



Making great sport happen

FREMINGTON PARISH COUNCIL

Review on the Sports Pitches at Tews Lane

Report Date: 9th October 2020

Consultant: Steve Gingell



Date of Visit: Wednesday 30th September 2020

Visit Objective: To undertake an inspection of the pitches at Tews Lane and provide recommendations.

Weather: The weather was wet, following a dry September.

Headlines

- The STRI have been commissioned to review the Tews Lane Football Pitch. This is due to a concern about the poor drainage rates on the site, leading to lost games. The STRI previously visited the site late on following the works in 2006 and again in 2010. The reports do emphasis the concern over the drainage and also the heavy soils needing high levels of maintenance to achieve good levels of drainage.
- Post 2010 it is unclear whether any secondary drainage as recommended was installed or any sand dressings and other maintenance occurred. This report therefore summaries the current condition and provides recommendations for potential works.
- The new maintenance plan was reviewed and evidence of implementation following the plan noted within the report.
- The report concludes that the drainage does not appear to be functioning due to the initial construction of placing the heavy topsoil over a graded and drained base. Water is unable to reach the drainage. The options would be to install a new lateral drain system at very close centres with sand slits as secondary drainage. Alternatively, an intensive slit drain system installed deep enough to connect into the existing drainage and heavy sand dressings and amelioration could be used. Both are discussed in the report but the later would be favoured.
- The level of use of the pitches will always add risk to their condition and it should be noted that the level of use is potentially in excess of even a pipe and slit drain pitch would cope with. This would potentially shorten the life of any system.
- A soil test was taken and would be reported upon on it return. This would help advise on drainage spacing and soil risk.

Key Actions

- The drainage layout as installed needs to be located and reviewed. To some extent this will determine the next stage of works and hence also costs.
- The proposed drainage needs to be installed so that it connects to the surface by secondary and high level sand dressings. The drainage would need to be fully specified and a design drawing completed.
- The maintenance of the site for the level of use needs to be at the absolute highest level of the specification detailed. Indeed, higher levels of sand dressings than noted for the next five years will be essential. Failure to do this will render the drainage less effective.
- There were some concerns over the maintenance seen on site versus the specification and these are discussed in the report.

Photo Observations and Comments



Figure 1: The site was inspected on a wet day following a dry period. There was no standing water but water was being held in the surface. There was 2 full sized and 1 junior pitches on site.



Figure 2: The grass cover was on average around 90% but bare ground was noted in the goalmouths and the central portions weaker and thinner. There was evidence of intensive training or casual use in the higher wear areas.



Figure 3: The goals were unrepaired and most were bare and dipped. The grass height varied between 45-60mm. There were areas of poor grass cutting visible as a stripe.



Figure 4: The grass cover was mainly turf ryegrasses and some meadow grasses. There was a moderate weed content of clover, plantains (indicating compaction) and dandelion.



Figure 5: The white lines appeared to have been "herbiced in" probably using glyphosate and this has crept beyond the line in places. Whilst this is a fairly common occurrence it is not deemed to be good practice. The individual product would need to have an approval for this use.



Figure 6: The general levels across the pitches were satisfactory with the worst pitch being closest to the road (eastern). There was a lengthways slope downwards to the north. It was estimated to be 1 in 50. If the case this would be outside the current lengthways guidelines. This would need to be confirmed.

Photo Observations and Comments (continued)



Figure 7: The North western pitch side manhole was loose and damaged. It was lifted slightly to allow a photograph to be taken. There were a number of inlets and outfall. There was only one in a west direction that showed an evidence of water flow. The middle south pipe was investigated in figure 8.



Figure 8: The main drain was dug and the aggregate. There was a layer of 100mm of topsoil over the aggregate which was found to be significantly blocked with soil in the upper 100mm. Below this the aggregate was cleaner.



Figure 9: No drains were visible or found in the pitch. In STRI reports in 2006 and 2010 it was reported the drainage was installed under the topsoil. The drainage therefore would not be seen on the surface, would not be effective in the heavy soils and without secondary drainage. The soil was heavy and stone rich below 60mm. Rooting was good.



Figure 10: The pitch centres were more compact as shown above with a smeared layer. There was no evidence of sand dressings or secondary drainage installation.



Figure 11: The grass health was variable with weak thin areas in area of high wear.



Figure 12: Wear in the eastern pitch goal at the North end. Note the creep in the white line.

Discussion

Drainage

- The STRI inspected the ground immediately following construction but unfortunately had no dealings with the original specification. It was thought at the time and could not easily be confirmed that the drainage was installed in a graded sub-base before the heavy topsoil was replaced over the top. This is certainly a method of drainage installation but with very heavy soils as is the case can render drainage systems nearly ineffective.
- Despite probing the surface extensively no drainage aggregate could be located in the upper 150mm and no evidence was seen on the surface as typically occurs. The outfall appeared to be flowing well but the route could not be determined. It may exist into the surface water run off system.
- Indeed the only way that drainage solutions of this manner can work is by the installation of secondary drainage slit system that connects into the drainage. As such secondary drainage systems have a very short life unless high levels of sand dressings are applied and would need replacing every five years or so. It is clear from the site that no secondary drainage is currently effective or could be found and limited sand dressings have been applied over the last 10 years following the last STRI visit.
- It should be noted that this is not unusual because typical maintenance programmes are focused mainly on cutting and marking out with limited other activities.
- The manholes on site were a non-lockable light steel type and were being displaced. Even if no further works occur then these should be replaced with heavy duty types and possibly be buried with the location recorded.

Option 1 – Enhanced Secondary Drainage

- In order to ensure the drainage is effective and at a level that would be able to cope with increased wear then the existing drainage needs to be connected to the surface. This would assume the aggregates are clean. If a narrow shallow trench were dug (probably 200mm deep and 150 mm wide) to examine at least 3 drain lines and the condition proved to be acceptable then the use of a modified secondary drainage could be utilised across the existing.
- This would need to be confirmed but an 80mm slit drain at 1m centres could be used connecting into the existing. The fill would be small sized gravel and sand cap.
- This option would rapidly increase drainage rates and give a reasonable life as the slit width being twice that of a normal secondary drain would resist failure for longer. Slit drains fail due to worm cast mixing and silting up and capping over due to low sand dressings.

Option 2 – New System

- Alternatively a full new lateral system be installed connecting into the existing main drainage. This has risk as every drain intersection through the existing pipework would need the existing to be capped off. There would also be risk of trench collapse where potential wide existing gravel drain are cut into, making installation challenging and costly.
- The piped lateral drainage system would need to be installed at 3m centres and progress across the pitches i.e. in an east to west direction picking up the falls of the site. This level is sufficient to allow good levels of drainage.
- In addition to this, sand silts or grooves should be installed. These are narrow forced slits that would connect from the surface into the drainage aggregate as it crosses the drain line and typically are 150-200mm deep backfilled with sand and at typically a little over 200mm centres. This would help to improve the local top soil.

- In both scenarios, in order to maintain the drainage it is vital that sand dressings are applied on an annual basis typically around 80 tonnes per pitch covering the entire pitch area rather than focusing down the centres. This would be applied to the surface, Verti-Drained and brushed in at renovation post football season. The works should allow for sand dressings at a high level to start the process.
- The drain lines would be typically an 80mm pipe at 500mm depth with a 2-6mm gravel over the pipe and rootzone to top off. It is important that these are probably specified and the drawing undertaken therefore this is a recommendation.
- Any drainage would create a significant level of excavation spoil. For example, a 3m lateral drainage system would generate around 150-250 m³ of material per pitch depending on the bulking factor. This could be banded on site and landscaped or may need to be removed at moderate cost.

Levels

- The levels across the site were within tolerances for a reasonable quality surface. However, the pitch lengthwise fall to the north was estimated to be around 1:50 but would fall outside the 1:80 recommended level. However, this would need to be checked with a survey of the site potentially. It would not however be recommended for a releveling of the site to occur as it is relatively constrained and the soils would present a number of risks.

Top Soil

- The top soil was extremely heavy and would significantly constrain the amount of use the pitches were able to take. This is particularly important with regard to training activity as this has a very high wear level. There could be some benefit in considering a small area of 4G football or a MUGA for training activity as this will take the pressure off the pitch areas and especially if higher levels of use were being considered.
- The clay soils also below 60mm were very stone rich and therefore any works within this lower level could generate stone on the surface and therefore would cause a risk. This is particularly the case if any resurfacing were considered.
- The key method of improving the soil would be through regular sand dressing and whilst it was pleasing to see this within the current maintenance specification it is deemed that this is not significantly high enough and would need to be elevated for a period of time to bring the surfaces into good condition. This is particularly important if secondary drainage were installed.
- It should be noted that even with an effective pipe drain system the pitches could be rendered unplayable under periods of extremely heavy rainfall. This is due to the heavy soils between drain lines having an effective zero permeability and so all surface water needs to find a drain to exit the pitch.

Maintenance Plan

- The current maintenance plan has been provided and would broadly be adequate for the level of usage. The area of concern would be the height of cut at 30mm is probably a little low for wear management and the spring and autumn fertiliser needs to be specified potentially to a controlled release type to maximise the impact and effect.
- Aeration is vitally important and it is noticed that there surface slitting is recommended, which is effective although could smear in poor conditions and that one Verti-Draining is undertaken per year at renovation. If at all possible further aeration should be undertaken using the Verti-Drain type machine throughout the season.

- The renovation only suggests applying 30 tonnes of sand through the centre of the pitches and this is not sufficient to maximise the condition of the profile and needs to be at 80 tonnes per hectare or per pitch for at least the next five years.
- The renovation is appropriate but contravating is a particularly aggressive form of renovation and whilst appropriate for goalmouth areas would not necessarily be appropriate through the whole pitch. The irrigation whilst desirable may not be able to be achieved due to the structural systems within the pitches and may result in slower germination.
- The existing maintenance appeared to have been using a higher height of cut than the 30mm specified although this is probably a little short, ideally around 40mm would be maintained. In places some areas were up to 60mm. The quality of cut was slightly poor and looked like one unit or part of a unit was scalping the surfaces slightly.
- There was no evidence of any weed treatment being undertaken and whilst the conditions are becoming cooler and the treatment is less effective there is still time in the south for such treatments to be appropriate.
- The white line marking does not include the use of any herbicides within the mix. It would appear potentially that Glyphosate has been used in the marking mix. Whilst this is a common practice, it would not be deemed as best practice and any product that is mixed with the line marking fluid must be approved for that purpose. There is also a significant risk with Glyphosate that the line creeps and there was evidence of some footprints where Glyphosate had been picked up on the foot and then walked across the grass effectively killing it. Also long term use will result in significant crack occurring along the lines and some sites have reported significant trip hazards being caused. The use of effective white lining materials and on a sufficient frequency will preserve a good line.
- The weed control was used on kerb edges but has crept significantly into grassed areas. This again would be deemed to be a relatively poor practice and should not occur in the future.
- The STRI can offer a regular review of the site to ensure the maintenance is satisfactory and the investment protected.

Next Stages

- The as built drainage plan needs to be sourced if possible and reviewed to allow a discussion to be made regarding drainage installation. This would allow a further discussion to occur on the best route for any works.
- A further excavation of drain lines should be undertaken.
- A levels survey should be undertaken on the site if again not present to allow a drainage plan to be developed.
- A new drainage layout and full specification should be developed to ensure that any works are undertaken to the highest standard. The costs would be in addition to the works shown below.

Costs

- To install pipe drainage at 3m centres assuming mains are effective is typically around £30,000 per hectare installed. This would mean around £60,000 -£70,000 on the site. Secondary drainage using the Sandmaster sand grooves/slits is typically around £10,000 per hectare and again this will be around £25,000. It is important that sand dressings are also undertaken and this would have a cost of around £5,000 per pitch and would need to be repeated a couple of times. A budget of £20,000 - £30,000 would be needed for the sand dressings. In total this would require a budget of around £120,000 with set up costs seeding etc.

- To install a wide 1 m sand slit would cost around £25,000 per hectare drained or around £50,000 - £65,000 on the site. The sand dressing as above would need a budget of £20,000-30,000 and so the budget would be slightly lower at around £100,000. Both of the above are very wide estimates and actual cost can significantly vary dependant on contractor availability, sand prices etc. The assumptions would be the excavations would remain on site and landscaped.
- It is important that a full specification be undertaken and a competent sports turf contractor be used to complete the works. Alternatively, the STRI could facilitate a design and build option potentially using the STRI Group Contractor – Carrick Sports.

Signed

A handwritten signature in black ink that reads "Steve Gingell".

Steve Gingell BSc (Hons)
Agronomy Operations Manager
t: +44 (0)7880 736687
e: steve.gingell@strigroup.com
www.strigroup.com