topsoil the following comments are made:

a) Topsoil

- The topsoil depth range was between 130mm and 180mm. The topsoil was well structured and appeared to be of a sandy loam texture and crumbled on touch. Some areas were contaminated with stone.
- The upper 20mm was compact.
- There were differences present over the site with the northeast wing containing an ash/clinker layer below the topsoil and this was also slightly higher than the rest of the pitch.
- Laboratory analysis (see Appendix 1) classified the topsoil as a sandy loam which after the removal of 5.6% gravel contained 61.9% sand, 28.5% silt and 9.6% clay.

| Sample | % Gravel | After removal of gravel | | | Soil Texture Classification |
|-----------------------|----------|-------------------------|--------|--------|-----------------------------|
| | | % Sand | % Silt | % Clay | |
| Sample OPRCR/TS/11418 | 5.6 | 61.9 | 28.5 | 9.6 | Sandy Loam |

Fig 2: Soil Texture Classification Results

In terms of the physical analysis of the topsoil, although a significant proportion is sand, it can still be classified as a fine natured material as 48.0% of the topsoil contains particles of less than 0.125mm in size. This will determine that the topsoil behaves as a fine textured material and will be susceptible to structural damage (compaction) during play in wet conditions.

To improve soil texture, sand dressing will be required during the works which will make improvements to the upper profile of topsoil. Further sand dressings are recommended on an annual basis to ensure that continual improvements are made to the upper profile by controlling thatch along with ensuring that the surface to drainage connection remains positive and functional.

Chemical analysis of the topsoil recorded a pH of 6.4 which is within the preferred range of 6.0-7.0 for a perennial ryegrass dominant sward which is the preferred species for winter sports pitches. Levels of major nutrients (phosphorus, potassium and magnesium) were recorded as index 2.1 for phosphorus, 2.1 for potassium and 3.1 for magnesium.

| Analysis | Result | Guideline | Interpretation | Comments |
|------------------|--------|-----------|----------------|---|
| pH | 6.4 | 6.0 | Normal | Adequate level. Maintain pH to ensure optimum nutrient nutrient availability and ideal conditions for an active soil biology. |
| Phosphorus (ppm) | 17 | 16 | Normal | (Index 2.1) 50 kg/ha P2O5 (40 units/acre). |
| Potassium (ppm) | 135 | 121 | Normal | (Index 2.1) 40 kg/ha K2O (32 units/acre) (2+), 60 kg/ha K2O (48 units/acre) (2-). |
| Magnesium (ppm) | 115 | 51 | High | (Index 3.1) Adequate level. |

Fig 3: Soil Chemical Analysis Results

The nutrient levels were sufficient and all within the recommended index range of 2.0 to 4.0. These levels should be maintained especially the phosphorus and potassium as these were at the lower end of the index. The levels of these can be maintained through appropriate application of fertilisers throughout any improvement works and maintenance beyond.

Based on the results, an annual fertiliser programme which provides in the region of 100-120kg of nitrogen per hectare and include phosphorus and potassium. Levels of magnesium can also be added from time to time. Depending on budget restrictions, the use of controlled release fertiliser would help to prevent flushes of growth which results in the grass being soft and needing to be cut more frequently. Currently the pH is within the ideal range, and this helps the plants to uptake nutrients without restriction.

b) Subsoil

The subsoil material varied over the pitch with some areas containing clay dominant material which was of a dark colour with some sand present. The clay material present was dense and not productive to natural drainage. The northeast wing contained clinker along its entirety which was up to 100mm in thickness below the topsoil which varied in depth between 130mm and 150mm. Below the clinker material was a dense clay to 1m.



Plate 3 Typical topsoil profile and condition away from the north wing



Plate 4: An example of the ash/clinker layer present below the topsoil on the north wing

3.4 Climatic Data

A collation of historical climatic data is tabulated in Table 2

| Characteristic | Data | Comments |
|-------------------------------------|-----------------------------|--|
| Annual rainfall | 786mm | All represent moderate readings |
| Excess winter rain (median) | 305mm | |
| Excess winter rain (quartile range) | 220-385mm | |
| Return to field capacity | 19 October | The pitch will be at field capacity for the majority of the rugby season |
| End of field capacity | 27 April | |
| Period of field capacity | 190 days | |
| Growing season | 24 March – 5 Dec (256 days) | Reasonable growing season; potential need for irrigation |
| Grass drought factor | 20 days | |
| Potential transpiration | 502mm | |

Table 2: Historical Climate Data

From the table above, the following should be noted:

- The average rainfall for this area is 786mm per year, whilst the Potential Transpiration is recorded as being 502mm per year.
- The grass drought factor gives an indication of the number of days when the soil moisture deficit exceeds 50mm within the main rootzone. Such a soil moisture deficit is likely to lead to the growth of grass being impeded due to a lack of regularly available soil moisture. In this area the grass drought factor is estimated to be in the region of 20 days. However, it should be noted that the soil moisture deficit in the area can reach 100mm in most years.
- Field capacity is that state in which the soil is holding its maximum amount of water after free drainage has ceased. It is useful to know this since it indicates the time of year about which drainage will start to occur and also that time when soil compaction is most likely to happen. Excess winter rainfall indicates the excess winter rain over the normal amount of evaporation found during the field capacity period. It gives an indication of the demands made on the drainage system and the likely degree of leaching of nutrients.

- The median date for return to field capacity is October 19th for this area with the end of field capacity being given as April 27th. This equates to the topsoil being at field capacity for 190 days. The quartile range for excess winter rainfall is shown to be 220-385 mm (median 305mm).
- The determination of a growing season is not easy as it depends upon a number of different factors, however, in this case it is defined as the length of time that the top 300mm of soil remains above 6°C. For this site the growing season is said to be 256 days (March 24th – December 5th).

In summary, excess winter rainfall is moderate and will need to be removed by an efficient drainage system given the presence of the impermeable clay subsoil. The need to irrigate to enable the sward to recover following renovation at the end of the playing season is assessed as not being essential but useful according to historical weather data. Deterioration of the topsoil's structural condition especially at the surface, would be expected given it will be at field capacity for much of the rugby season.

3.5 Existing Drainage

From information supplied by the Club and following the site investigation, it was seen that there were two existing systems installed within the pitch. These were installed during different decades and are understood to have provided benefits at the time of installation.

The first system was a herringbone layout which included two main drains running through the pitch with the laterals running across on diagonals. The mains connect to the outfall chamber, which is located to the south of the pitch, close to the hedge line and approximately 15-16m in from the access road. From the information provided on site this scheme was introduced in approximately 1974 and consisted of two main ceramic land drains.

The inspection chamber is in a poor condition, and it is recommended to replace it during the improvement works making good the existing connections. The chamber also contains a significant amount of silt which needs to be removed, this should be monitored on a regular basis. The outfall pipe and its connection to the surface water system to and beyond the club boundary should be checked for its condition and ultimately determine its path.

In 1993-94 a further system was installed which consisted of the Turfdry system which consists of narrow diameter pipes wrapped in geotextile connecting to a 125mm plastic pipe which runs along the southwest touchline. This scheme also connects into the existing manhole which outlets into Holm Lane.

Site investigations found lytag type gravel which was used as a backfill for the 1993/4 system. This gravel was topped with topsoil and was heavily contaminated soil which will significantly reduce the effectiveness of the system.

Due to the condition of the existing system and allowing for the climatic factors present and predicted usage levels, a new system should be installed to improve drainage of the pitch. All factors dictate that the main primary system should be supplemented by excavated slit drains which will intensify the system providing a quick method for water removal from the surface and into the drainage system.



Plate 5: Example of the 1994 system capped by topsoil and the backfill heavily contaminated



Plate 6: Inside the existing inspection chamber which requires replacement due to its condition. Note the build up of silt in the base of the chamber

3.6 Agronomic Assessment

The 2019 assessment recorded the existing vegetation was of reasonable length being approximately 40mm in height. The sward was an established surface consisting of perennial ryegrass and annual meadow grass with weed species and broadleaved weeds present.

On the northern side along with high wear areas, the sward was patchy in appearance and a reflection of the time of visit following the end of the season and the level of compaction present. Away from these areas, the grass was longer but of a coarse nature and works to improve sward composition and condition are required.



Plate 7: General view of the existing vegetation (2019)



Plate 8: Close up of the sward, in areas there is a patchy appearance which is a reflection of the amount of compaction present (2019)

The Club had carried out some chain harrowing prior to the visit and this practice was recommended to continue to remove some of the thatch/stalky growth which has developed over time. This work will help to improve the growing habit of the grass and provide a better appearance.

The March 2023 visit coincided with the lead up to the end of the season. The pitch was characterised by variable wear with the northern half exhibiting more wear than the southern half. Grass cover was in the range 10 – 60% and comprised mainly of a mixture of perennial ryegrass and meadow grass.

The immediate surface was compact and visually appeared slightly undulating. The Club reported rootzone had been used to fill some of the hollows in 2020 (lockdown period) and had achieved improvements but gradual deterioration has since been observed mainly in terms of inadequate drainage.

It was reported heavy rain the previous day had caused significant water ponding over the pitch, but the majority had dissipated on the day of the visit apart from a number of localised areas still characterised by surface water.



Plate 9 : Worn surface and consolidated surface (2023)



Plate 10 : Localised depression at southern end; flattened sward and surface water (2023)

3.7 Pitch Usage

Future usage levels for the pitch are currently unknown depending upon the additional requirements from the school, however the assumption is that current usage levels will increase from the present 3 hours per week of adult usage. Sport England consider the information provided in Table 3 as giving a reasonable estimation of the likely usage level on winter sports pitches for a range of construction types.

| Drainage status | Adult weekly use* (hours) |
|--|---------------------------|
| Undrained | Under 2 |
| Pipe-drained | 2 – 3 |
| Pipe-drained with mole drains | 2 – 4 |
| Pipe-drained with sand grooves | 3 – 6 |
| Pipe-drained with slit drains | 3 – 6 |
| Pipe-drained with topsoil and drainage layer | 3 – 6 |
| Pipe and slit drained | 3 – 6 |
| Pipe-drained with suspended water table | 4 – 6 |

*The usage levels shown will increase by ~50 % for players 15 years of age and under.

Table 3. Estimated usage levels.

Given the particle size distribution of the topsoil, the low permeability of the subsoil and the climatic data, the installation of a piped drainage system supplemented with a secondary system and sand dressings will be required to improve performance and increase usage levels of the pitch.

Overall, if a surface by-pass drainage system were to be installed in combination with the pipe drains, it is expected that pitch usage of 3 – 6 hours per week for adults or 4½ - 9 hours per week for younger age groups would be sustainable based on SE's estimates.

3.8 Site Infrastructure and Influencing Factors

A summary of relevant information relating to the site is given below:

- Access for material deliveries and machinery shouldn't be an issue.
- A suitable area will need to be made available for a site compound/materials storage area.
- It is anticipated that drainage arisings will need to be disposed off-site, however this should be confirmed as part of the design stage.
- There are residential dwellings around the site and therefore a restriction on working hours could apply.
- Based on current Local Authority data, the site is within Flood Zone 1 which does not represent a high risk of flooding.
- Irrigation might be required to ensure that the sward establishes effectively following the works.
- There is an existing drainage outlet present on site. Confirmation of its continued use should be gained from the relevant Authorities.
- Any ash/clinker contained within drainage spoil may require a Waste Acceptance License if disposed off site. On-site disposal within a bund would be preferable.



Fig. 4: Flood map showing the site falls in Zone 1



Plate 11: Work area, site access & materials storage

4.0 RECOMMENDATIONS & BUDGET COSTS

4.1 Recommendations

In order to improve the usability and condition of the area a number of factors need to be considered to ensure that these factors can be achieved. Installation of a pipe drainage system will be required along with supplementary secondary drainage system to intensify the drainage connection to the surface. Sand dressing should also take place in several stages to improve the characteristics of the topsoil which will also improve its natural drainage properties to be beneficial as part of the overall works and on an annual basis following completion of the works.

The works should comprise of the following:

- Confirmation that the drainage outlet can be used with CCTV checking of the outlet towards the road to confirm no obstructions are present. There was a considerable amount of silt present within the chamber, and this will need to be removed.
- Undulating (low) areas will require additional topsoil to prevent water collecting in low spots. These areas should be identified, the vegetation killed off with glyphosate-based weedkiller, allowed time to die off (7-10 days), topsoil/rootzone applied and then lightly cultivated and consolidated to achieve a firm surface.
- A drainage system should be installed at 5m centres and supplemented with the installation of excavated slit drains at 1m spacings. This is the preferred option long term as this will provide a network of gravel slits which are both longer lasting (approx. 8-10 years with the appropriate maintenance) and will allow for addition of sand bands or slits in the future if required.
- The alternative is to reduce lateral spacing to 3m centres and install Koro top drain sand bands installed immediately after at 0.5m centres and prior to seeding. The negatives are that the longevity of the bands is likely to be shorter at 3-5 years and it is more expensive as the lateral spacing needs to be closer.
- Drainage arisings may need to be disposed off-site. If onsite disposal is available, this will save approximately £5,000-7,000 and would be the recommended option with the presence of ash/clinker on site.

- Sand topdressings will be required as part of the works and these will be vertidraind and dragmatted to ensure that some material is worked into the upper surface.
- A full overseeding of the pitch will be required.
- Sward improvements can be carried out to include intensive scarifying and cleaning of the existing sward.
- It is recommended that the pitch contractor undertakes the first 6 cuts so they have full responsibility of the pitch until the drain lines have established with seed.
- Annual sand dressings, vertidraind and fertilising operations as well as overseeding should be carried out to ensure that the winter sports pitches remain usable for the required amount of hours.

Note: The end of season sand topdressing/vertidraind/overseeding works/overseeding works should be undertaken by experienced specialist sportsground contractor.

4.2 Guideline Costs

2 no. options are presented for consideration with the difference between the lateral drainage spacing and the type of secondary drainage system installed. A number of other items are required for both drainage options including:

- Weedkiller application in low areas followed by topsoil import
- Drainage arisings disposal offsite (to be confirmed)
- Connection to a positive drainage outfall (subject to approval)
- Sand topdressing
- Post installation vertidraind and sand dressings – 2 no.
- Initial maintenance – 6 no.

Option 1 – Lateral Drainage @ 5m centres and excavated slits @ 1m centres

Option 2 – Lateral Drainage @ 3m centres and Koro Top Drain sand bands @ 0.5m centres

Note:

- The costed option below is based on 1 no. pitch and run-offs with an overall area of approximately 9,828m².
- The costs indicated include items for the disposal of arisings and the importation of topsoil to improve levels.
- The costs assume that a positive outlet is present onsite with a connection off the South-West corner of the pitch.
- The works will be dependent upon suitable weather during the working period followed by adequate rainfall during the establishment phase. Irrigation would be beneficial should dry weather prevail for any length of time after the works.
- The work costs include a 5% contingency.

In terms of budget costs, the following is anticipated:

OPTION 1: LATERALS @ 5M CENTRES AND EXCAVATED SLITS @ 1M CENTRES

| Old Parkonians RUFC | | |
|--|--|---------------------|
| Budget Costs for Lateral Drains at 5m centres, Slits at 1m | | |
| Item | Description | Cost |
| 1 | Prelims - site set-up, material testing, as built plan | £ 8,000.00 |
| 2 | Cultivation & Levelling of Localised Areas | £ 10,000.00 |
| 3 | Drainage -Main/pipe drains @ 5m, chambers, connections, slits at 1m, spoil disposal off site | £ 75,450.00 |
| 4 | Sward Establishment | £ 3,500.00 |
| 5 | Sand Topdressing & Vertidrainng (2no.) | £ 12,000.00 |
| 6 | Est. & Maint. - 6no cuts, overseeding & fertilising | £ 6,500.00 |
| | Sub Total | £ 115,450.00 |
| | Contingency 5% | £ 5,772.50 |
| | TOTAL (exc. VAT) | £ 121,222.50 |
| | Vat 20% | £ 24,244.50 |
| | TOTAL (inc. VAT) | £ 145,467.00 |

OPTION 2: LATERALS @ 3M CENTRES AND KORO TOP DRAIN SLITS @ 0.5M CENTRES

| Old Parkonians RUFC | | |
|--|---|---------------------|
| Budget Costs for Lateral Drains at 3m centres, Koro Sand Bands at 0.5m | | |
| Item | Description | Cost |
| 1 | Prelims - site set-up, material testing, as built plan | £ 8,000.00 |
| 2 | Cultivation & Levelling of Localised Areas | £ 10,000.00 |
| 3 | Drainage -Main/pipe drains @ 3m, Chambers, connections to outlet, Koro slits at 0.5m, spoil disposal off site | £ 88,665.00 |
| 4 | Sward Establishment | £ 3,500.00 |
| 5 | Sand Topdressing & Vertidrainng (2no.) | £ 12,000.00 |
| 6 | Est. & Maint. - 2no cuts, overseeding & fertilising | £ 6,600.00 |
| | Sub Total | £ 128,765.00 |
| | Contingency 5% | £6,438.25 |
| | TOTAL (exc. VAT) | £ 135,203.25 |
| | Vat 20% | £ 27,040.65 |
| | TOTAL (inc. VAT) | £ 162,243.90 |

Note: Consultancy fees for design and tender and contract administration have not been included and will need to be added to the project costs.

Based on the findings on site, the location and proposed usage, the recommended option would be Option 1. This will provide a robust network of drainage that is suitable for usage levels of up to 9 hours per week. Maintenance of the pitch in the long-term is key and this includes an application of a sand dressing at the end of each season.

Should a temporary irrigation system be required, a budget figure of £10,000 should be considered for the duration of the period.

5.0 TIMESCALES/INDICATIVE PROGRAMME

With respect to timescales for completing the project, it is recommended that construction works are only undertaken under suitable ground and weather conditions and ideally achieve seeding in late August. To get the pitch back into play for the start of the new season, the work will need to be done in April/May as per the programme shown.

An indicative work programme is presented below:

Possible Timescales of Works – Drains @ 5m centres and excavated slits @ 1m centres.

| Pitch Improvement Works | Year 1 | | | | | | | | | | | |
|----------------------------------|--------|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| Design | | | | | | | | | | | | |
| Tender | | | | | | | | | | | | |
| Mobilisation of Contractor | | | | | | | | | | | | |
| Weedkiller Application | | | | | | | | | | | | |
| Levelling in Low Areas | | | | | | | | | | | | |
| Piped Drainage Installation | | | | | | | | | | | | |
| Slit Drainage Installation | | | | | | | | | | | | |
| Sand Topdressing | | | | | | | | | | | | |
| Initial Seeding | | | | | | | | | | | | |
| Initial Maintenance | | | | | | | | | | | | |
| Overseeding | | | | | | | | | | | | |
| Pitch Initially Brought into Use | | | | | | | | | | | | |

Possible Timescales of Works – Drains @ 3m centres and Koro Top Drain Sand Bands @ 0.5m centres.

| Pitch Improvement Works | Year 1 | | | | | | | | | | | |
|-----------------------------|--------|---|---|---|---|---|---|---|---|---|---|---|
| | J | F | M | A | M | J | J | A | S | O | N | D |
| Design | | | | | | | | | | | | |
| Tender | | | | | | | | | | | | |
| Mobilisation of contractor | | | | | | | | | | | | |
| Weedkiller Application | | | | | | | | | | | | |
| Levelling in Low Areas | | | | | | | | | | | | |
| Piped Drainage | | | | | | | | | | | | |
| Koro Top Drain Installation | | | | | | | | | | | | |
| Initial Seeding | | | | | | | | | | | | |
| Initial Maintenance | | | | | | | | | | | | |
| Overseeding | | | | | | | | | | | | |
| Pitch Brought into Use | | | | | | | | | | | | |

*P denotes "Possible".

6.0 CONFIDENTIALITY

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7.0 ADDITIONAL INFORMATION

It is the client's responsibility to check with the relevant local authority regarding permissions to implement the works e.g. planning permission or any other factors that could affect starting on site or progress whilst on site.

A Performance Quality Standards assessment (PQS) is provided in Appendix 2 which provides valuable data to compare the condition of the pitch post improvement. The observations in 2023 were consistent with 2019.

This report does not constitute a detailed Specification or Bill of Quantities, and as such, is not suitable for use in obtaining prices from contractors or as a formal construction contract document.

Successful implementation of the works at Old Parkonians RUFC should involve the preparation of a full design and specification and the skilled implementation of the designed works. It must be appreciated that the preparation of good sports turf surfaces involves a great deal of skill and care. Materials, particularly soils on site, are variable. The way in which the works are implemented and especially the weather and ground conditions prevailing at the time are as important as the methods used.

Any work would best be carried out during the normally drier months of late spring and summer, which should coincide with the end of season with an aim to grow in the pitch ready for use in late summer to early autumn – depending on the weather.

Following the construction works it is essential that the facility should be properly maintained, receiving a full maintenance programme designed around the individual requirements of the site.

All relevant Health and Safety Regulations must be observed and the works, as more widely described, would not fall within the scope of the Construction (Design & Management) Regulations 2015 (CDM 2015).

8.0 CONTACT DETAILS

Mr Mike Harbridge
Professional Sportsturf Design (NW) Ltd
Wigan Road
Leyland
Lancashire
PR25 5XW

Tel: 01772 297830

APPENDIX 1

OLD PARKONIANS RUFC

SOIL ANALYSIS RESULTS

| 15365/3 | PARTICLE SIZE DISTRIBUTION | | |
|----------|----------------------------|--|--|
| | SAND / SILT / CLAY | | |
| | | | Test Report Number 15365/D Page 1 of 2 |
| 100% | | | Project 1571 Sample OPRCR/TS/1141B |
| | | | ** Stones present > 12mm ** |
| 03/06/19 | | | Sample Received Date & Sample Test Date |
| moist | | | Sample Moisture (very wet, wet, moist, dry, n/a) |
| friable | | | Sample Consistency (hard, friable, plastic, n/a) |
| high | | | Sample Homogeneity (high, medium, low, n/a) |
| | | | Particle Size Distribution – Not Covered by A2LA Accreditation ** |
| SA - SR | | | Angularity (VA, A, SA, SR, R, WR, n/a) |
| M | | | Sphericity (H, M, L, n/a) |
| 5.0 | | | % Coarse Gravel > 3.4 mm |
| 0.6 | | | % Fine Gravel 2 to 3.4 mm |
| 1.1 | | | % Very Coarse Sand 1 to 2 mm |
| 3.8 | | | % Coarse Sand 0.5 to 1 mm |
| 18.7 | | | % Medium Sand 0.25 to 0.5 mm |
| 22.8 | | | % Fine Sand 0.125 to 0.25 mm |
| 12.0 | | | % Very Fine Sand 0.05 to 0.125 mm |
| 26.9 | | | % Silt 0.002 to 0.05 mm |
| 9.1 | | | % Clay less than 0.002 mm |
| 6.7 | | | % greater than 1mm |
| 22.5 | | | % Coarse + Medium Sand |
| 22.8 | | | % Fine Sand |
| 48.0 | | | % Fines less than 0.125 mm |

** Test Not Covered by A2LA Accreditation

Continued on Page 2

Continued from Page 1

| | | | | |
|----------------|--|--|----------------|--|
| 15365/3 | | | | PARTICLE SIZE DISTRIBUTION |
| | | | | SAND / SILT / CLAY |
| | | | | Test Report Number 15365/D Page 2 of 2 |
| | | | | Coarse Gravel Criterion |
| | | | | Gravel / Very Coarse Sand Criterion |
| | | | | Coarse / Medium Sand Criterion |
| | | | | Fine Sand Criterion |
| | | | | Very Fine Sand Criterion |
| | | | | Total Fines Criterion |
| | | | | Silt Criterion |
| | | | Clay Criterion | |

Angularity codes: VA, very angular; A, angular; SA, sub-angular; SR, sub-rounded; R, rounded; WR, well rounded.
 Sphericity codes: H, high; M, medium; L, low

These results refer only to the samples provided. No guarantee is given that they are representative of the bulk material.
 Full terms and conditions are set out in document 'ETL / Conditions' which is available on request.
 This report shall not be reproduced except in full without the written approval of ETL.

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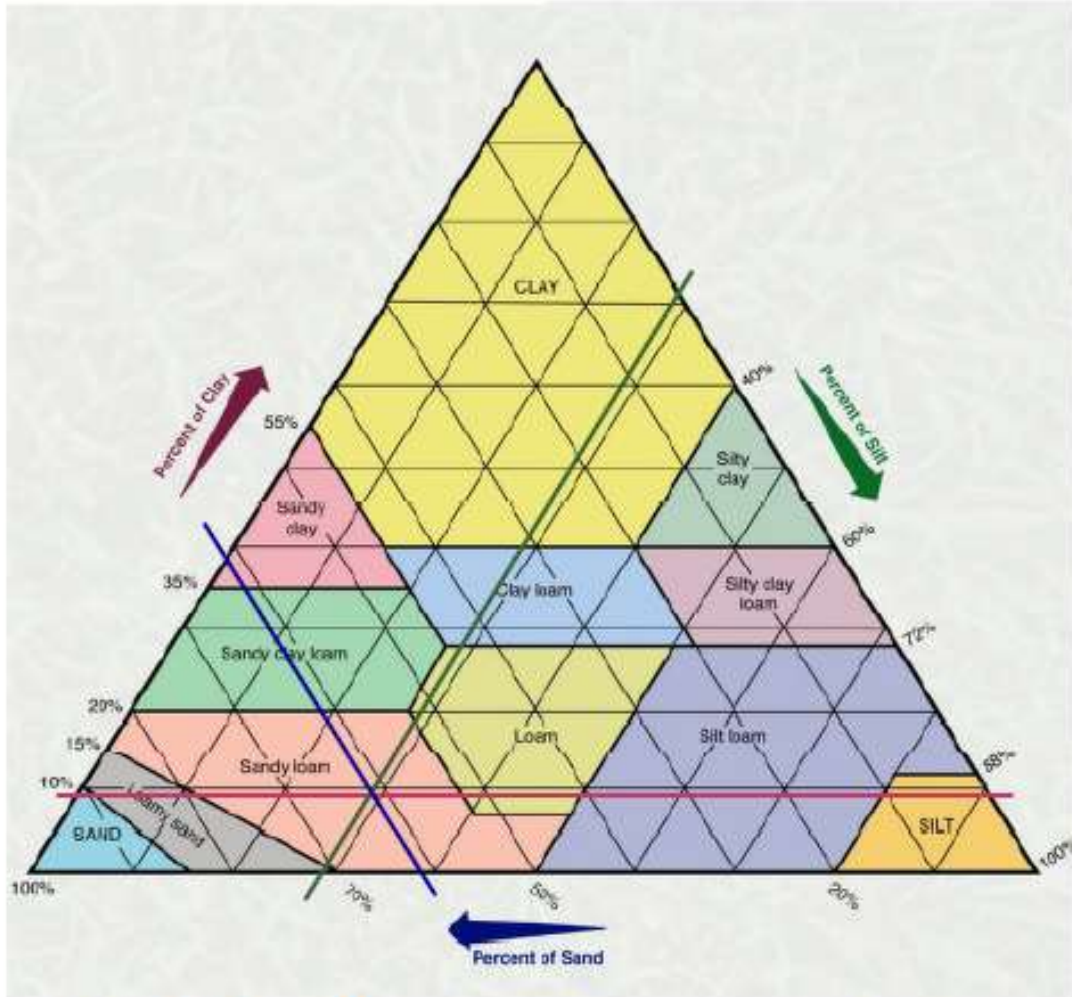
Approved by: 

Date: 7th June 2019

Managing Director, for European Turfgrass Laboratories Ltd

Triangle of Texture : Soil Classification

Date of Issue: May 2011, Revision 2,
Issuing Authority: Sharon Singleton-Bruce



Soil Sample: PSD (NW) Ltd

Project 1571

| Sample | % Gravel | After removal of gravel | | | Soil Texture Classification |
|-----------------------|----------|-------------------------|--------|--------|-----------------------------|
| | | % Sand | % Silt | % Clay | |
| Sample OPRCR/TS/11418 | 5.6 | 61.9 | 28.5 | 9.6 | Sandy Loam |

Signed: *Sharon Singleton-Bruce*

Date: 7th June 2019

for European Turfgrass Laboratories Ltd

Analysis Results (SOIL)

| | | | |
|-------------------|---------------|----------------------|---|
| Customer | 1393 | Distributor | P.S.D. (NW) LTD WIGAN ROAD LEYLAND LANCS PR25 5XW |
| Sample Ref | OPRC/TS/11420 | Date Received | 03/06/2019 (Date Issued: 04/06/2019) |
| Sample No | E335042 | | |
| Crop | GRASS GROWTH | | |

| Analysis | Result | Guideline | Interpretation | Comments |
|------------------|--------|-----------|----------------|---|
| pH | 6.4 | 6.0 | Normal | Adequate level. Maintain pH to ensure optimum nutrient nutrient availability and ideal conditions for an active soil biology. |
| Phosphorus (ppm) | 17 | 16 | Normal | (Index 2.1) 50 kg/ha P ₂ O ₅ (40 units/acre). |
| Potassium (ppm) | 135 | 121 | Normal | (Index 2.1) 40 kg/ha K ₂ O (32 units/acre) (2+), 60 kg/ha K ₂ O (48 units/acre) (2-). |
| Magnesium (ppm) | 115 | 51 | High | (Index 3.1) Adequate level. |

Additional Comments

The analyses and interpretations for P & K have been carried out in accordance with RB209. PLEASE NOTE: The recommendations should be adjusted if organic manures are used. See RB209 for more information.
Where applicable soil applied P,K and pH recommendations are taken from AHDB Nutrient Management Guide (RB209)

Any indicated Lime Requirement assumes a medium textured soil.
Additional technical bulletins are available at www.lancrop.com.

Please Note

Whilst every care is taken to ensure that the Results from Analysis are as accurate as possible, it is important to note that the analysis relates to the sample received by the laboratory, and is representative only of that sample. No warranty is given by the laboratory that the Results from Analysis relates to any part of a field or growing area not covered by the sample received. It is important to ensure that any soil, leaf, silage or fruit/vegetable sample sent for analysis is representative of the area requiring analysis and that samples are obtained in accordance with established sampling techniques. A leaflet containing instructions on how to take soil, leaf, herbage, silage and fruit samples for analysis is available from the laboratory on request.

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Date Printed : 04/06/2019

APPENDIX 2
OLD PARKONIANS RUFC
PQS ASSESSMENT

APPENDIX 2: PERFORMANCE QUALITY STANDARDS

Client:

Old Parkonians RUFC

Physical Site Survey date:

30th May 2019

Project Title:

Proposed Pitch Construction at Prenton RFC

| ELEMENT | LIMITS | METHOD OF TEST | Visit 1 | Visit 2 |
|--|----------------------|---|---------|---------|
| Ground cover % | >75% | BS 7370 : P3 A6 | ✓ | |
| Broad-leaved weeds % | <10 | BS 7370 : P3 A6 | ✓ | |
| Sward height mm | 20-70 PS 30-60 CS | BS 7370 : P3 A3 | ✓ | |
| Thatch depth mm | <15 | BS 7370 : P3 A7 | | |
| Hardness in g | 35-200 | STRI method of test using a 0.5 kg Clegg Impact Hammer from a drop height of 0.55 m | n/a | |
| Water infiltration rate mm d ⁻¹ | 5 (mm/hr) | BS 7370 : P3 A8 | x | |
| Evenness (2 metre straight edge) | <25 mm | BS 7370 : P3 A6 | x | |
| Slope: Direction of play (%) | <1.00 - 1.25 | BS 7370 : P3 A5 | ✓ | |
| Across play (%) | <1.25 - 2.5% | | x | |
| pH value | 5.8 – 7.5 | ISO 10390 | ✓ | |

KEY: SH = Sward Height

PS = Playing Season

CS = Closed Season

Visual assessment is an acceptable alternative method of testing, if undertaken by a turfgrass consultant who is able to satisfy the selection criteria identified within the Turfgrass Consultants – Construction/Upgrade Brief.

Assessment undertaken by:

Dale Frith

Consultancy:

Professional Sportsturf Design (NW) Ltd

APPENDIX 3

OLD PARKONIANS RUFC

MAINTENANCE GUIDELINES

APPENDIX 3 OUTLINE MAINTENANCE RECOMMENDATIONS

Mowing. The grass shall be maintained between a height of 25 - 40 mm using cylinder mowing equipment. The grass should never be allowed to exceed a height of 50 mm. If the grass does become too long, the height of cut should be reduced gradually over 3 – 4 cuts allowing some time for recovery in between. N.B. On no account should the grass height be reduced by more than 50% on any one occasion. Overall, approximately 30 mowing operations may be required each year, depending on weather and growing conditions.

Fertiliser application. Allowance should be made for a sufficient number of fertiliser applications to maintain healthy growth and colour. The fertiliser regime should be based on the results of annual soil sampling to determine nutrient concentrations, but the following programme is provided as a guide:

| | |
|--|---------------------|
| May (end of playing season when renovated) | 12:6:6 at 350 kg/ha |
| June/July (during warm wet spell) | 12:6:6 at 350 kg/ha |
| September (if needed) | 5:5:10 at 350 kg/ha |

Fertiliser shall be applied with appropriate equipment that ensures a uniform distribution.

Weed control. Apply a selective herbicide in the spring (if required) to combat the weeds present. This to be applied at least two weeks after the first fertiliser treatment (April/May) and at a time when grass growth is strong and healthy. NB. Do not apply herbicide during periods of potential turf stress, i.e. if the weather is hot and dry or if frosts are forecast. Apply herbicide strictly according to the manufacturers label recommendations and only by suitably qualified personnel. Usually only needed every 3 years or so.

Pesticide/Fungicide [If required]. A pesticide/fungicide application may be required should disease be present within the grass sward. An approved fungicide should be used with activity against the pathogens present and be applied following the manufacturers label recommendations by suitably qualified personnel.

Aeration / Compaction Alleviation. Verti-drain (or other similar de-compaction treatment) the pitch on at least two occasions in the spring and autumn. Use 18 mm diameter solid tines working to a minimum depth of 200 mm below the surface set to provide some heave. Verti-draining must not be carried out if ground conditions are too soft or during frost.

Additional aeration treatments (e.g. slitting or spiking) during the playing season would also be highly beneficial to maintain surface drainage rates. These treatments should only be undertaken when ground conditions are suitable.

Sand topdressing. Supply and spread approved medium-fine sand suitable for sports use during the renovations period (e.g. mid May) at the rate of approximately 65 t/senior-sized pitch. After each application, the sand should be worked into the surface with brushes or drag mats.

Overseeding. Overseed the pitch area and safety margins as required at the application rate of approximately 200kg/ha (20g/m²) immediately after the topdressing application in May. Use at least three cultivars of perennial ryegrass chosen from the latest Turfgrass Seed booklet with live ground cover and visual merit ratings of 6.5 or more. Make at least two passes with seeding equipment designed to place the seed approximately 5mm below the surface.

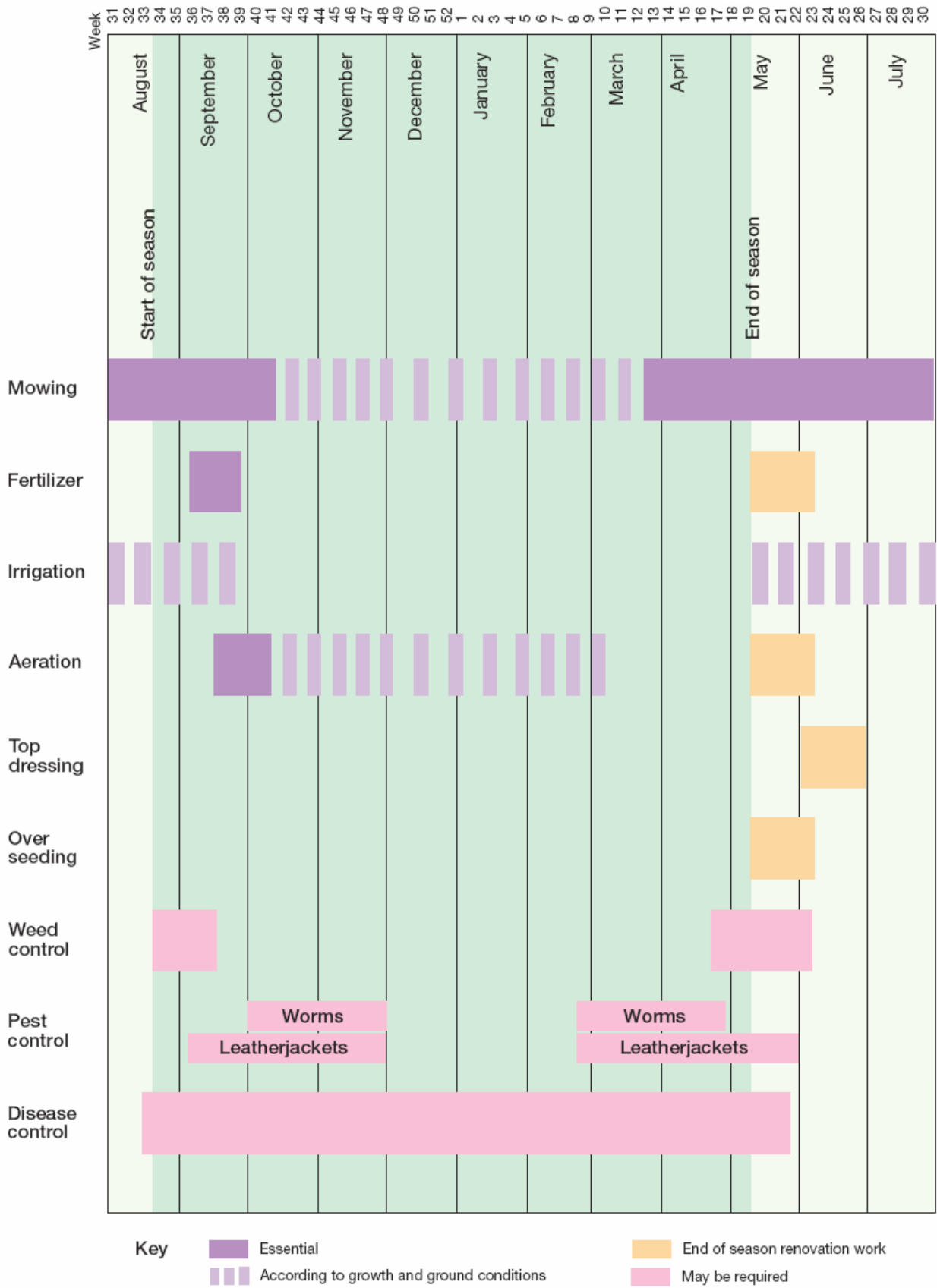
Harrowing [Playing season as required]. To maintain surface levels, it is recommended to chain harrow / drag mat the pitch as opposed to flat rolling which tends to compact the pitch surface and exacerbate undulations. This should only be undertaken under suitable ground conditions.

Divot repair [Playing season]. After each match, divot and tread the divots back into position. This will remove any bare soil which allows weeds and weed grasses to germinate. Filling in divots with seed/soil mix will help to maintain better grass coverage.

Renovation of worn areas [Playing season]. Areas of high wear, e.g. goal mouths, should be dressed and seeded using a divot repair mix (seed/rootzone) during the playing season as required in order to maintain good grass cover. These areas should be hand watered (if necessary) to ensure rapid grass germination and establishment.

Line Marking [Playing season]. Line marking should be undertaken on a weekly basis during the playing season.

Goal post safety. The posts should be regularly checked for damage and re-painted / re-paired as necessary following the manufacturer's guidance.



Winter Football and Rugby League: Summary pitch maintenance programme