SPORT ENGLAND

Facility
Case Study

Creating sporting opportunities in every community

MOWSBURY PARK PLAYING FIELDS

BEDFORD

Status: Completed 2009
Client: Bedford Design Group
Value: £250k

Mowsbury Park is a popular natural turf facility situated towards the northern outskirts of Bedford. The site is a well established playing field that comprises 7 x senior football pitches, 2 x junior football pitches, 3 x mini football pitches, 1 x junior rugby pitch and 5 x 8 pitch cricket squares.

Despite being maintained to a high standard, a number of the pitches were routinely waterlogged and were unplayable for many weeks during the season. Hi-tech soil scanning technology was used to establish that the poorly draining areas occurred as a result of undulating surface levels in combination with impermeable clay soil underlying parts of the site.

The site was regraded to address the poor surface levels, and a new land drainage scheme was designed and installed to intercept rainfall and convey it safely to a nearby ditch.

The park has now become an important facility for schools, clubs and local residents.

Laser grading to address surface undulations

Installation of land drains into an existing grassed area using a chain trencher

The construction and maintenance of safe and sustainable natural turf surfaces is a fundamental prerequisite for the safety and enjoyment of participants of sport from the community level through to the professional game.

Installation of land drains into a regraded area using a chain trencher

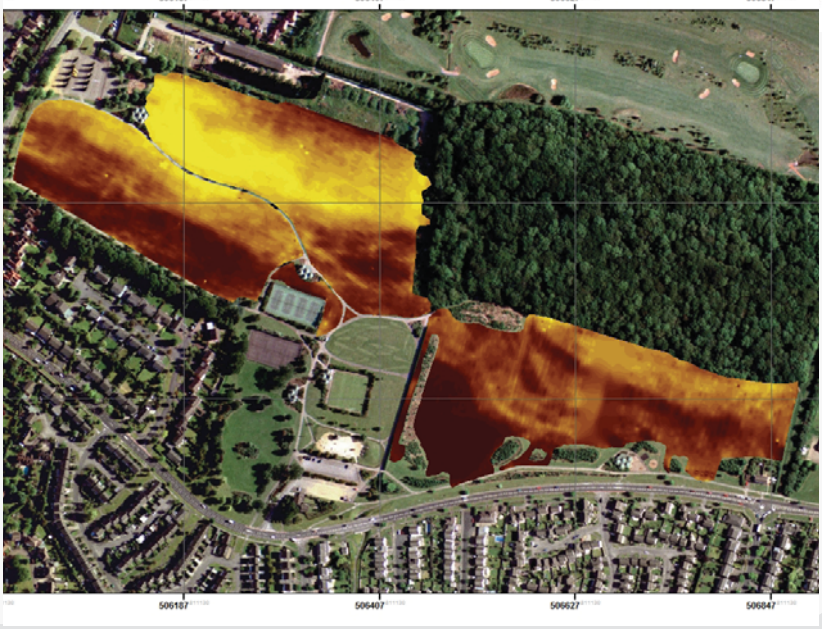
Installation of sand grooves

Existing Pitch Layout

Key

- Mini Football Pitch
- Junior Football Pitch
- Senior Football Pitch
- Rugby Pitch

Electromagnetic Induction (EMI) Scan Image 0 to 1.2 m depth. The dark brown areas indicate the presence of slowly permeable clay which requires the installation of a land drainage scheme.



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The EMI survey revealed two distinct soil types (Evesham 3 and Efford 1), which have different drainage characteristics as a result of their respective clay contents. The presence of these different soil types across the site is a direct result of glacial action more than 10 thousand years ago and is clearly differentiated in the EMI scan imagery. Evesham 3 appears as 'browner' colours and Efford 1 appears as 'yellow'. The high clay content of Evesham 3 impedes the rate at which water can percolate through the soil profile, which can lead to saturated conditions at the surface, particularly during the winter months when the rate of precipitation exceeds the rate at which water can be removed from the profile through drainage, evaporation or transpiration through grass leaves.

Pitch drainage

To address the surface water drainage problems encountered at Mowsbury Park, a surface water bypass drainage scheme was designed and installed.

This comprised a series of perforated pipe drains laid in gravel-filled trenches at 7m spacing, in combination with sand slits installed at right-angles to these drains at 2m spacing. In addition to this, sand grooves were also installed on a proportion of pitches where the drainage problems (i.e. areas with the highest clay content) were most severe.

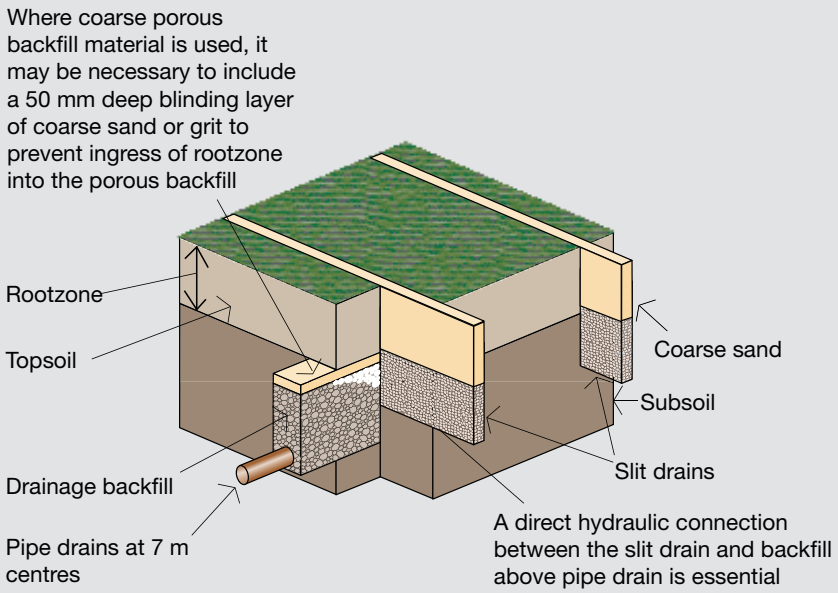
With this type of drainage scheme, it is essential that a thin sand layer is spread across the top of the drained pitches to ensure that the sand slits and sand grooves do not become capped over by soil during play. Normally, it is recommended to apply at least 25 mm of sand during the first two years post construction. After this time, additional sand may be required depending on the intensity of use and the maintenance of the site.

Schedule of Areas in hectares (ha)

Gross site area (Natural turf pitches)	15 ha
Pitch Area for the prject works	5 ha

General Accommodation / Standards

Football	7 senior pitches 2 junior pitches 3 mini pitches
Rugby	1 junior pitch
Cricket	5 squares (8 pitches each)



Obtaining Statutory Consents

- Planning permission was not required
- Land drainage consent was obtained from The Bedfordshire and River Ivel Internal Drainage Board
- The project was split into 2 phases to enable continuity of use, albeit at a reduced level, throughout the construction period. Each phase was grown-in for a period of approximately 12-months prior to first use.

General Description of Key Specifications and Materials

Lateral drains	80 mm diameter perforated corrugated plastic at 0.55 m depth
Collector drains	150 mm diameter corrugated plastic at 0.60 m depth
Sand grooves	20 mm wide, 150 mm deep, 260 mm spacing
Drainage water outfall	Headwall in ditch leading to brook
Topdressing sand	Washed sand of predominantly 0.125 - 1.0 mm particles
Grass seed	Dwarf – rye dominated seed mix

Summary of Elemental Costs

	Element	Total Cost (£)	Cost (£) per m^2
1	Earthworks	18,000	0.36
2	Drainage	145,000	2.90
3	Cultivation and seeding	6,000	0.12
4	Initial maintenance	57,000	1.14
5	Preliminaries	2,000	0.04
6	Contingencies	10,000	0.20
7	Consultant Fees	15,000	0.30
	TOTAL CONTRACT SUM	253,000	5.06

Notes:
1. Costs stated are approximate 'rounded-up' at 2009.
2. The above contract sum excludes the initial maintenance for 12 months following construction.
3. Caution should be taken when using any sets of figures, and professional advice should be sought regarding current market rates.

"...As a direct result of the drainage works, pitch usage at Mowsbury Park has increased from less than 2 hours per pitch per week to more than 6 hours per pitch per week..."

Click here for **'User Guide'**

Click here for current **'Design and Cost Guidance'**

Environmental Sustainability

- Promoting natural grass growth
- Reduced leaching of fertiliser compared with pitches constructed from sand
- Low irrigation requirements.

Procurement / Programme

Tender	Single stage
Contract	Traditional
Duration	15 months from Stage C to practical completion

Performance Quality Standards

Performance Quality Standards (PQS) for natural turf sports pitches provide a mechanism for objectively benchmarking the quality and performance of sports surfaces as well as assisting with their management. PQS for a range of parameters (e.g. drainage rates, surface uniformity, pitch gradient, grass cover, surface hardness and the presence of weeds) was assessed prior to, and following the construction works in order to ensure that the project delivered playing surfaces of an acceptable standard for the level of play anticipated.

Final cultivations of regraded area prior to seeding

Grass emergence and establishment following seeding