CLIENT:

ARDRISHAIG KGV COMMUNITY PARK ASSOCIATION

TECHNICAL APPRAISAL AND QUOTE

of the

KING GEORGE V PLAYING FIELD

Hemstock Design Ltd
Sorrento Studio
High Street
Elkesley
DN22 8AJ

hemstock design

TECHNICAL APPRAISAL of the KING GEORGE V PLAYING FIELD, ARDRISHAIG

Fig.1 - The KGV Playing Field site, viewed from the north

Project: Upgrading of the natural grass pitch area

Consultant: David Hemstock, BSc.DipAgrEng.IEng, MIAgrE.
Member of SAPCA & RIPTA

Date of assessment: 16th of August, 2024

Fig. 2 - Location of the soccer pitch in Ardrishaig, school field to the north

1.0 PROJECT BACKGROUND

1.1 OVERVIEW

1) The Client, Ardrishaig KGV Community Park Association ('the Association') has commissioned Hemstock Design Ltd to support the processes involved in the development of the playing field that they manage in the village. The field was originally

relevelled and drained around 40 years ago but has recently suffered from waterlogged conditions throughout the year. This technical assessment is aimed at identifying the primary problems, opportunities and implications.

2) The Association will have access to funding (the Scottish FA may also be approached) and is looking to take on a lease of the site from the local authority owners, Argyll & Bute Council. This will allow a coordinated approach to developing the site and managing it for the village into the future.

   The intention is to form a field playable throughout the year, and capable of holding sports and non-sports events. The field will be upgraded with new sports-field drainage and high-quality sports-field grass types, possibly with some reconfiguration. This work is programmed for 2025.

3) Longer-term, the Association are looking to develop parking and a pavilion within the site boundary. Initial plans have been drawn-up for this.

4) The site was visited initially on the 16th of August 2024, meeting Association Secretary Blair Johnston with Donald McClarty and Charlie Ellis, who worked on the original pitch levelling and drainage project.

5) Weather conditions on the day of the initial visit were rainy temperature was around 16 degrees C with damp to waterlogged ground conditions.

1.2 BRIEF

1) The client has requested the following scope of works:

- Pre-visit site layout drawing from satellite imagery
- Briefing meeting on site
- Site assessment to include spot levels, soil trial pits, drainage features, grass condition, pitch layout, access and parking overview, etc.
- Produce a technical assessment report covering findings, recommendations and budget prices based on local circumstances.
- Sketch of the proposed grass pitch layout adjustments and drainage.
- Including notes on the next stages of design and planning application work.

- *(Topographic survey by others)*

1.3 Location & Site Overview

1) Location - The site lies centrally within the village. The address is:

   KGV Community Park
   Glengilp Road

Ardrishaig, PA30 8HF

OS co-ordinates: Grid Reference – NR 84907 86011

X (Easting) - 184907 Y (Northing) - 686011

2) The playing field area currently accommodates:

   - **Pitch 1** – Grass Soccer Pitch 92 x 52m approximately plus margins.
   - Children's play area

NB - Area to the north of the KGV field is the school playing field and community garden.

3) The playing field site is bounded by a wooded embankment above and to the west, the school garden to the north, a wooded bank down to Park Road to the east, and Glengilp Road and one residence to the south. The eastern boundary did have a ball-stop fence fitted but only the posts remain due to stability problems.

4) Parking is limited to the local roads.

Fig. 3 - The extent of the playing area available was measured on the ground as 92 x 52m including margins (minimum 2m) with an additional 2-3m available to the western side if scrub is removed, plus other adjustments

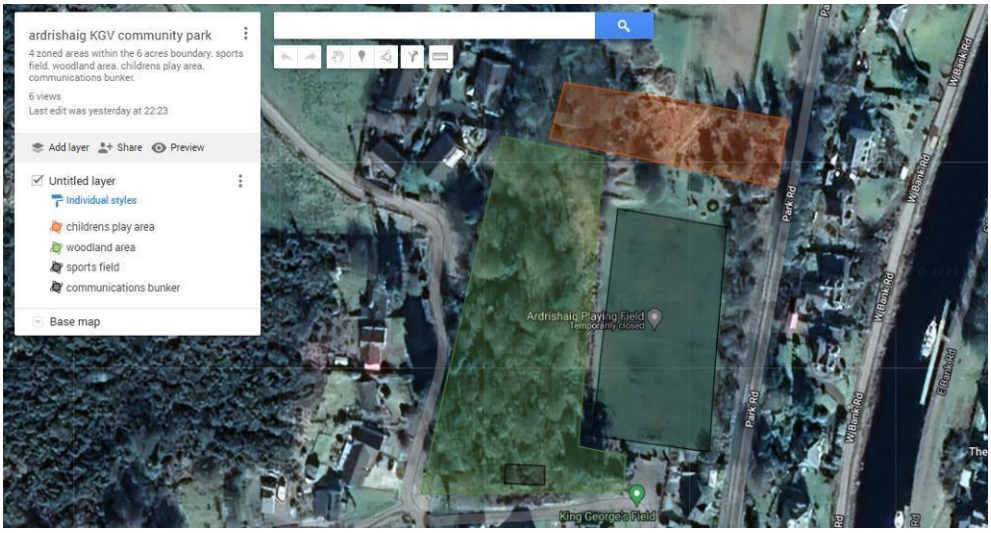

Fig. 4 - The Association manage the field, play area and woodland

2.0 SITE ASSESMENT INFORMATION

2.1 PITCH LAYOUT

1) The existing playing field has a playing surface effectively of 92 x 48m plus 2m margins to the sides and 6m approximately to each end.

2) The length of the pitch is limited by a large drain chamber and access ramp in the north-west corner and play area fittings. The width is limited by the embankments on either side and the cut-off drain along the bottom of the western bank, this being overgrown on the day of the visit.

3) The southern end of the pitch is close to the access point and residence, 6 metres from the current goal-line to the access gate. Scope exists to make the playing area slightly larger and potentially to move the pitch further in towards the north, giving a greater margin for errant balls and making room for parking, potentially.

Fig. 5 – Soil trial pit locations

2.2 Soil Assessment

1) Soil pits were excavated to assess the topsoil and upper subsoil conditions. Six pits were dug by hand with a spade, supplemented by a Dutch Auger where possible to examine deeper into the subsoil. These pits were supplemented by checks using a depth gauge probe and notches taken with the spade to check soil depth and compaction elsewhere around the site.

2) Topsoil depth was found to be approximately 120 - 170mm of mid-brown clay loam with the upper 80 to 100mm being compacted. All pits were wet, with waterlogging on the western side. Below the topsoil layer was a stoney subsoil to the east, weathered mica schist rock to the west. It appears that levelling the pitch by cutting on the west to raise it on the eastern side was significantly inhibited by the presence of the bedrock.

3) There were no signs of sand topdressing or decompaction equipment having been used recently.

4) Trial pit results are summarized as follows:

- **Trial Pit 1** – South-western corner of the playing field. Topsoil 160mm deep, top 100mm mildly compacted with limited root depth below this. Hard, brown stoney subsoil, augering not possible due to the presence of rock

Trial Pit 1 – 160mm of loamy topsoil over a drain run with fine gravel permeable fill. Compact 100mm upper layer with limited root depth, hard subsoil.

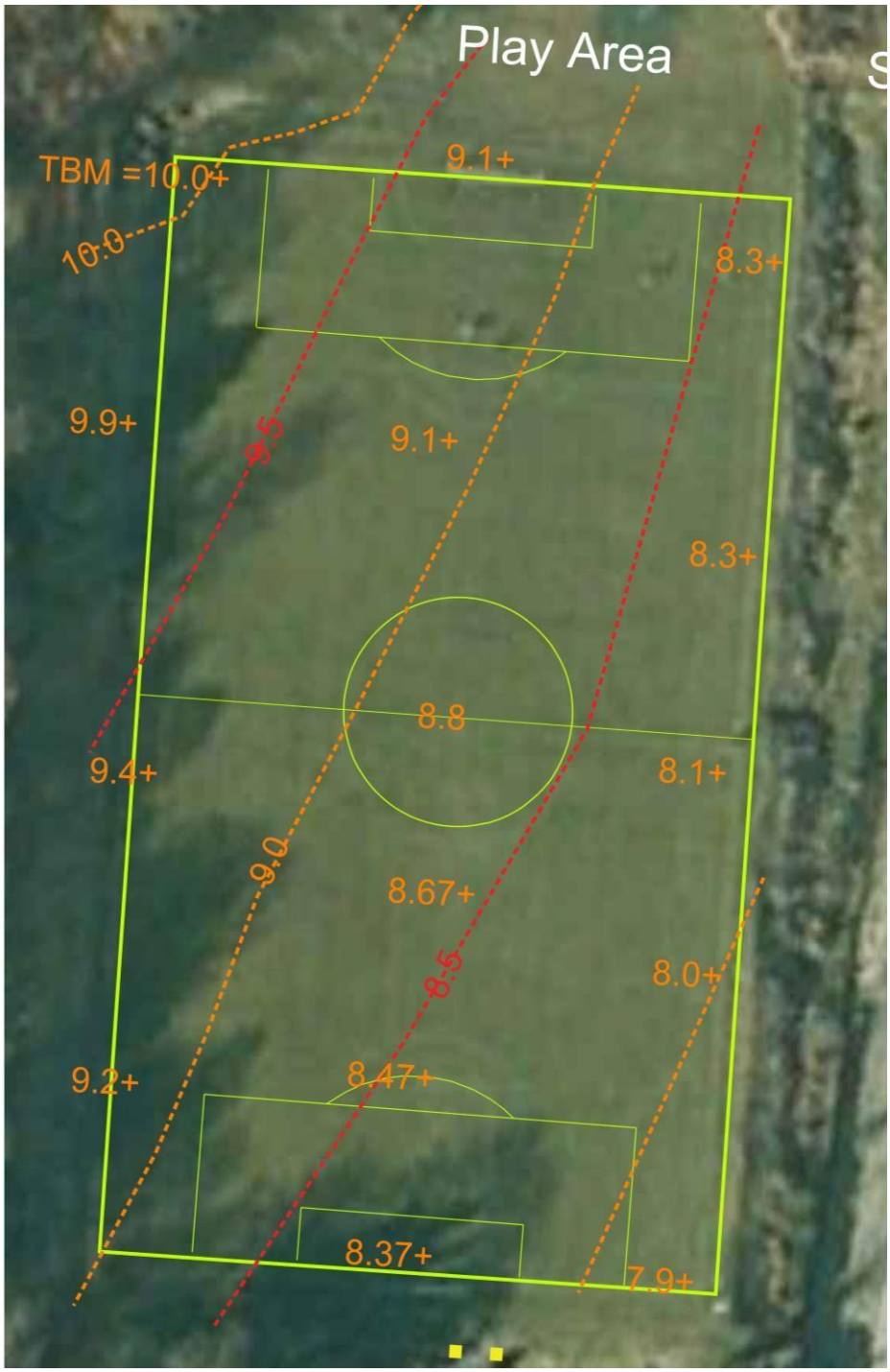

Fig. 6 – Spot levels taken on the pitch (to a temporary bench mark)

2.3 LEVEL ASSESSMENT

1) The playing field has a compound fall total of 2.1m from north-west down to south-east corners, over a distance of 102 metres or approximately 1 in 50, 2%. The general recommendations for a desirable playing gradient are:

   SPORT ENGLAND/SCOTLAND GRADIENT RECOMMENDATIONS:

   - *Direction of play < 1.25% = less than 1:80*
   - *Across play < 2% = less than 1:50*

   Across the direction of play, the playing area has a 1.1 to 1.7 fall over 52m, or approximately 2% to 3%. This crossfall is slightly over the recommendations.

2) Given the problems inherent in further cut-and-fill into rock on the western side, the discussions on site focussed on the option of using fill material and additional topsoil to bring the pitch into the preferred gradient overall.

   Fill will be generated from trimming back the bank for additional width, and from trenching works, potentially from earthworks for a new parking area if this ties-in.

2.4 DRAINAGE

1) The pitches were fully drained after levelling in 1984, with Charlie Ellis working on the project at that time. Pipes were 80mm uPVC corrugated type with fine gravel permeable fill. The outfall is understood to be to Park Road surface water system via a silt chamber in the south-east corner of the field which could not be located on the day.

   Land drains are normally given a 25-year life-span before siltation and other problems cause a rapid degeneration, so the KGV drains are well beyond this period.

2) There is a culverted watercourse running along the northern edge of the pitch from a raised chamber in the pitch corner to a pair of chambers on the edge of Park Road. This was heard running on the day

3) Runoff is causing additional problems on the centre-west side of the pitch, with water running from the road above and embankment, over the blocked cut-off or French drain here and onto the pitch.

4) The existing drains were exposed at permeable fill level in two places. The gravel fill appeared to be blocked with silt, and in on case there was a waterlogged pit directly over the line of a pipe- drain.

5) Further work to be carried out to locate final outfall(s) and buried silt chamber(s).

Fig. 10 –pitch relocation option in red, 18 metres between pitch margin and boundary, widened area for playing surface plus 2m margins, requires work to the chamber and ramp to the north east.

Moving the pitch even further north might allow the play accessibility from Glengilp Road end

3.2 Pitch Layout

1) A concept sketch is shown in Fig. 10 above, where the pitch size could be retained or slightly increased in width but moved north to allow other developments.

2) The pitch resulting might just accommodate two U11 cross-pitches and margins, depending on the feasibility of excavating the western bank.

FA Recommended pitch and ball sizes from 2013/2014

Age	Format	Ball Size	Pitch Size (yards)	Pitch Size (metres)
U7	5 v 5	3	30x20 to 40x30	27.43x18.29 to 36.58x27.43
U8	5 v 5	3	30x20 to 40x30	27.43x18.29 to 36.58x27.43
U9	7 v 7	3	50x30 to 60x40	45.72x27.43 to 54.86x36.58
U10	7 v 7	4	50x30 to 60x40	45.72x27.43 to 54.86x36.58
U11	7 v 7 (Primary Sch.)	4	50x30 to 60x40	45.72x27.43 to 54.86x36.58
U11	9 v 9	4	70x40 to 80x50	64x36.58 to 73.15x45.72
U12	9 v 9	4	70x40 to 80x50	64x36.58 to 73.15x45.72
U13	9 v 9 or 11 v 11	4	90x50 to 100x60	82.3x45.72 to 91.44x54.86
U14	9 v 9 or 11 v 11	4	90x50 to 100x60	82.3x45.72 to 91.44x54.86
U15	9 v 9 or 11 v 11	5	90x50 to 110x70	82.3x45.72 to 91.44x64
U16	9 v 9 or 11 v 11	5	90x50 to 110x70	82.3x45.72 to 91.44x64
U17	11 v 11	5	90x50 to 110x70	82.3x45.72 to 91.44x64
U18	11 v 11	5	90x50 to 110x70	82.3x45.72 to 91.44x64
Sen	11 v 11			90x45.5 to 120x90

Fig. 11 – standard pitch sizes.

3) There is now a requirement for new developments to show a 10% gain in biodiversity post-development. Margin and woodland areas may be valuable in enabling this target to be at least part-met.

4) The idea of linking the KGV and school playing fields was mentioned during the site visit. To be considered once the Association are in control of the site, perhaps.

3.3 Drainage & Renovation

3.2.1 – Sports Field Drainage

1) The recommendation is for a re-draining of the grass playing field area with:

- a new main drain connecting to a suitable point on the southern boundary, low point (existing outfall?).
- A lateral pipe system at 5 metre spacing, possible following the line of the existing trenches to save on hard-dig trenching
- Sand-slitting of the playing surface.
- Sand topdressing of the playing surface.

2) The main methods of construction with approximate potential levels of use of each system are summarised below based onresearch for senior level soccer use. Actual level of use attainable is however very much dependent on the age of the users, prevailing weather and the maintenance regime. Seasonal/annual variations in conditions and maintenance requirements must be allowed for in any budget or cash-flow calculations.

- Undrained turf pitch Type 1 - typical maximum of 2 hours use on average per week (up to 4 hours, depending on weather/ground conditions). Use can be severely limited in wet conditions.
- Pipe-drained turf pitch Type 2 – up to 3 or 4 hours use on average per week. Pitches constructed with pipe drainage systems only are generally regarded as the basic starting point.
- Pipe drained & sand-slitted pitch with sand topdressing Type 5 - up to 6 hours use on average per week may be feasible. Sand grooves provide a similar wear capacity, but tend not to last as long as slits.
- Sand Carpet over slits & drains (Hemstock Design classification 5a) – up to 6 hours use on average per week may be possible, but with the effect of reduced soil compaction potential on play and maintenance.

Drainage Layer Construction Systems:

- Topsoil with drainage base layer Type 6 – up to average 6 hours use/ week.
- Suspended Water Table Type 7 (sand rootzone, drainage-layer construction) – no significant increase in use over the former, but the pitch should remain playable in all but the wettest conditions, very high quality playing surface.

The latter three options would require an irrigation system capable of applying up to 25mm of water per week in the peak irrigation season.

Drainage status	Adult weekly use* (hours)
Un-drained	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.*

Fig. 12 – standard levels of use for different drainage systems.

Wear and damage inflicted by the younger age groups is considerably less than that for seniors. Juniors can be allotted a nominal reduced wear factor:

- 14 to 16 Year-old - 100% equivalent wear rate
- 11 to 13 Year-old - 50% equivalent wear rate
- Under 11 - 25% of the senior rate

3) The recommendation for the KGV field is for the installation of the Type 5 pipes plus sand-slit system connecting into the existing outfall, or possibly a new one. New cut-off drain along the bank, possible relocation of the culverted watercourse pipe.

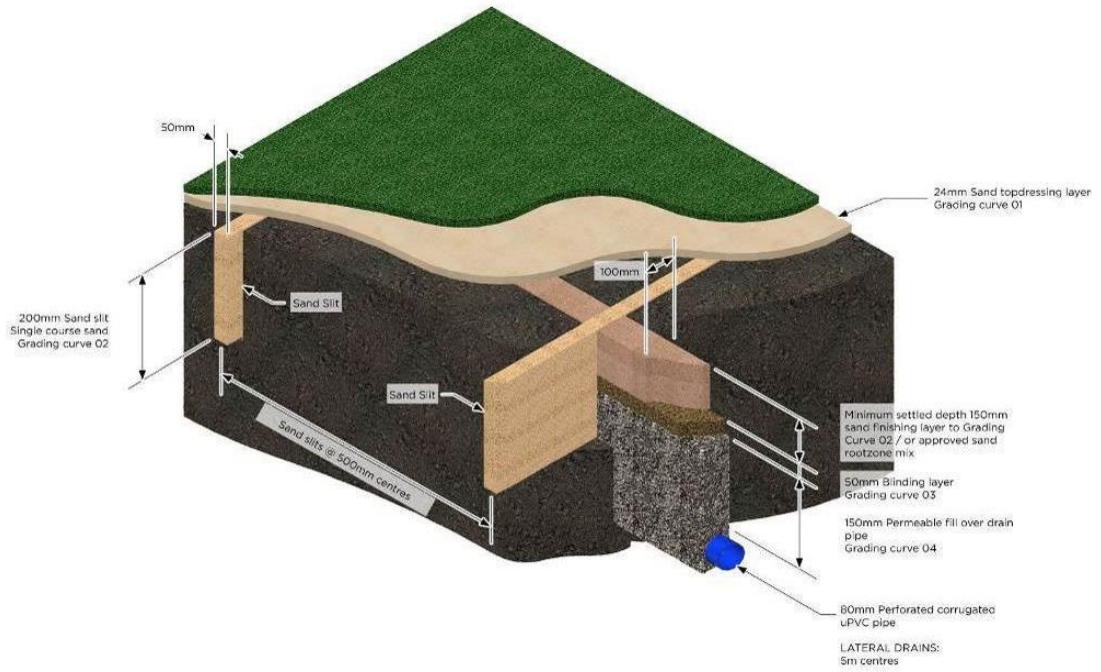

Fig. 13 - Pipe drains & sand-slit drained pitch

3.2.2 – Grass Pitch Upgrading

1) The new grass pitch area may have an increase in topsoil depth, which will improve rooting capacity and water retention in drier weather and facilitate lateral movement of water for drainage.

2) The pitch will then be overseeded with a top-quality sports field Perennial Ryegrass mix, together with weed control and a tailored fertiliser/sand topdressing application.

3.3.3 - Maintenance

1) There are implications for annual maintenance costs and the periodic replacement of a sand-slit system. This needs to be discussed at the appropriate time.

2) The drainage system likewise will need replacing, usually a 25-year useful life is allowed for.

3) There is a limit on the amount of use a Type 5 pitch can take before damage occurs, so a log of amount of use needs to be kept and checked. This includes non-sports events which can be particularly damaging.

4.0 BUDGET PRICE

4.1 Basis of Pricing

1) The indicative rates shown below are based on recent rates.

2) VAT to be added on as necessary, with planning-related fees and disbursements, additional items such as work to the parking areas and so on.

3) A contingency should be included to cover such items as hard-dig problems, unforeseen works, materials cost increases in 2025 and fees & disbursements.

4) Use of local recycled materials was discussed, particularly vortex crushed glass and other options. A sustainable source of sand for topdressing may be expensive.

5) Additional items such as replacing the ball-stop fencing are not included here.

4.2 Indicative Bills of Quantities

KGV Playing Field Ardrishaig

hemstock design

Item	Description Of Works	Qty	Unit	Depth	Rate	Value	NOTES
	Earthworks & Enabling	**Unit**	**Amount**	**Rate**	**Total**		
1	Allow for all preliminaries associated with the outlined works	Item	1	£7,500.00	£7,500.00		
2	Strip topsoil from proposed fill zone and embankment trimming area	cu.m	0	£0.00	£0.00		To be fixed
3	Fencing, play area, ramp/chamber work, etc	Item	1	£0.00	£0.00		To be fixed
	Sub-total:					**£7,500.00**	
	Grass Pitch Work						
4	Install a new 110mm cut-off drain	lin.m	98	£25.00	£2,450.00		
5	Install a new 160mm main drain	lin.m	98	£25.00	£2,450.00		
6	Install 600mm deep 80mm diameter lateral pipes at 5-metre spacing including junctions	lin.m	1100	£15.00	£16,500.00		
7	Install silt chambers	nr	2	£500.00	£1,000.00		
8	Install 200mm deep sand slits at a 0.5-metre spacing using a digging-wheel type of trencher	m^2	5200	£3.00	£15,600.00		Can be installed after pipe drainage, or ommitted
9	Overseeding and weed control, decompaction	Item	1	£5,000.00	£5,000.00		
10	Extra over for hard-dig	Item	1	£2,500.00	£2,500.00		
11	Carting and handling of spoil material	Item	1	£2,500.00	£2,500.00		
12	Other	Item		£0.00	£0.00		
	Sub-total:					**£48,000.00**	
	Total:					**£55,500.00**	***Price is subject to VAT at the current rate***
	Contingency of 15%					***£8,325.00***	
	Grand Total inc contingency					**£63,825.00**	

Fig. 13 – Indicative costings for the pitch drainage and renovation

Signed: ……

David Hemstock, BSc.DipAgrEng.IEng.MIAgrE.

Member, Register of Independent Professional Turf Agronomists (RIPTA)

Member, Sport & Play Construction Association (SAPCA)

M: 07850 744957 **E:** david@hemstock.design