

A Feasibility Study for the Development of Natural Turf Football Pitches & Cricket Facilities at

Imberhorne Farm
East Grinstead.



25th March 2026

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Job Title

A Feasibility Study for the Development of Natural Turf Football Pitches & Cricket Facilities at Imberhorne Farm East Grinstead.

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Signed



Date

25th March 2026

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1.0 INTRODUCTION AND OBJECTIVES

1.1 General

GEO Turf Consulting Limited was commissioned in February 2026 by McArdle Sport Tec to undertake a feasibility study for the proposed development.

The address of the proposed development site is:

Imberhorne Farm
East Grinstead

The site visit was undertaken by Jonathan Smith of GEO Turf Consulting on 13th March 2026.

The main objective of this report is to present the findings of the site visit and soil testing. The physical and chemical characteristics of the in-situ near-surface topsoil and subsoil were assessed. Investigating and understanding the characteristics of these aspects of the site was undertaken to assist in the preparation of pitch construction details.

The work undertaken in the preparation of this report included, but was not limited to:

- Site assessment
- Laboratory testing of topsoil and subsoil samples
- Desktop assessment of flood risks
- Surface hardness, soil moisture content and surface water infiltration rate testing
- Assessment of existing drains
- Assessment of near surface soil profile
- Assessment of existing falls

The objectives of this feasibility study are as follows:

- To prepare the outline development options for the natural turf facilities.
- To establish any possible risks associated with the works.
- To make recommendations for further investigation work where required.
- To present the technical criteria for the proposed development works.

2.0 PHYSICAL SITE SURVEY

2.1 Site Location

The site is located at:

Imberhorne Farm
East Grinstead

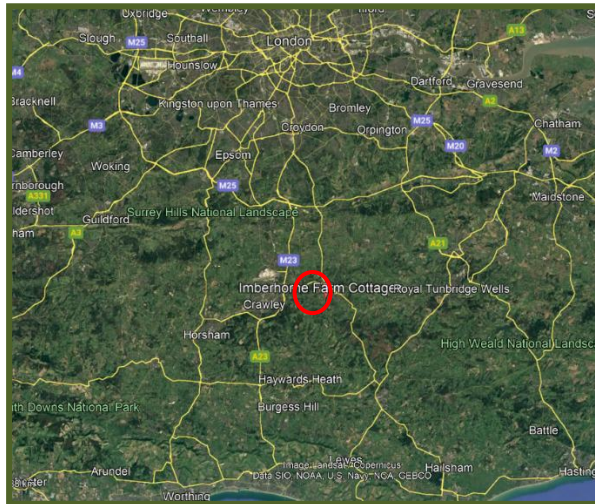


Figure 1 Site Location



Figure 2 – Location of the proposed development area.

2.2 Geomorphology

2.2.1 Geology

The British Geological Survey describes the site geology as:

Superficial deposits:

No Information

Bedrock geology:

Upper Tunbridge Wells Sand-Sandstone and siltstone, interbedded. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).

2.2.2 Hydrology

Based on information obtained from the Environment Agency website on 16th March 2026. The eastern edge of the development area is at low risk of surface water flooding (Figure 3). The whole area is outside flood-risk areas from rivers and sea (Figures 4 & 5).

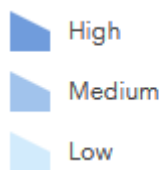


Figure 3. Flooding from surface water.

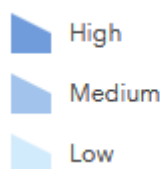


Figure 4. Flooding from rivers and sea



- Extent
- When river levels are normal
 - When there is also flooding from rivers

Figure 5. Flooding from reservoirs

2.2.3 Near-Surface Soil Profile

Four hand-dug trial holes were dug on the field and the soil profile encountered is detailed below. The approximate location of the holes is detailed in Appendix IV.

Trial Hole 1



0-250mm clay loam topsoil – low stone content

300 -600mm moist silty clay

600mm refusal possible large stone encountered.

No groundwater encountered

Plate 1 – Trial hole 1

Trial Hole 2



0-300mm clay loam topsoil –
moderate stone content

300 - 600mm moist silty clay with iron
staining

600mm refusal possible large stone
encountered.

No groundwater encountered.

Plate 2 – Trial hole 2

Trial Hole 3



0-300mm clay loam topsoil
with low stone content.

300 - 500mm moist silty clay

500mm refusal possible
large stone encountered.

No groundwater encountered

Plate 3 – Trial hole 3

Trial Hole 4



0-250mm clay loam topsoil with low stone content.

250 – 1,000 mm moist silty clay.

No groundwater encountered

Plate 4 – Trial hole 4.

2.2.4 Topsoil & Subsoil

The topsoil within the development area is a moderately structured light brown clay loam ranging between 250 and 300mm deep. Where examined the subsoil is predominantly a soft light brown silty clay.

A topsoil was obtained by obtaining numerous micro-samples to a maximum depth of 150mm and combining them to form a bulk sample. A subsoil sample was obtained from trial hole 01. They was submitted to a test laboratory and tested for:

- Particle size analysis and stone content
- Organic matter content
- pH, & nutrients

The results of the soil laboratory test results are presented in Appendix V and are discussed below:

TOPSOIL

Particle Size Analysis

The texture of the topsoil is described as clay loam with approximately 21% of the particles in the sand fraction. The total fines (silt plus clay) content is approximately 79%. The sampled soil has a high silt content of 60%. Where examined the topsoil had a low stone content. No odorous or deleterious materials were observed where inspected.

Organic Matter

The organic matter content was 3.3% which is considered to be moderate and not excessive.

pH & nutrients

The pH value of the topsoil is a little low at 5.9 and should be increased to 6.5-7.0. The pH could be increased with the application of an amenity lime product at a rate of 2 tonnes per hectare.

Phosphorus level is adequate. Magnesium levels were on the low side. Potassium was low and can be increased with the use of good quality amenity fertiliser containing micronutrients. This would help to increase micronutrient levels which were low for calcium, sulphur boron, sodium, molybdenum, zinc and sulphur.

SUBSOIL

Particle Size Analysis

The texture of the topsoil is described as silty clay loam with approximately 13% of the particles in the sand fraction. The total fines (silt plus clay) content is approximately 87%. The sampled soil has a silt content of 64%. No odorous or deleterious materials were observed where inspected.

Organic Matter

The organic matter content was 1.8% which is considered to be acceptable for subsoil.

2.2.5 Vegetation

Grass cover was generally low with broadleaved weeds present. It appears that the field had recently been used for growing corn.

2.3 Existing Levels

The approximate direction of falls and relative levels are shown in Appendix III.

The ground within the proposed facility footprint has excessive and variable falls ranging from approximately 1 in 20 to 1 in 40, with the slope falling generally from the south to north.

Topsoil stripping then cut and fill earthworks of the subsoil is recommended to a fall of 1 in 100 south to north prior to the topsoil replacement. The proposed earthworks design to give this fall is presented in Appendix I.

2.4 Hardness & Moisture Contents Testing

Surface hardness was tested with a 2.25kg Clegg hammer at twenty locations and values ranged from 36 to 49g. The average hardness value was 39g. Ideally when the pitches are constructed the hardness levels should be in the range of 65 to 85 g.

Soil moisture content values were obtained at twenty locations in the top 50mm depth of the soil profile. Moderate to high moisture contents were recorded and values ranged from 32 to 46%. The average value was 37% and this is considered to be moderate given the time of year and topsoil texture. Ideally the moisture content for such soils should be in the range of 25 to 30% and this will result in reduced surface hardness levels.

2.5 Surface Water Infiltration Rates

Three water infiltration rate tests were undertaken with double ring infiltrometers and the infiltration rates recorded are detailed below:

Test Location	Infiltration Rate
1	2 mm/hour
2	4 mm/hour
3	2 mm/hour
Average Infiltration Rate Of Tests	3 mm/hour



Plate 5 – Water infiltration rate test.

A value of 3mm/hour is considered to be very low and will not cope with moderate to high rainfall. When soil with a high fines content such as that on the site become compacted under sports turf use drainage infiltration rates will reduce further. This is evident with standing water noticed in areas of trafficked soil. Also, the high silt content of the soil means soil will remain wet following a rainfall event. This will result in reduced durability of the playing surface and increased rate of grass loss.

2.6 Pitch Orientation

In terms of orientation of the area, Sport England has published guidance on optimum pitch orientation for a range of sports. The limits of orientation for football pitches are 285° and 20°. The limits of orientation for cricket pitches are 300° and 55°. The orientation of the football and cricket pitches are inside the ranges at approximately 10°.



Plate 6 – Facility layout.

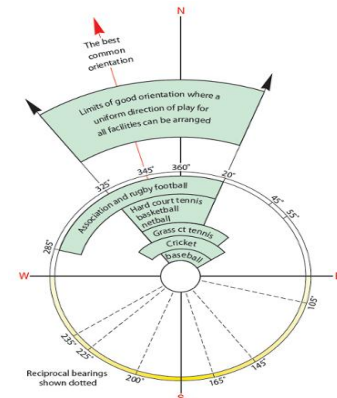


Figure 6. Recommended pitch orientation

2.7 Existing Drainage Infrastructure

Aerial photographs and the site assessment indicates there is an existing agricultural drainage system. With drains oriented east to west at 40m centres. The drains will become disrupted as a result of the earthworks required to reduce falls on the site.



Plate 7 – Existing drainage.

2.8 Agronomic Assessment

Grass cover on the area is comprised primarily of meadow grass with a high amount of broad-leaved weeds. There was also evidence of maize being grown on the field.



Plate 8 –Generally low grass density.

2.9 Pitch Usage Levels

Sport England considers the following to represent a reasonable estimation of the likely usage for a range of construction types (Ref: Natural Turf for Sport, 2000, ISBN 1 86078 103 9 – 2nd Edition, 2011) (Table 1):

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-drained with suspended water table	4 – 6

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

Table 1. Estimated Usage Levels.

The most cost effective form of drainage which is considered suitable in this instance is pipe-drained with sand grooves which will result in 3-6 hours adult use per week.

2.10 Underground & Overhead Utilities

Basic utility records are presented in Appendix II. These show that there are no public gas and electricity services within the field footprint. There were no overhead services.

3.0 RECOMMENDATIONS

3.1 Pitch & Cricket Square Construction

3.1.1 General

The topsoil should be stripped from the field and the subsoil regraded to produce a uniform fall. This operation will potentially de-structure the topsoil and this could further reduce drainage rates .

The key to producing good pitches will be to increase the rate of water movement from the playing surface through the soil and to reduce soil moisture content following a rainfall event. It is recommended that an intensive drainage system is installed and the fines content of the topsoil is reduced by ameliorating the topsoil with sand.

The topsoil is not suitable for use in the construction of a cricket square and at least 200mm depth of cricket loam should be imported. The subsoil with a high silt content could be structurally weak and hard to compact prior to placement of the loam. Consideration should therefore be given to importing and compacting an MOT Type 3 stone layer over the footprint of the square prior to placement of the loam.

3.1.2 Introduction

The recommended scope of works for the winter games pitches / outfield is detailed below.

The suggested best value drainage is based on the traditional pipe and secondary by-pass drainage system with amelioration of topsoil with sand. A new drainage system is recommended and the pitches have the potential to form a good quality playing surfaces.

Recommended Scope of Works.

- 1 Spray off grass, weeds and vegetation with total non residual herbicide
- 2 Cultivate topsoil
- 3 Strip topsoil and place in stockpile
- 4 Cut and fill earthworks
- 5 Laser grade formation
- 6 Decompact subsoil
- 7 Replace topsoil
- 8 Ameliorate topsoil with 40mm sand
- 9 Install primary drainage with lateral drains at 4.0m centres
- 10 Ameliorate topsoil with 20mm sand
- 11 Remove remaining stones
- 12 Fertilise & seed
- 13 Establish grass with intensive maintenance and irrigation.
- 14 Install secondary drainage
- 15 Top-dress with sand and over-seed
- 16 Top-up settled drains.

Given below are details of the drainage and post-construction maintenance aspects of the above recommended works.

3.1.3 Drainage Detail

The site is characterised by a high-fines content clay loam topsoil overlying silty clay subsoil. The topsoil has high silt content and such soils tend to be moisture retentive when compacted and physically weak. Such a soil is also prone to compaction and de-structuring, especially when wet.

It follows that during the winter months, when the rate of precipitation exceeds the rate at which water is removed through drainage or evapotranspiration, water may tend to accumulate within the topsoil. This can lead to saturated conditions at the surface which may prevail throughout the winter.

In some circumstances this is manifested by standing water in low areas, but more typically the soil becomes prone to excessive wear and tear and the grass sward suffers due to poor aeration status (i.e. the soil pores that are normally air-filled become filled with water leading to anaerobic conditions. In order for grass to thrive, at least 10% of the volume of the soil should comprise air-filled pores).

In order to correct this situation, the installation of a surface by-pass drainage system should be undertaken. These systems work by intercepting rain water at the surface before it has had an opportunity to soak in to the soil profile, and then removing this water to a system of piped drains. Typical systems would comprise sand grooves installed at 0.5m centres (Figure 7) linked into a system of lateral drains installed at 4.0m centres through the pitches.

The following drainage scheme is suggested, however, this can be adjusted depending on budgetary constraints. Clearly, as the intensity of the scheme is reduced so is the rapidity with which the site will drain following rainfall. Lateral drains should be installed at least 4.0m centres connecting with a system of collector and main drains discharging to the water course. The suggested drainage system layout is presented below in Figure 8.

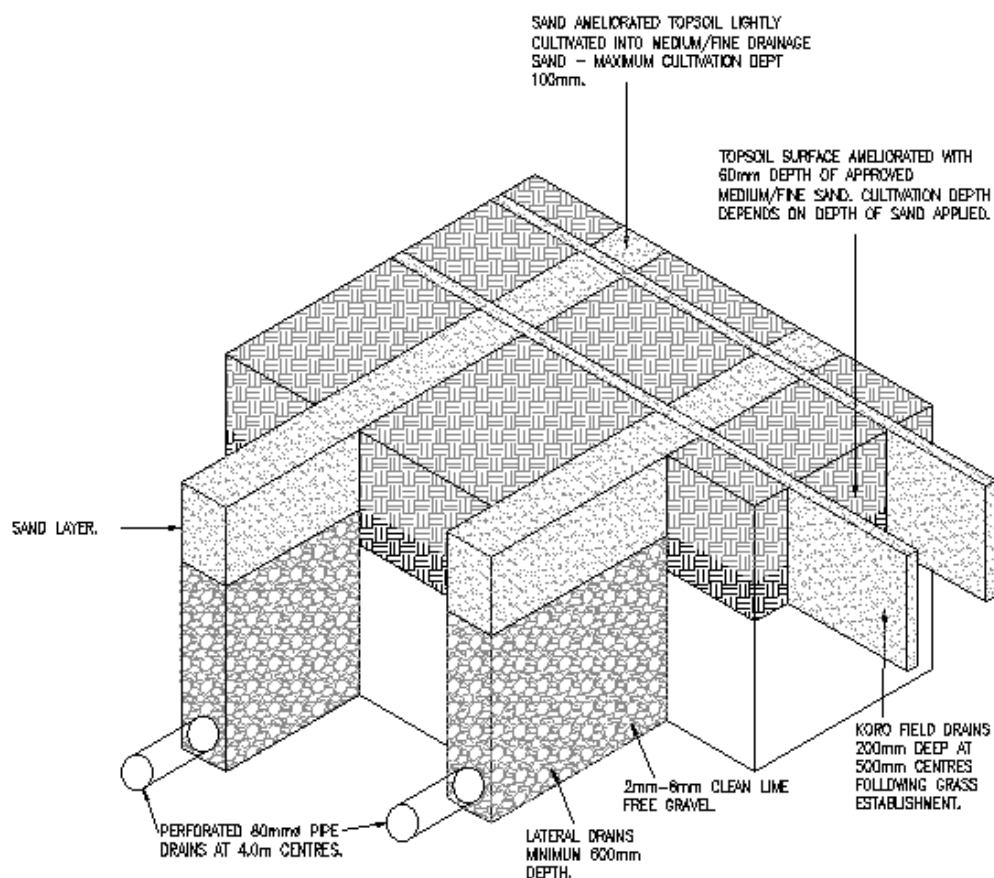


Figure 7. - Typical sand slit drained based surface by-pass drainage system

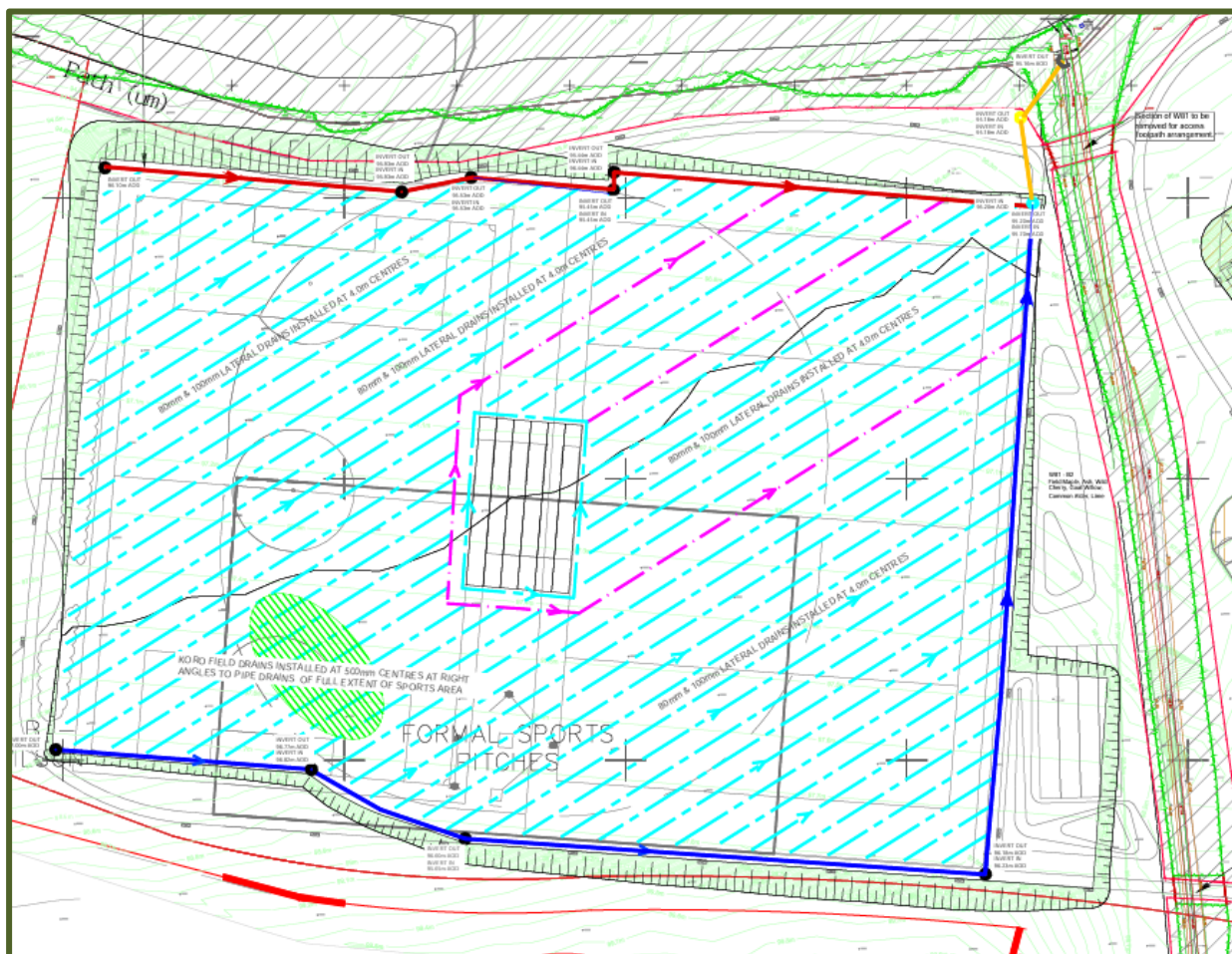


Figure 8. -Suggested drainage system layout.

3.1.4 12-Months Maintenance Post-Construction.

When the grass has grown to approx. 35mm in height the pitches and surrounds should be inspected and all stones or other debris having a dimension greater than 16mm should be collected (hand-picked) from the surface and removed to the contractor's tip off the site. The area should then be carefully rolled, with a flat roller, during suitable ground and weather conditions.

When the grass is no longer than 50mm the areas should be mown, with the height of cut set at 25mm – 35mm, using sharp gang mowers or other approved mower. Mowing should be repeated as and when required, not allowing the growth of the grass to exceed 50mm.

The soil analyses indicated inadequate nutrient levels. Following initial establishment of the grass the soil pH and nutrient levels should be reassessed. A fertilizer programme should be carried out to include for (a minimum) 1 No. application of a proprietary autumn/winter fertilizer and 2 No. applications of a proprietary spring/summer fertilizer, all at the appropriate season. Any defects and/or reinstatement works should be remedied and completed in an approved manner.

Depending on the construction timetable, it is possible that on-going maintenance will be required for the first 12-months following completion of the works. This will include the following items:

1. Mowing & fertiliser application.
2. Compaction alleviation (e.g. Verti-draining).
3. Sand topdressing (2 x 5mm applications).
4. Selective weed control (as required).
5. Pest and disease control (as required).

3.1.5 Irrigation.

If possible it is recommended that at least a basic irrigation system is installed. A cost effective system would be the Briggs Rota Rainer system. It should be noted that this is not an automated system and management will be required. Some damage may be caused to the new grass and pitch surface during the early grass establishment phase and remedial works will most probably be required.

Typically the Briggs Rota Rainer system comprises of a booster pump, water storage tank, pipe work and self-travelling irrigator. If there is adequate mains water pressure (2.5 – 3.0 bar) then it may be possible to run the Briggs Model 2 directly off the mains without the need for a booster pump and water storage tank. A supplier of the Briggs Rotator Rainer system is UK Pump Supplies.

Further investigation is required with regard to the suitability and pressure of the incoming water supply. It should be noted that the cost of mains water is approximately £2.00/m³. During the irrigation season from May to September there may be a requirement to apply up to 40m³ of water per day. To reduce the cost of mains water the option of installing a borehole could be looked into. It is possible to install a borehole and abstract up to 20m³ of water per day from this or a stream without having to obtain a licence from the Environment Agency.

If a borehole is to be drilled it is recommended that a borehole prognosis report is procured in the first instance. The installation of such an irrigation system would be beneficial in future years helping to improve grass and pitch quality.

3.2 New Drainage System Discharge

A drainage system will need to be installed as part of the pitch development works.

It is understood that attenuation of the drainage water from the proposed pitch drainage system is not required.

If attenuation of drainage water is required then attenuation features could be one or a combination of the following

- Large size carrier pipes or,
- Underground high capacity attenuation crates
- Stone filled trenches
- Swales.

Attenuation crates are as shown below in Figure 9.

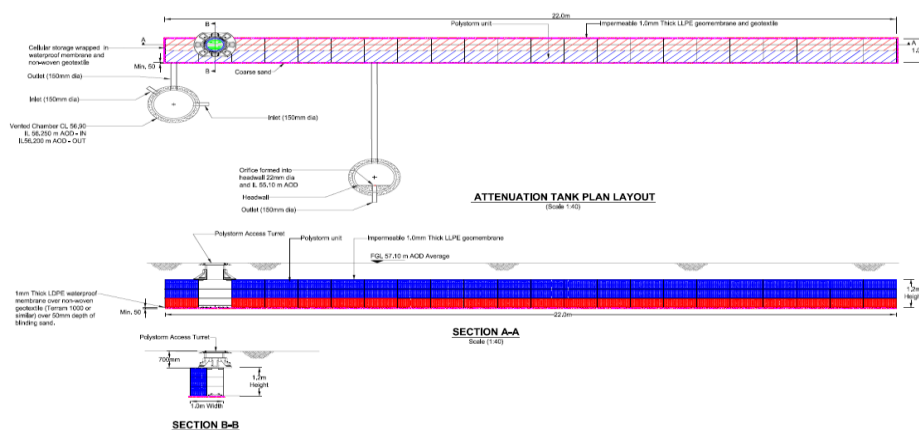


Figure 9 – Typical detail of attenuation crates which are installed below ground

3.3 Implications of Works On Future Maintenance, System Longevity & Usage

3.3.1 *Maintenance issues*

With surface bypass drainage systems, such as that recommended it is essential that adequate allowance is made for annual sand topdressing as this helps to protect the sand slits from contamination with topsoil. As a guide it is recommended that at least 4mm depth of sand should be applied annually as part of the renovations programme. A 4-5mm depth of sand would equate to approximately 160t at a cost of approximately £8,000.00+VAT (2026 prices) per full size pitch. Ideally two dressings should be made in the first twelve months following the drainage installation works.

Land drains can be prone to differential settlement (i.e. there can be some sinkage over the drain lines) as the soil surrounding the drain pipe dries out and shrinks; this is perfectly normal in new constructions. Whilst topping up drain lines is usually covered by the contractor during the first 12-months following construction, it is possible that drains may continue to sink to some extent after this time. Therefore, there should be some allowance within the maintenance programme to ensure that drains are kept topped up. The installation of an irrigation system will help to reduce the likelihood of settlement within the drains.

Ideally the pitches should be subjected to annual renovation and depending on the condition of the pitch the works required could range from light scarification, aeration, top-dressing fertilisation and over seeding to full removal of surface vegetation and re-establishment from seed. At present day cost the latter operation could cost in the order of £20,000.00 exc VAT. This does not include the cost to grow-in the new grass.

During the irrigation season (April to September) there will be a requirement for approximately 40m³ of water per day to adequately irrigate each pitch. In most areas the cost of mains water is approximately £2.00/m³. If required, the option to install a borehole could be looked at as this may prove to be more cost-effective overtime. It should be noticed that the licensing process for a new borehole can presently take up to two years. However 20m³ of water per day can be abstracted from a borehole or water course without a licence.

Outline maintenance procedures are presented in Appendix VII.

3.3.2 *System longevity*

Whilst only a guide, the piped drainage system should have an operational lifespan of approximately 20 - 25 years if well maintained (e.g. silt traps regularly inspected and emptied and collector drains flushed).

If managed well (i.e. annual sand topdressing) and not over-used the slit drains should have an operational lifespan of 5–7 years, hence a sinking fund should be in place to repeat this operation.

4.0 CONCLUSIONS

4.1 Introduction

Natural drainage properties of the topsoil are poor and the installation of a drainage system and amelioration of the topsoil with sand would help to improve drainage performance and durability of the proposed pitches.

A new drainage system should ideally comprise of a pipe drainage system and secondary drainage. At least a basic form of irrigation installation is recommended.

The new drains have the potential to settle especially during the summer period when the clay subsoil will shrink. Topping up of the drains will be required for at least several years following installation. Irrigation will help to reduce the degree and extent of settlement.

The topsoil is not suitable for use in the construction of a cricket square and at least 200mm depth of cricket loam should be imported. The subsoil with a high silt content could be structurally weak and hard to compact prior to placement of the loam. Consideration should therefore be given to importing and compacting an MOT Type 3 stone layer over the footprint of the square prior to placement of the loam.

4.2 Proposed Drainage

A new drainage system is recommended and it will be possible to discharge this into the stream on the eastern side of the site. It is understood that attenuation of water from the new drainage system is not required.

4.3 Planning Consent

Planning Consent for the works will be required and the Local Authority and it is assumed that this is in place.

4.4 Soil & Ground Conditions

The topsoil is a clay loam with high silt and a low stone content. The topsoil has poor natural drainage capacity when compacted and will be weak and prone to compaction, especially when wet. The subsoil is a silty clay and poorly drained.

4.5 Geomorphology

The eastern side of the site is at low risk of surface water flooding. It is not at risk from flooding from rivers, seas and reservoirs. No groundwater was found to be present within 1.0m of the ground surface.

4.6 Pitch Orientation & Falls

The orientation of the pitches and cricket square are inside the ideal range stipulated in the Sport England guidance. The overall gradients are in excess of guidance values and are not uniform. These should be reduced by stripping the topsoil cut and filling the subsoil followed by topsoil replacement.

4.7 Site Access & Services

Site access is a little restricted but there would be room to form a contractor's compound to the south of the proposed development area.

4.8 Irrigation

The installation of at least a self-travelling irrigation system is recommended. The installation of a abstracting water from the stream supply should be investigated as 20m³ of water can be abstracted per day without a licence. There could however be a requirement for up to 40m³ per day of irrigation water. 20m³ could also be abstracted per day from a borehole without a licence.

4.9 Underground Services

A basic underground services search was undertaken and these show that for the services gas and electricity searched none were present within the area footprint. Further comprehensive investigation for site services should be undertaken prior to any site works commencing.

4.10 CDM H&S Regulations

The proposed works will come under the requirements of the 2015 CDM Health & Safety regulations. A CDM Planning Principal Designer will need to be appointed to manage the H&S process during the design stage. CDM Regulations should be reviewed and fully understood and the Client has responsibilities. The project may need to be notified to the HSE by completing and submitting an F10 form to them.

5.0 CONTACT DETAILS

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6.0 ADDITIONAL POINTS

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 natural turf facilities 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. 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.

All relevant Health and Safety Regulations must be observed and the works, as more widely described, would fall within the scope of the Construction (Design & Management) Regulations 2015 (CDM 2015).

Confidentiality

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Appendix I: Facility Layout

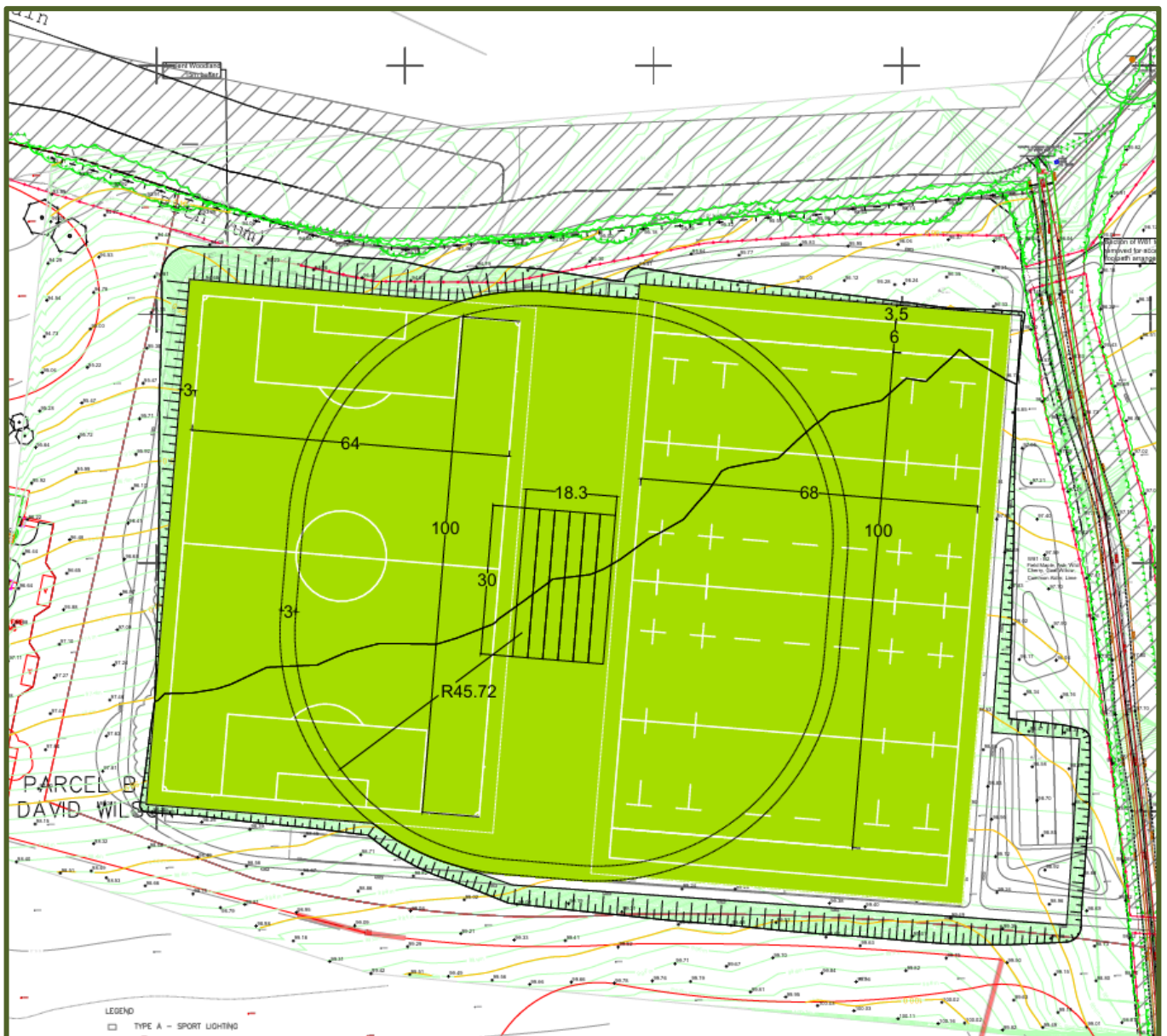
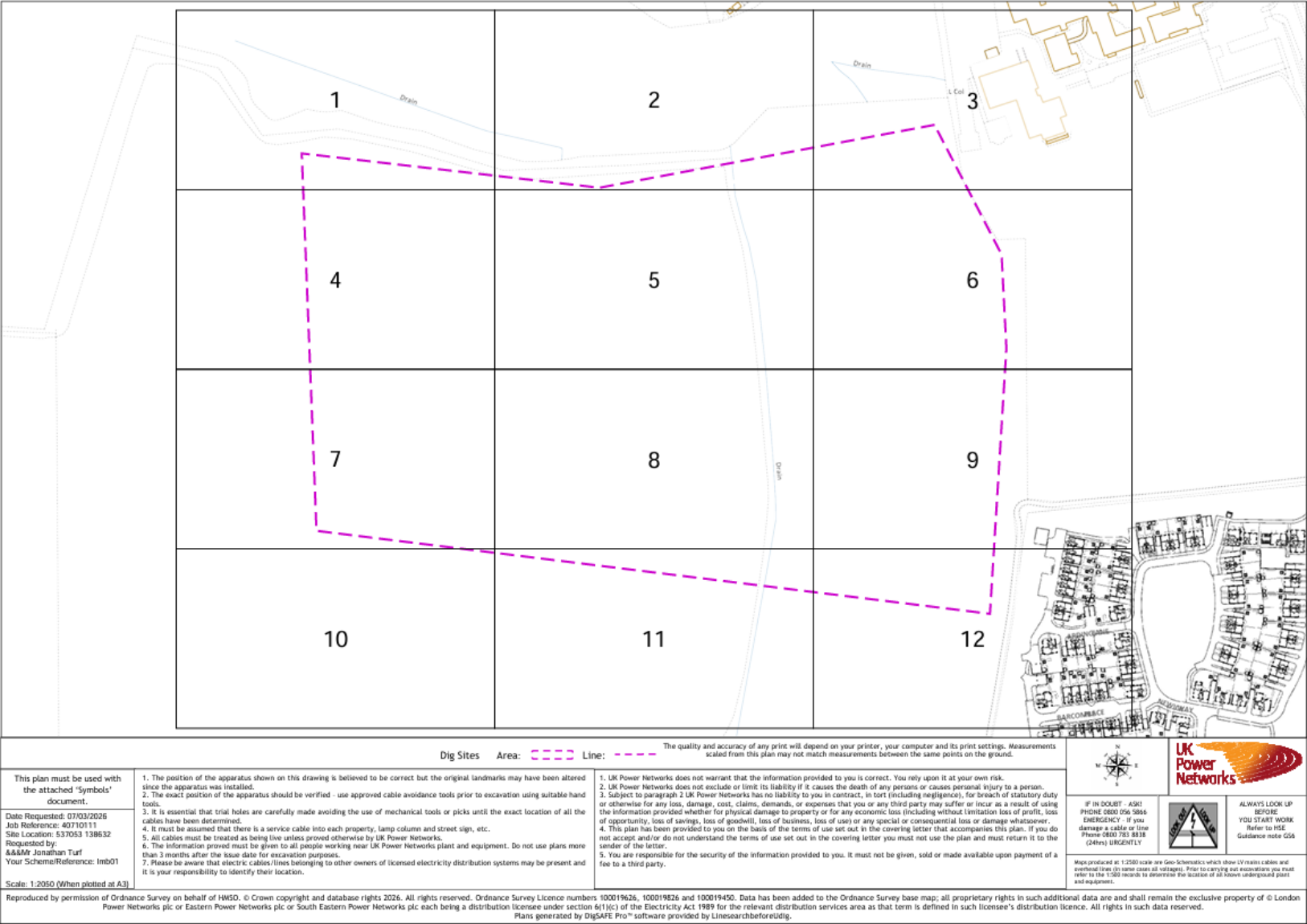
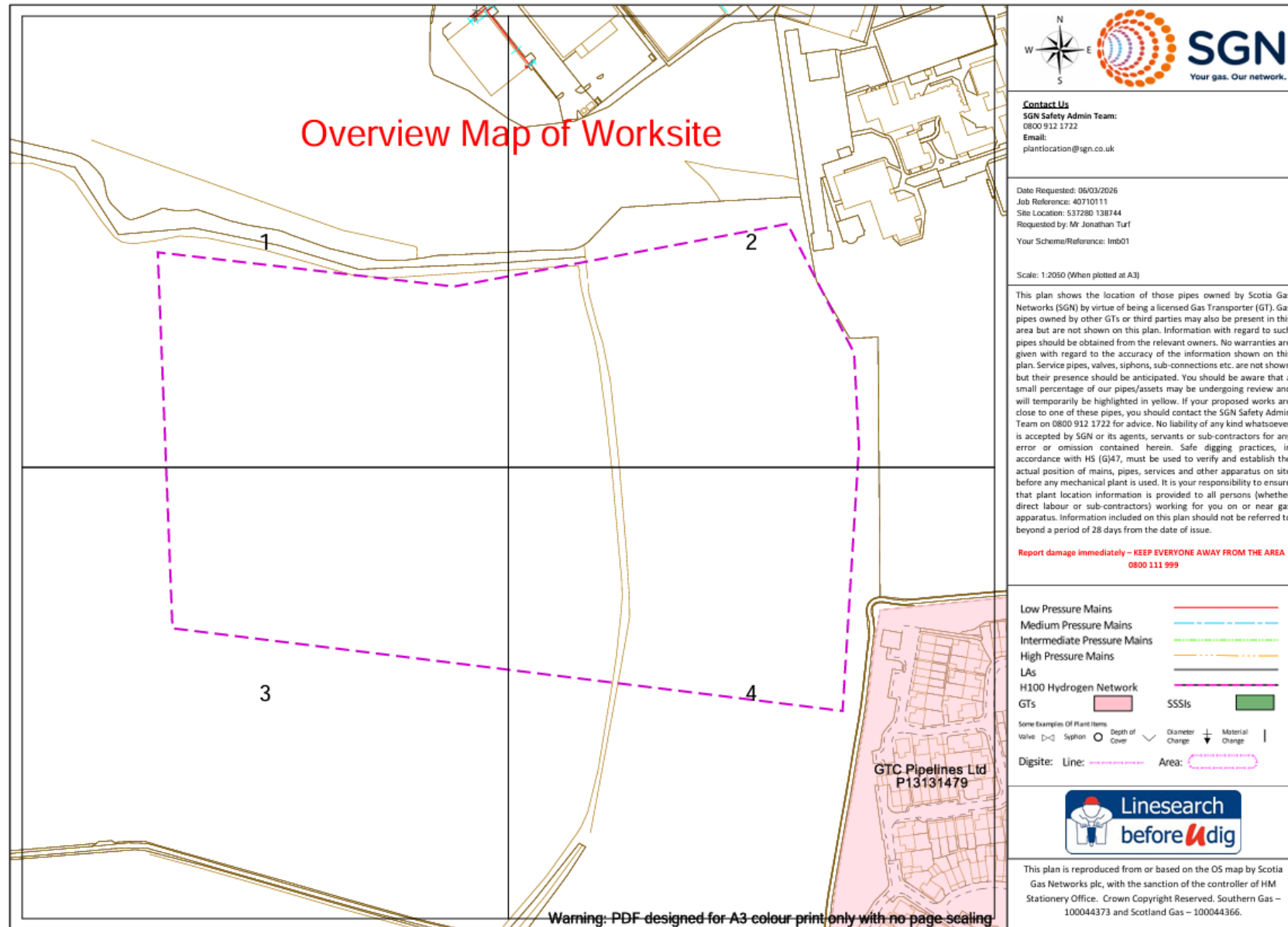


Figure 10. Proposed Facility Layout.

Appendix II: Basic Site Services

Electricity





List of not affected LSBUD members

(LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)

Advanced Electricity Networks	Air Products PLC	AllPoints Fibre
Angus Energy	AWE Pipeline	B & D Energy Limited
Bakkafrost Scotland Limited	Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)
Box Broadband	BP Exploration Operating Company Limited	BPA
Burwell 11 Solar Limited	Cadent Gas	Cambridge Water
Cambridgeshire County Council Climate Change and Energy Services	CATS Pipeline c/o Wood Group PSN	Cemex
Centrica Storage Ltd	CNG Services Ltd	Concept Solutions People Ltd
ConocoPhillips (UK) Teesside Operator Ltd	D.S.Smith	Diamond Transmission Corporation
DIO (MOD Live Pipelines)	Drax Power Limited	Eden Estuary Energy Limited
EDF Energy Renewables Ltd	EET Fuels	EirGrid
Eleclink Limited	Electricity North West Limited	Energy Assets Networks
ENI & Himor c/o Penspen Ltd	EnQuest Heather Ltd	EP Langage Limited
ESB CCGT Power station (Carrington Gas Pipeline)	ESP Utilities Group	Esso Petroleum Company Limited
euNetworks Fiber UK Ltd	EXA Infrastructure	Exolum Pipeline System
Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited	G.Network Communication Ltd c/o JSM Group Ltd
Gamma	Gas Networks Ireland (UK)	Gateshead Energy Company
Gigaclear Ltd	Greenlink Interconnector Ltd	Harbour Energy
Heathrow Airport LTD	Humbly Grove Energy	IGas Energy
Impala Terminals Infrastructure Ltd	Indigo Networks	INEOS FPS Pipelines
INEOS Manufacturing (Scotland and TSEP)	INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited
Intergen (Coryton Energy or Spalding Energy)	Kensa Utilities	Last Mile
Liverpool City Region Connect	Mainline Pipelines Limited	Manchester Jetline Limited
Manx Cable Company	Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited
Mining Remediation Authority	MUA Group Limited	Mutual Energy
National Gas Transmission	National Grid Electricity Distribution	National Grid Electricity Transmission
National Grid Ventures	Neos Networks	Northern Gas Networks Limited
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	Ogi	Oikos Storage Limited
Ørsted	Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)
Petroineos	Phillips 66	Portsmouth Water
Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)	RWEpower (Little Barford and South Haven)

SABIC UK Petrochemicals	SAS Utility Services Ltd	Scottish and Southern Electricity Networks
Scottish Power Generation	Seabank Power Ltd	SES Water
Shell	Shell NOP	South Staffs Water
SP Energy Networks	Spring Fibre Limited	SSE Generation Ltd
SSE Private Networks / iDNO	SSE Transmission	Storengy
Sutton Bridge Power Generation	Tata Communications (c/o JSM Construction Ltd)	TfL – London Underground HV Cables (Road & Track Side Cables)
toob Limited	Total (Colnbrook) c/o Penspen	Total Finaline Pipelines
Transmission Capital	Trojan Energy Limited	UK Power Distribution
Uniper UK Ltd	University of Cambridge Granta Backbone Network	Vattenfall
Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd	Virgin Media O2
Voneus Limited	VPI Power Limited	Wales and West Utilities
Welsh Power	West of Duddon Sands Transmission Ltd	West Sussex OpenNetwork (Cooperative National Infrastructure)
Westminster City Council	Winnington CHP Ltd	Zayo Group UK Ltd c/o JSM Group Ltd

Non-LSBUD members (Asset owners not registered on LSBUD)

(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.

Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
Bring Energy	nrrswa@bringenergy.com	0800 130 3600	Not Notified
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@ocugroup.com	02087314613	Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrrswa@sky.uk	02070323234	Not Notified
Sota	sota.plantenquiries@ocugroup.com		Not Notified
South East Water	water.maps@southeastwater.co.uk	0333 000 0059	Not Notified
Southern Water		03303030368	Not Notified
Utility assets Ltd	assetrecords@utilityassets.co.uk		Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkinsglobal.com	01454662881	Not Notified

Appendix III: Existing Approximate Falls

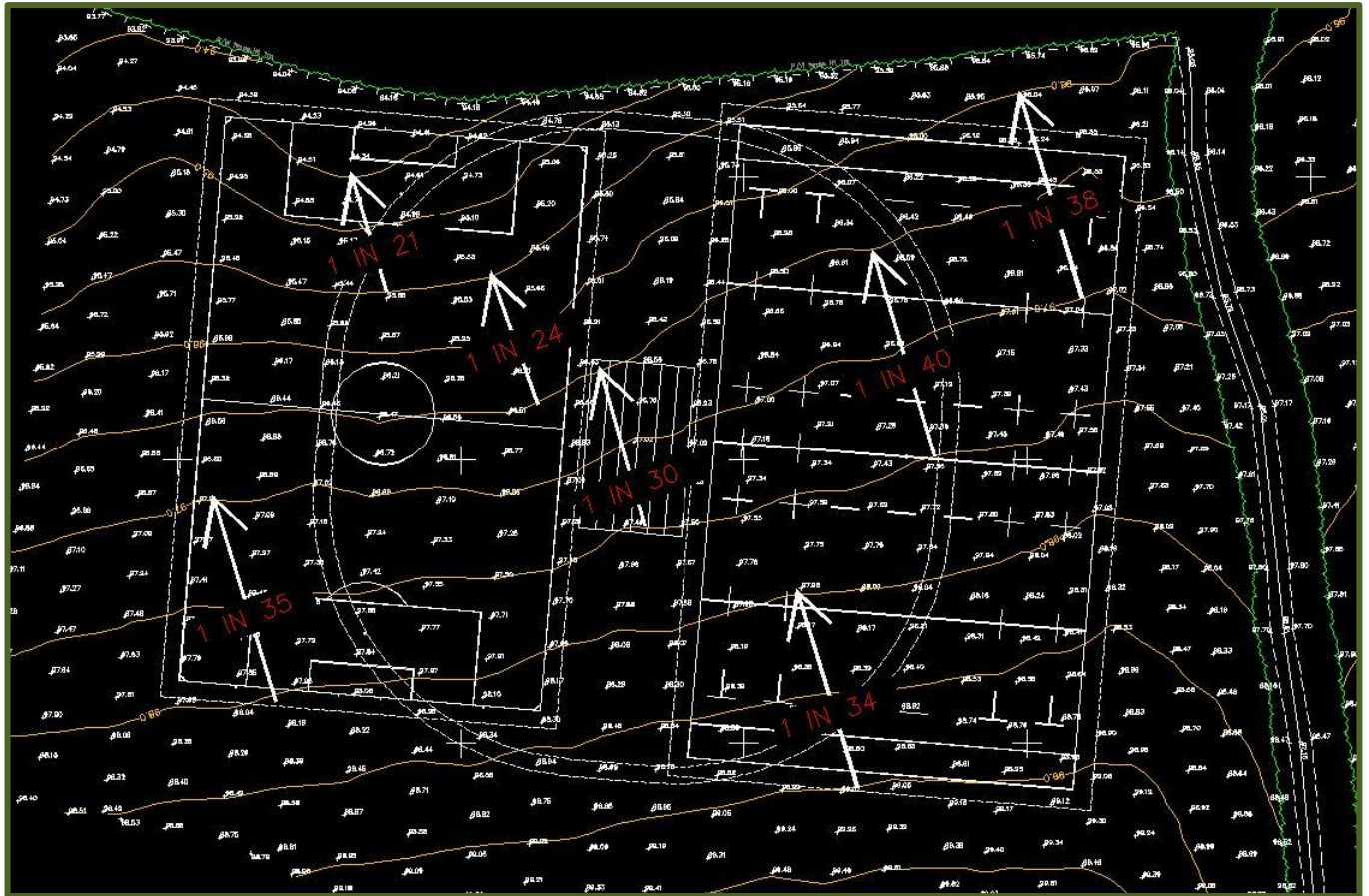


Figure 11. Existing Approximate Falls .

Appendix IV: Approximate Trail Hole Locations



Figure 12. Approximate Trial Hole Locations .



Soil analysis report

Customer GEO TURF CONSULTING
82 COG ROAD
SULLY
VALE OF GLAMORGAN
CF64 5TE

Distributor GEO TURF CONSULTING LTD
82 COG ROAD
SULLY
PENARTH
VALE OF GLAMORGAN
CF64 5TA

Sample no. G185320/01-2
Samples 2

Received 19/03/2026
Issued 24/03/2026 (issue 1)

Order summary

Order number	Crop	pH	P (ppm)	K (ppm)	Mg (ppm)	OM (%)
G185320/01 IMBER HORNE SAMPLE 1	NO CROP SPECIFIED	5.9	21 (2.5)	68 (1.1)	41 (1.6)	3.3
G185320/02 IMBER HORNE SAMPLE 2	NO CROP SPECIFIED	7.2	3 (0.3)	37 (0.6)	23 (0.9)	1.8

Index: (0-9) Soil nutrient indices from AHDB Nutrient Management Guide (RB209)



Soil analysis report

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82 COG ROAD
SULLY
PENARTH
VALE OF GLAMORGAN
CF64 5TA

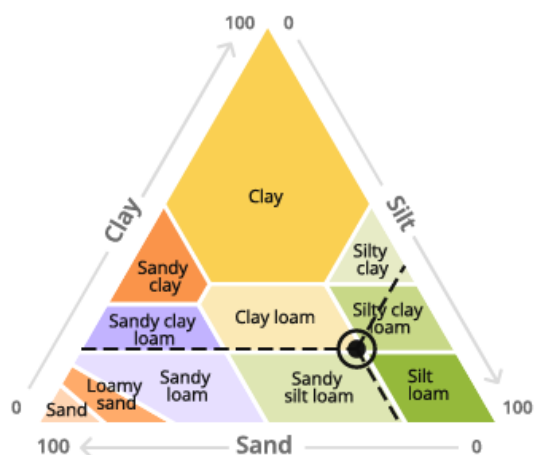
Sample ref. IMBER HORNE SAMPLE 1
Sample no. G185320/01
Crop NO CROP SPECIFIED

Received 19/03/2026
Issued 24/03/2026 (issue 1)

Soil characteristics	Result	Guideline	Low		Medium		High	
pH (L/R 6 t/ha)	5.9	6.5						
C.E.C. (meq/100g)	10.8	15.0						
Organic Matter (LOI) (%)	3.3	3.0						
Organic Carbon (LOI) (%)	1.9	1.7						
Primary nutrients	Result	Guideline	0	1	2-	2+	3	4+
Phosphorus (ppm)	21	16						
Potassium (ppm)	68	121						
Magnesium (ppm)	41	51						
Secondary & micronutrients	Result	Guideline	Low		Medium		High	
Calcium (ppm)	1582	1600						
Sulphur (ppm)	2	10						
Boron (ppm)	0.88	2.10						
Copper (ppm)	5.0	2.1						
Iron (ppm)	1030	50						
Manganese (ppm)	94	15						
Molybdenum (ppm)	0.02	0.60						
Sodium (ppm)	20	90						
Zinc (ppm)	3.2	4.1						

Physical analysis

Soil texture



Soil texture	Result (%)
Sand	21.35
Silt	59.87
Clay	18.78
Soil type	CLLo - Clay Loam
Property	Assessment
Available water	Medium to High
Drainage rate	Medium to Slow
Inherent fertility	Medium to High
Potential C.E.C.	Medium to High
Leaching risk	Moderate to Low
Warming rate	Medium

Interpretation and comments

Soil characteristics		Result	Guideline	Comments
pH (LR 6 t/ha)	●	5.9	6.5	Low. An acidic environment will reduce soil nutrient availability and the efficiency of any applied fertilisers or organic materials. A sub-optimum pH will also impact on soil microbial populations and rates of activity. Refer to lime requirement.
C.E.C. (meq/100g)	●	10.8	15.0	Cation Exchange Capacity indicates a slightly low nutrient holding ability - soil applied nutrients could be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	●	3.3	3.0	Good. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Ensure appropriate soil management practices are used to maintain organic matter levels.
Organic Carbon (LOI) (%)	●	1.9	1.7	Normal (See Organic Matter comment). Organic carbon is the measurable component of organic matter. Organic carbon and organic matter can be broken into distinct "pools". These pools include labile/active (particulate, almost entirely decomposed, readily available microbe foodsource), humus carbon (decomposing carbon) and recalcitrant organic carbon (resistant to decomposition). Each of these pools are involved in different soil processes (see: Active Carbon).
Primary nutrients		Result	Guideline	Comments
Phosphorus (ppm)	●	21	16	[Index 2.5]
Potassium (ppm)	●	68	121	[Index 1.1]
Magnesium (ppm)	●	41	51	[Index 1.6]
Secondary & micronutrients		Result	Guideline	Comments
Calcium (ppm)	●	1582	1600	
Sulphur (ppm)	●	2	10	
Boron (ppm)	●	0.88	2.10	
Copper (ppm)	●	5.0	2.1	
Iron (ppm)	●	1030	50	
Manganese (ppm)	●	94	15	
Molybdenum (ppm)	●	0.02	0.60	
Sodium (ppm)	●	20	90	
Zinc (ppm)	●	3.2	4.1	



Sample no.: **G185320/01**, Customer: **GEO TURF CONSULTING**, Sample ref.: **IMBER HORNE SAMPLE 1**

Legend: ● Low ● Medium ● High

Comments:

Accreditation, Interpretation & Decision Rules

* Any analytical parameters marked with an asterisk indicate the test was conducted under our UKAS accreditation. Lancrop Laboratories is a UKAS accredited testing laboratory No.4164. Full scope is available upon request.

All interpretations and comments are outside of our scope of accreditation.

The laboratory exercises a Simple Acceptance decision rule as per ILAC G8:09.

Distributor & customer details, sample reference and crop are supplied by the customer not the testing laboratory.

Any indicated fertiliser application recommendations are taken from AHDB publication "Nutrient Management Guide (RB209)". Any indicated Lime Requirement assumes a medium textured soil.

Data Privacy

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Additional technical bulletins are available at www.lancrop.com

Soil analysis report

Customer GEO TURF CONSULTING
82 COG ROAD
SULLY
VALE OF GLAMORGAN
CF64 5TE

Distributor GEO TURF CONSULTING LTD
82 COG ROAD
SULLY
PENARTH
VALE OF GLAMORGAN
CF64 5TA

Sample ref. IMBER HORNE SAMPLE 2

Received 19/03/2026

Sample no. G185320/02

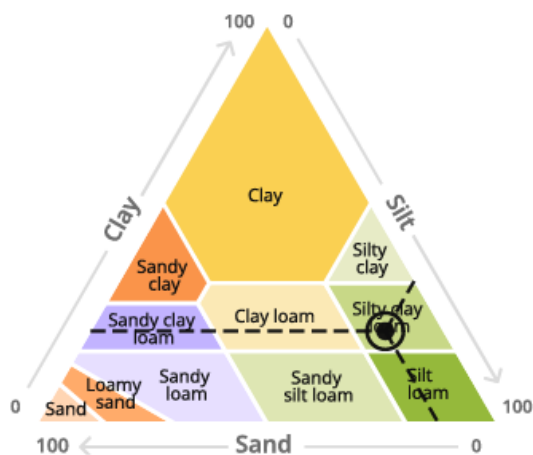
Issued 24/03/2026 (issue 1)

Crop NO CROP SPECIFIED

Soil characteristics	Result	Guideline	Low		Medium		High	
pH	7.2	6.5						
C.E.C. (meq/100g)	6.9	15.0						
Organic Matter (LOI) (%)	1.8	3.0						
Organic Carbon (LOI) (%)	1.1	1.7						
Primary nutrients	Result	Guideline	0	1	2-	2+	3	4+
Phosphorus (ppm)	3	16						
Potassium (ppm)	37	121						
Magnesium (ppm)	23	51						
Secondary & micronutrients	Result	Guideline	Low		Medium		High	
Calcium (ppm)	1248	1600						
Sulphur (ppm)	3	10						
Boron (ppm)	0.68	2.10						
Copper (ppm)	2.0	2.1						
Iron (ppm)	367	50						
Manganese (ppm)	118	80						
Molybdenum (ppm)	0.03	0.30						
Sodium (ppm)	24	90						
Zinc (ppm)	1.5	4.1						

Physical analysis

Soil texture



Soil texture	Result (%)
Sand	12.97
Silt	64.03
Clay	23.00
Soil type	SiClLo - Silty Clay Loam
Property	Assessment
Available water	High to Medium
Drainage rate	Medium
Inherent fertility	Medium
Potential C.E.C.	Medium
Leaching risk	Moderate
Warming rate	Rapid to Medium

Interpretation and comments

Soil characteristics		Result	Guideline	Comments
pH	●	7.2	6.5	Adequate level. Maintain pH to ensure optimum nutrient availability and ideal conditions for an active soil biology.
C.E.C. (meq/100g)	●	6.9	15.0	Cation Exchange Capacity indicates a low nutrient holding ability - soil applied nutrients will be readily leached. Where possible foliar applied nutrients should be recommended.
Organic Matter (LOI) (%)	●	1.8	3.0	Low. Soils with medium to high levels of organic matter would generally be expected to have a good potential fertility and good structure, moisture retention and water infiltration. Investigate soil conditions to establish if soil management practices can improve levels of organic matter.
Organic Carbon (LOI) (%)	●	1.1	1.7	Low (See organic matter comment). Organic carbon is the measurable component of organic matter. Organic carbon and organic matter can be broken into distinct "pools". These pools include labile/active (particulate, almost entirely decomposed, readily available microbe foodsource), humus carbon (decomposing carbon) and recalcitrant organic carbon (resistant to decomposition). Each of these pools are involved in different soil processes (see: Active Carbon).
Primary nutrients		Result	Guideline	Comments
Phosphorus (ppm)	●	3	16	[Index 0.3]
Potassium (ppm)	●	37	121	[Index 0.6]
Magnesium (ppm)	●	23	51	[Index 0.9]
Secondary & micronutrients		Result	Guideline	Comments
Calcium (ppm)	●	1248	1600	
Sulphur (ppm)	●	3	10	
Boron (ppm)	●	0.68	2.10	
Copper (ppm)	●	2.0	2.1	
Iron (ppm)	●	367	50	
Manganese (ppm)	●	118	80	
Molybdenum (ppm)	●	0.03	0.30	
Sodium (ppm)	●	24	90	
Zinc (ppm)	●	1.5	4.1	

Legend: ● Low ● Medium ● High

Comments:



Sample no.: **G185320/02**, Customer: **GEO TURF CONSULTING**, Sample ref.: **IMBER HORNE SAMPLE 2**

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Released by  Laboratory Manager, on behalf of Lancrop Laboratories

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/let 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. Uncertainty measurements of results are available on request

Appendix VI: Additional Photographs

13th March 2026.



Plate 8 – General view south to north.



Plate 9 – Northern site boundary.



Plate 10 – Standing water



Plate 11 – Standing water



Plate 12 – Standing water.



Plate 13 – Standing water.



Plate 14 – Watercourse on eastern boundary.



Plate 15 – Watercourse on eastern boundary.



Plate 16 – Northern boundary.



Plate 17 – Stones and flints.



Plate 18 – Surface harness testing with 2.25kg Clegg Hammer



Plate 19 – Surface vegetation.



Plate 20 – Site entrance



Plate 21 – Trail trench area.

Appendix VII: Outline Maintenance Recommendations

It is important that the personnel responsible for ground maintenance implement appropriate maintenance.

Mowing.

The grass should be maintained between a height of 23 - 28 mm using cylinder mowing equipment. The grass should never be allowed to exceed a height of 30 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. 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) 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.

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.

General 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 an approved medium-fine sand suitable for sports use during the renovations period (e.g. mid May) at the rate of 80t/ha. After each application, the sand should be worked into the surface with brushes or drag mats. Allowance should also be made for topping up pipe and slit drains.

Overseeding.

Overseed the pitch areas and safety margins as required at the application rate of approximately 200 kg/ha immediately after the topdressing application in May. Use at least three cultivars of perennial ryegrass chosen from the latest Turgrass 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 5 mm below the surface.

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

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 watered (if necessary) to ensure rapid grass germination and establishment. Consideration could be given to scarrification, fraise mowing or koroing the surfaces.

Line Marking [Playing season].

Line marking should be undertaken on a weekly basis during the playing season.

Goalpost safety.

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