

Natural Grass Pitches



Football Foundation

This guidance is intended as an aid for use in the design and construction or improvement of natural grass pitches. The Football Foundation in partnership with The FA have a number of years of experience in the provision of sports facilities and best practice and the following information should assist both you and your appointed consultants when undertaking the feasibility study, scheme development and application details.



Creating well designed and constructed grass pitches for football is a major objective of the Football Foundation through its grant aid programme and this guidance details the key issues including initial feasibility study, design and specification, construction considerations and performance standards.

Data sheet Ancillary Works should also be consulted alongside this document. If you require clarification of any items then please contact your regional Technical Advisor for advice. Their details can be found at www.footballfoundation.org.uk/apply/facilities-grant/help-with-your-application/facilities-grant-staff.

Project brief

It is recommended that prior to the selection and appointment of your professional team; you should look to gather the following information:

- A site plan that shows the extent and scope of your land ownership, legal agreements, covenants, way-leaves and rights of way, existing buildings, mains services and pitch layouts, local knowledge of ground conditions and any other site factors.
- A maintenance arrangement, detailing who will be responsible for the maintenance of the pitch and what your annual budget will need to be to provide good quality maintenance.
- Layout details of existing and proposed number of pitches, existing and future programme of use including age and sex of players ie: senior, junior, male and female and Mini-Soccer. This may determine that possible additional changing rooms are required. It is recommended that adult male football is played at different times to junior and female games and it may help to draw up a matrix of use for each pitch.
- Is there adequate changing provision on the site? If not this may need to form part of your project.
- Will you need additional car parking?
- Access must be provided for use by spectators/players with disabilities.
- Consider any other sports uses and events that the facility may host.
- What is the expected level of user performance, for example local league or county standard?
- Devise a project programme, including realistic timetables for commencing and completing your project.
- Initial consultations with the Local Planning Authority, are recommended in order to gauge the likelihood of gaining any planning permission's that may be required before expenses are incurred in obtaining detailed plans or surveys.
- For pitch drainage schemes your project may also require approval from The Environment Agency or local authority to discharge into an existing drainage system.
- Possible funding sources and initial capital provision should be explored. The Football Foundation expects you to have exhausted all other possible funding avenues and be able to show evidence of this.

Remember – your Football Development Plan and matrix of use should be in place before your design. This is the driving force for your project as this will reflect the need for your facility.

Professional advice

The construction and regeneration of natural grass pitches is a specialist area and for all but the smallest projects it is recommended you seek the advice of an experienced independent professional in this field, also known as an Agronomist. As well as giving appropriate technical advice, an experienced professional should be able to give specific guidance on the financial and contractual implications of the proposed work.

Interview potential consultants, ensure you would be happy working with them, find out what services they provide and at what cost and importantly what their experience is. An Agronomist that has already had experience of similar grant aided schemes should be aware of the requirements of the funding organisations. Speak with personnel from other clubs who have already been through the experience and find out which Agronomists and contractors were used, this advice can be extremely useful.

Having made your selection your appointed Agronomist may undertake the following services on your behalf:

- undertake an initial survey of the site to establish levels and general condition of the surface and soils;
- produce a feasibility study suggesting the best option for the way forward and identifying a budget cost for each;
- develop a design and full specification document for the work to be undertaken and in most cases this will include a contract sum analysis;
- provide details of a suitable maintenance regime to be followed once the pitches come into use;
- compile a detailed pre-tender estimate covering the scheme content;
- recommend a suitable procurement method detailing the form of contract to be entered into between the parties;
- obtain at least three competitive tenders for the work based on the documents detailed above;
- prepare a tender evaluation report and recommendation of which tender to accept and which contractor to employ;
- undertake project management services during the construction phase including preparing interim payment certificates, signing off each element as its completed and compilation of the final account.

Remember – It is important you seek advice from the Football Foundation and your FA Regional Facilities Manager before engaging in potentially costly consultant advice.

Project viability

You should be able to provide a good case for the need of your project. An initial feasibility study will help with this and with the development of the design and should be undertaken by your consultant.

Items that should be included in a study are;

- site description
- access, car parking and emergency vehicle access
- site boundaries and adjoining owners, including uses
- topography (levels, trees and special features)
- where drainage improvements are required a positive outfall should be identified into which water from the site can be discharged. Consent must be obtained from bodies such as the Environment Agency and/or the local authority if utilising existing watercourses or surface water drainage systems
- orientation, view of the pitch and exposure to wind and weather
- proximity to changing facilities
- geotechnical investigation (ground conditions)
- town planning issues including land designations.

It is important to note that your feasibility study does not constitute a specification and only indicates the principles involved in the creation of the playing surfaces.

Following completion of the feasibility study your appointed consultant should be retained to prepare the design, compile a full specification, compile tender documentation and obtain tenders for the work. Finally the consultant's appointment should be extended to include supervision and project management of the scheme during the construction phase and to certify payments to the contractor and conclude the final account for the project.

Performance quality standard

Of course a decent surface is critical to ensuring enjoyment of any game as well as most importantly player safety. The basic requirement for a surface that is suitable for all standards of football is that of a flat, firm pitch that is able to take a stud and provide excellent grip. Solid, hard, unforgiving surfaces can often contribute to muscle strains and potential serious injury. Because of this The FA, in conjunction with the Institute of Groundsmanship, developed the Performance Quality Standard (PQS) which provides a recommended minimum quality standard for the maintenance and construction of pitches. Specifically, it sets the basic standard recommended for natural grass pitches, which may be located at a variety of locations including a club site, within a park or recreational ground. Principally, this recommends that a natural grass pitch must:

- have adequate grass cover
- low level of weed coverage
- Be flat
- have the ability to drain water
- carrying capacity – pitches should be able to cope with the demand laid out in your matrix of use.

The PQS has been adopted by the Football Foundation as a basic requirement for all natural grass pitch schemes.

Land purchase

In cases where an applicant wishes to purchase land to enable the provision of new pitches the Football Foundation consider the purchase cost to be an eligible item for funding providing the Football Development Plan can demonstrate the need.

Design

It should not be assumed that because an existing facility, a pavilion or pitch, for example, is located in a certain position that it should stay there. Careful re-planning will be rewarded by efficient layouts that are often easier and more economic to construct and maintain.

Consider carefully the layout of pitches to maximise the potential of the site. In particular the space and pitch marking requirements for Mini-Soccer need to be taken into account and these should always be located closest to the changing facilities wherever possible. The location of spectators needs to be considered to avoid interference or damage to adjacent playing surfaces. This can be a particular problem if football pitches are located too close to a cricket square. If you have the space available it is best to provide a variety of pitch sizes to suit different age groups.

Obviously, the shape and contours of the available site will influence the location of the facility. This is particularly true for natural turf surfaces. Generally, depending upon the standard of facility required, the playing surface should be no steeper than 1:100 along the line of play and 1:50 across the line of play.

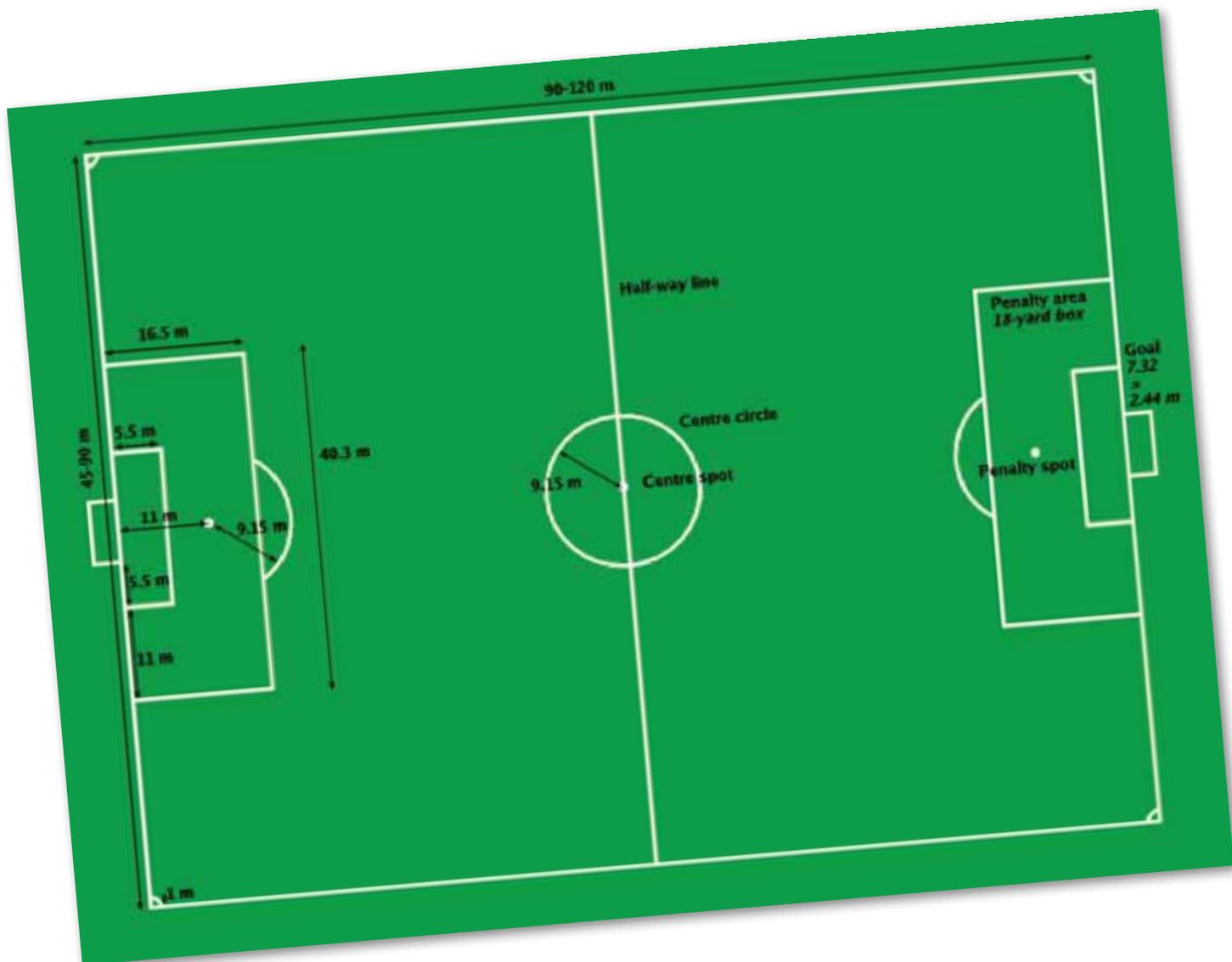


Dimensions

Football pitches have specific dimensions defined by The FA. These requirements will not only define the size of the playing surface but should include 'safety margins' around it. Additionally, they may define relationships to other facilities such as a changing room or pavilion.

The maximum and minimum dimensions for 11-a-side pitches (excluding international matches) as governed by Law 1 of the game, are shown in the table below, along with the optimum suggested dimensions.

Age group	Suggested		Pitch dimensions in yards				Pitch dimensions in metres			
	Pitch size in yards		Length		Width		Length		Width	
	Length	Width	Max	Min	Max	Min	Max	Min	Max	Min
Senior ages	110	70	130	100	100	50	120	90	90	45.5
Youth U17-U18	110	70	130	100	100	50	120	90	90	45.5
Youth U15-U16	100	60	110	90	70	50	100.6	82.3	64	45.5
Youth U13-U14	90	55	100	80	60	50	91	72.8	56	45.5
Youth U11-U12	80	50	90	75	55	45	82	68.25	50.77	42



The laws of the game allow for modification (within the principles of the laws) for matches for players under 16, for women footballers, for veteran players (35 and over) and for players with disabilities.

The laws of the game do not specify the width of the margins surrounding the touch lines, though they do specify that no advertising is allowed within one metre of the touch line or within the technical area. Many leagues lay down their own safety margins with a minimum of 1.83m (ideally 2.00m) being commonly recommended between touch lines, goal lines and any pitch perimeter barrier. In the interests of player safety it is advisable to increase this distance wherever possible.

Respect

As part of The FA Respect Campaign it is advisable to create a spectator barrier at least 1 metre from the touchline. Details can be found on The FA website at: www.thefa.com/TheFA/Respect/News/Postings/Respect_barrier_launch.htm

Line markings

The goal lines and touch lines are included in the size of the pitch. They are generally 76mm (3ins) wide, but cannot exceed a maximum of 120mm (5ins) wide (100mm for Mini-Soccer).

Mini-Soccer

Described by The FA as "the best introduction to the world's greatest game" Mini-Soccer was introduced to meet the needs of the under 10's. It is a version of the game which has been modified to fit the needs of children, rather than the other way round. The number of players will vary from 4 v 4 to 7 v 7 according to the age of the players.

Reference must be made to the criteria described in *The FA Guide to Indoor and Outdoor Areas for Small Sided Football, Mini-Soccer and Futsal* dated January 2005 for more detailed information on sizes, safety margins, markings etc.

The rules of Mini-Soccer are part of the laws of the game and the recommended sizes of the pitches are shown in the table below.

Age group	Suggested		Pitch dimensions in yards				Pitch dimensions in metres			
	Pitch size in yards		Length		Width		Length		Width	
	Length	Width	Max	Min	Max	Min	Max	Min	Max	Min
Mini-Soccer U9-U10	60	40	60	50	40	30	54.9	45.75	36.6	27.45
Mini-Soccer U7-U8	50	30	50	30	30	20	45.75	27.45	27.45	18.3
Minimum run-off – all round	3	3	3	3	3	3	3	3	3	3

Space to be left between adjoining Mini-Soccer pitches must be at least 6m (20ft) which will allow space for spectators and for safety purposes.

Mini-Soccer goal posts should measure 3.6m x 1.83m (6ft x 12ft).

When 9v9 is played The FA recommends the use of a junior size pitch 80m x 50m and junior goals 4.8m x 2.1m (16ft x 7ft).

Goalpost safety

Applicants have a responsibility for ensuring the safety of all equipment in use particularly the goalposts. The Football Foundation operates a grant scheme for the provision or replacement of goalposts but only for those goalposts which meet The FA requirements and standards. It is a requirement of all grant applications that all goalposts at your site must meet The FA requirements and standards which can be found at: www.thefa.com/GrassrootsNew/Facilities/SafetyAndRegulations/Postings/2004/02/GoalPostSafety

A list of suppliers can be found at: www.footballfoundation.org.uk/apply/goalpost-safety-grant/online-form/

Drainage

Good drainage is a key requirement and a naturally well-drained site will form a sound basis for a playing surface. On land where the soil tends to be impervious, adequate provision for supplementary drainage must be provided to meet the needs of the intended use.

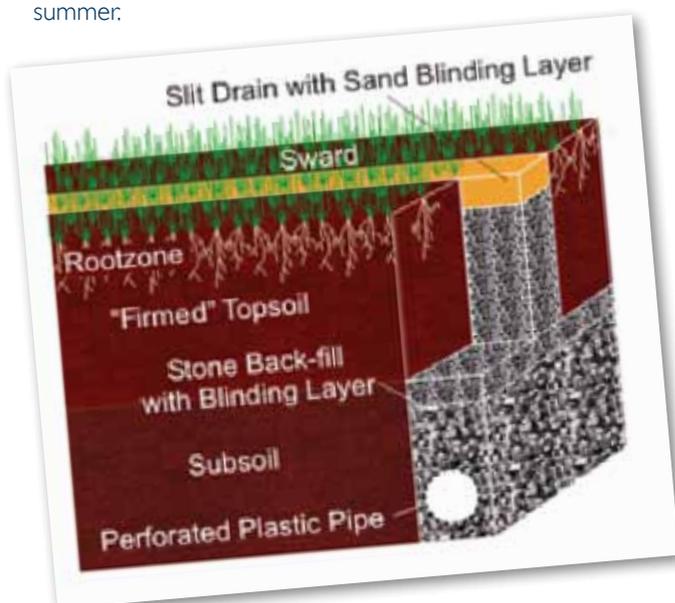
Upgrading a poorly drained pitch or constructing a new one does not necessarily solve the drainage and usage problem. Poor construction, lack of effective maintenance and overuse of the pitch will, eventually, lead to poor drainage and unacceptable playing conditions. It is essential that pitches are designed taking account of the estimated intensity of use.

The damage caused by such conditions will, at best, mean under utilisation of the playing facility and loss of revenue. In the worst case scenario complete re-construction of the playing field is required. The construction should allow for the rapid drainage of water from the surface by either a permeable construction allowing water to flow through the surface at a minimum rate of 100mm/hour into a drainage layer, piped system or combination of the two or a non-permeable system with surface gradients not greater than 1 in 100 in any direction. At the feasibility stage it is essential to consider the effects of 'run-off' from adjacent areas of land or hard surface on to the playing surface so that appropriate provision can be made.



Sport England's publication 'Natural Turf for Sport' identifies four types of pitch drainage:

1. **Undrained** – Unlikely to be adequate for regular usage unless the subsoil is naturally well drained.
2. **Pipe drained pitches** – Most common system, using perforated plastic pipes at 1:200 minimum fall laid approx. 600mm below the surface in lateral gravel filled trenches. The pipes must connect to a surface water drainage system or watercourse.
3. **Pipe and slit drained pitches** – Uses the pipe drained system with additional slit drains laid across the top of the pipes. The slits are commonly 200mm to 300mm deep, filled with gravel and dressed with minimum 75mm sand. This system requires regular maintenance with frequent sand dressing to maintain the safety and quality of the surface. The surface may be uneven during the first season and may be susceptible to shrinkage in summer.



4. **Suspended water table** – The entire playing surface is constructed over a gravel base with a lateral piped drainage system. Water is held in the sand/soil 'rootzone' and this moisture helps to sustain the grass during dry weather. A fully automatic irrigation system is needed, and some form of reinforcement is likely to be incorporated in the rootzone. This type of construction is advisable where the subsoil is unsuitable and where a very high standard of pitch performance (including high levels of play) is required, for example at professional clubs. The management and maintenance of suspended water table pitches is very demanding.

Maintenance

The quality of pitch maintenance during and after the playing season is easily the most critical factor in providing a playing surface that is fit for purpose and that lasts. The demand and expectation for good quality grass pitches is ever growing and funding is available from the Football Foundation for the provision of appropriate maintenance equipment.

The annual maintenance of winter pitches is not only important in improving the quality and quantity of sport played at a site, but is also important in reducing injuries to players. Wherever possible a robust maintenance programme should be implemented and the procedures outlined below should be regarded as routine and incorporated into the year round maintenance programme:

Mowing – Regular mowing is critical in developing a satisfactory sward particularly during the growing season. The height of cut should be kept at between 25-37mm all year round.

Fertiliser application – Around April or early May an application of fertiliser will assist in promoting growth and recovery after being in use over the Winter months.

Verti-draining – About two weeks after fertiliser application the pitches should be verti-drained. For best results the soil needs to have dried out sufficiently to maximise the fracturing and fissuring effect. Verti-draining should be dovetailed with the application of sand top dressing.

Sand top dressing – Helps maintain a sandy upper profile thereby maximising rates of surface drainage particularly if applied in conjunction with verti-draining operations. Application should be made each spring and the sand should be well worked into the base of the sward to avoid smothering the turf. This treatment is critical if a sand slit system has been introduced.

Over-seeding – Normally some over-seeding will be necessary as part of the renovation programme during spring. As a minimum the main worn areas should receive this treatment.

Weed control – Well maintained pitches should not require the application of a selective herbicide on an annual basis but a treatment every few years may be required to keep weed levels under control. Spraying of selective herbicide is best carried out in early summer when both the weeds and grasses are growing strongly to help resultant bare areas infill with grass.

Worm control – Where worms become a problem chemicals are available to optimise control and are best applied in mild moist weather most likely during the autumn and spring when the worms are active near the surface.

Winter work – For best results it is necessary to carry out maintenance work throughout the playing season. During the winter months the use of tractor mounted equipment should be limited because the ground is rarely dry enough to support a tractor without some damage to the playing surface. Heavy rolling should be avoided as this causes compaction but light rolling can

be beneficial on occasion to smooth the surface and should only be done when the ground is just moist and not when wet or dry.

Renovation – Needs to be carried out promptly at the end of the playing season in order to produce a healthy sward within the short time available before the start of the next playing season. Even in good years there is barely sufficient time and those areas that are not promptly dealt with will start the next season with an already weakened sward.

The Sport England publication 'Natural Turf for Sport' also describes the following:

- maintenance regimes and running costs
- cultivation
- grass cover and types
- upgrading pipe drained pitches
- sand amelioration
- irrigation
- maintenance equipment.

The FA provide a more detailed guide to four seasons maintenance on their website at: www.thefa.com/GrassrootsNew/Facilities/Postings/2004/03/FacDev_Guidance_WinterPitches.htm

And to the white line marking of pitches at: www.thefa.com/GrassrootsNew/Facilities/Postings/2004/03/FacDev_Guidance_Markings.htm

Irrigation

Good drainage needs to be supplemented by irrigation where possible to help with germination and grass growth during the closed season. Well drained pitches will require intensive irrigation to prevent drying out during periods of dry weather and to enable rapid grass establishment. Consideration should be given to a pumped water supply and hydrant points located near the pitches. Automatic pop-up irrigation systems are recommended for higher levels of play.

Floodlights

In general the Football Foundation does not provide funding for floodlighting for grass pitches. The provision of floodlighting for training purposes can lead to the over use of grass pitches and therefore damage the playing surface. Consideration may be given to grant assistance for portable floodlights to be used on dedicated training areas, where the Club has appropriate insurance cover and adequate secure storage.

Senior clubs playing within the non league pyramid with a requirement for floodlighting to meet FA Ground Grading can apply through the Football Stadia Improvement Fund grant system at: www.footballfoundation.org.uk/apply/football-stadia-improvement-fund-grant/online-form/.

Tender process

Your application to any funding body will have to demonstrate that professionally prepared estimates or competitive tenders have been obtained and that your proposals meet the required design, performance and construction standards. The Football Foundation requires a minimum of three competitive tenders and it is therefore considered prudent to seek a minimum of five to ensure that at least three completed submissions are returned.

Your appointed consultant should advise on procurement methods and the tender process and should include:

Pre-tender

- a short list of experienced contractors that are to provide references for similar projects
- information on the financial standing of the contractor.

Tenders

Tender documents should include:

- the role and responsibility of the client's consultants
- outline scheme drawings
- planning permission and any conditions appended
- contractual preliminaries
- performance standards and specifications
- guarantees
- maintenance requirements
- planning supervision (CDM regulations)
- equipment
- other associated works.

Top tips

1. Employ a qualified Agronomist to carry out your feasibility study, prepare drawings and full specifications, compile tender documents, obtain tenders and project manage the works during the construction phase.
2. Install drainage to the entire site area so that pitch locations can be re-configured at any time to avoid over use of areas.
3. Include different size pitches where possible to cater for various age group.
4. Establish the condition of pitches against the requirement for use.

Case Study

Thurrock FC, Grays, Essex

Total project cost – £111,146

There is a significant shortage of football pitches in the Thurrock area and this project will help alleviate the present situation. Thurrock Juniors currently run over 20 teams playing at a variety of sites across the Borough. This project will free up those sites whilst allowing the Club to foster a 'team ethos' by operating from a single site.

The amalgamation of Thurrock FC and Grays Cosmos FC has provided a clear player pathway for boys and girls from entry into the game to adult football.

The project offered an excellent opportunity to provide a number of much needed, good quality, grass football pitches on four hectares of unused scrub land. The site is large enough to provide six grass pitches being, one full size, one junior and four Mini-Soccer.

Following a successful application to the Foundation from which the Club received a grant award of £86,146 in December 2007. Work began the following February to remove the existing vegetation and level the site in accordance with the FA Performance Quality Standard. The surface was prepared and seeded in the spring and the pitches will come into use for the start of the 2009/10 season.



We believe we have covered all the major issues in this data sheet, however if you wish to contribute through innovation, comment or examples of best practice then please email technical.advisor@footballfoundation.org.uk.

Disclaimer

This technical guidance note is part of a series produced by the Football Foundation. While every effort has been made to ensure that the contents are accurate the Football Foundation, its servants or agents shall not at any time be held responsible or liable for any loss, damage or expenditure arising from reliance placed upon the information in Technical Guidance Note. The information is intended as a guide, and should be supplemented where necessary by professional advice.

The Football Foundation reserves the right to amend, alter, add to or discontinue the advice contained in this Technical Guidance Note.

Should you have any queries on this Technical Guidance Note, or anything on the wider work of the Football Foundation, please do not hesitate to contact us.



The Football Foundation Trading Limited Whittington House, 19-30 Alfred Place London WC1E 7EA
T 0845 345 4555 F 0845 345 7057 E enquiries@footballfoundation.org.uk W www.footballfoundation.org.uk
Company Number 3876305 Registered in England and Wales

improving facilities • creating opportunities • building communities