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A REPORT TO PUDDLETOWN CRICKET CLUB

A feasibility study for the development of a new cricket square at Puddletown Cricket Club, Dorset

TGMS1180.2

REVISION RECORD					
Rev	**Date**	**Description**	**Prepared**	**Checked**	**Approved**
0	27/09/19	Document Creation	ITJ	MY	MY

Please note: This report aims to assess the feasibility of the sports pitch development at the site specified in 'Physical Site Survey' below only. This is not a design document and does not include detailed design or design information and should not be used for this purpose.

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY PUDDLETOWN CC

KEY: **No action required** **Action may be required** **Action required**

Site information

	1	**Objective:** To conduct a study to determine the feasibility of installing a new cricket square in Puddletown Recreation Ground for Puddletown Cricket Club.
	2	**Site Visit:** A site visit was completed on the 21 August 2019 in dry weather.
	3	**Topography:** The playing field comprises a playing area of 1.6 ha but is trapezoidal in shape so that it narrows towards the east restricting the boundary lengths achievable if the football pitch to the west is to be retained. There is a slope of ca 4% down from the southern boundary of the playing field towards the middle where it then shallows to almost horizontal.
	4	**Proposed layout**: A six pitch cricket square plus a non-turf pitch can be accommodated but maximum straight boundaries will be only ca 38 m. The suitability for a ground of such dimensions must be agreed with the Dorset Cricket League before investment in the square is made.
	5	**Hydrology:** Annual rainfall is on average 935 mm, which is high. There are no adjacent watercourses. Soakaway drainage outfall will be required, there are soakaways on site which are effective at draining the surface water from the pavilion. The site is over a primary aquifer and groundwater source protection zone so all soakaway discharge must be above the groundwater table.
	6	**Drainage:** There is not an existing sports pitch drainage scheme in the field. A ring drain around the proposed square is required because of the slope down to the square from the south.
	7	**Flood Risk:** The field has a very low (<1:1000) risk of flooding from rivers and sea, or from surface water according to the Environment Agency who map the playing fields in Flood Zone 1.
	8	**Soils:** Soils on the existing site are generally SANDY LOAM topsoils over similar subsoils.
	9	**Geology:** Superficial quaternary head deposits over chalk. Soils on site are from the head deposits.
	10	**Landfill:** The field is not located over registered landfill.
	11	**Services:** To be confirmed.
	12	**Irrigation:** A WRAS compliant (Category 5) tank, pump and hydrant system should be installed for irrigating the cricket pitches. A temporary irrigation solution might be required if the new sports pitches are seeded in prolonged dry weather.
	13	**Planning:** A ball strike assessment is essential at the design stage and this is likely to indicate a requirement for ball stop netting at a minimum height of 15 m. This will require planning permission from the local planning authority. Landlord consent will be required for any works.
	14	**Maintenance:** The client must be aware of the additional maintenance requirements for natural turf cricket squares (appended) and cut height of the outfield should be reduced and rabbit damage repaired before any cricket is played.

Iain James – September 2019

2 INTRODUCTION AND OBJECTIVES

TGMS has been commissioned by Puddletown Cricket Club to investigate the feasibility of developing a new natural turf cricket square on their existing ground at Puddletown Recreation Ground, Puddletown, Dorset. The club require natural grass pitches for their first team who are playing in the Dorset League County Division 2 – this means that the club has to use an away venue. Meanwhile the club is seeing strong growth in its junior section and will need facilities for junior cricket and to bring older juniors into the Second XI.

The objectives of the feasibility study are as follows:

- To carry out a topographic survey and to assess existing field dimensions and levels.
- To conduct a detailed site visit to include assessment of current soil types, infiltration rates and outfall opportunities.
- To draw up design options for comment and consultation.
- To derive indicative construction costs for budgetary purposes and present costed options where applicable.
- To provide an indicative work programme of the proposed construction works.

3 PHYSICAL SITE SURVEY OF EXISTING SURFACES

Dr Iain James of TGMS Ltd conducted a topographic survey and site visit on 21 August 2019 and met with David Stevens, Chairman of Puddletown Cricket Club.

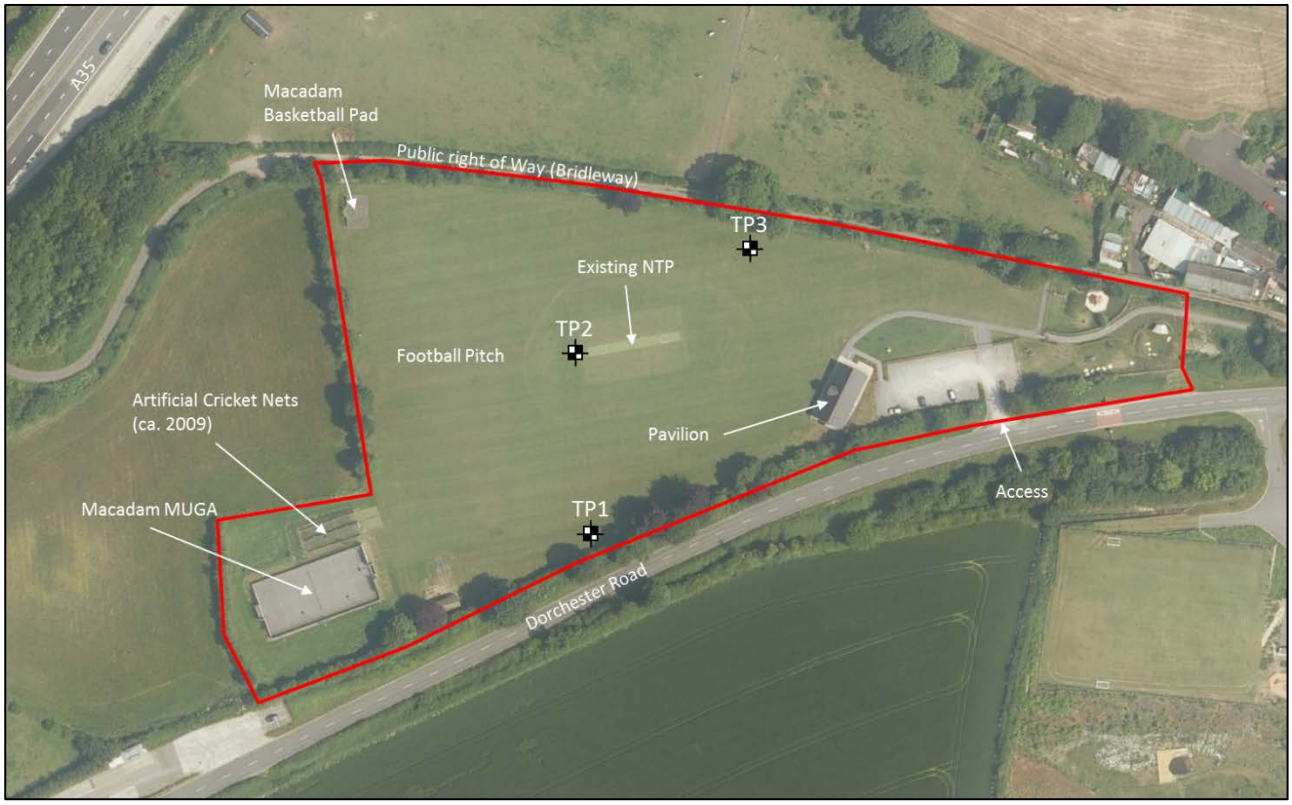


Figure 1 Site location (indicative; do not scale). TP1 to TP3 mark the location of the trial pits.

3.1 Site location and access

The field is accessed via the car park accessed from the Dorchester Road at the western end of Puddletown.

The nearest postcodes is DT2 8FZ.
The grid reference for the centre of the field is approximately: OSGB 375126 094422

Figure 2 General view looking north east.

Figure 3 General view looking east across the existing NTP towards the pavilion.

Figure 4 General view looking west.

Figure 5 View east towards the play area and car park.

Figure 6 The macadam surfaced MUGA.

Figure 7 Basketball / goal area.

Figure 8 Existing 2 Lane Non Turf Cricket Nets.

Figure 9 Football Team Shelters.

3.2 Topographical (levels) survey, slope and orientation

3.2.1 Existing levels and layout

The playing field comprises a playing area of ca 15,935 m^2 (1.59 ha). The topographic levels measured with an RTK GPS and robotic total station are shown in drawing TGMS1180.1-1 appended to this report. The key feature of the playing field is its quasi-trapezoidal shape which narrows towards the pavilion. This means that whilst the western boundary is 150 m long, the eastern boundary is only 69 m long.

Because of this a football pitch (67.6 x 100.5 m) has been located in the western half of the playing field. To maximise straight boundaries, the existing non-turf cricket pitch is located to the east of the football pitch with the playing direction approximately east-west which is undesirable for cricket because of the risk of the batters facing into the sun and not being able to see the ball; cricket pitches should be orientated with their playing direction between 305º and 055º (Figure 10).

There is a relatively steep fall from the southern boundary of the field (62.75 m AOD) down to the centre of the field (60.50 m AOD) at a fall of 4.82% which is greater than the Sport England recommended maximum falls of 1.25% in direction of play and 2.00% across play. The slope then shallows to a slight depression in the northern part of the playing field. The slope can be reduced

using cut and fill earthworks but this would lead to a significant reduction of the playing area at the southern and northern ends of the playing field because the 1:3 batter slopes required to level the ground will result in the loss of ca 10 m in the length of the playing field.

3.2.2 Proposed layout and levels

Drawing TGMS1180.1-2 shows a proposed layout for a six-pitch cricket square with a 30 m non-turf match pitch orientated more north-south than the existing layout. The ECB recommends a minimum boundary size of 50 yards (45.72 m) from the middle stump at each end as a minimum boundary size for 'Premier League' adult cricket (ECB TS4[1]). Indicative ECB compliant boundaries for the six pitches are shown on drawing TGMS1180.1-2. It is evident that full ECB compliant boundaries cannot be accommodated with the square in that location. However, it cannot move further to the west because of the proximity to the football pitch (the square needs to be 3 m from the football touchline to allow a compliant safety runoff from the football pitch when the square is fenced for winter.

The football pitch is wider than the FA recommendations of 100 m x 64 m. Narrowing the football pitch by 3 m would improve but not remove the boundary constraints on site. Moving the cricket square further westwards is not feasible without removing the football pitch.

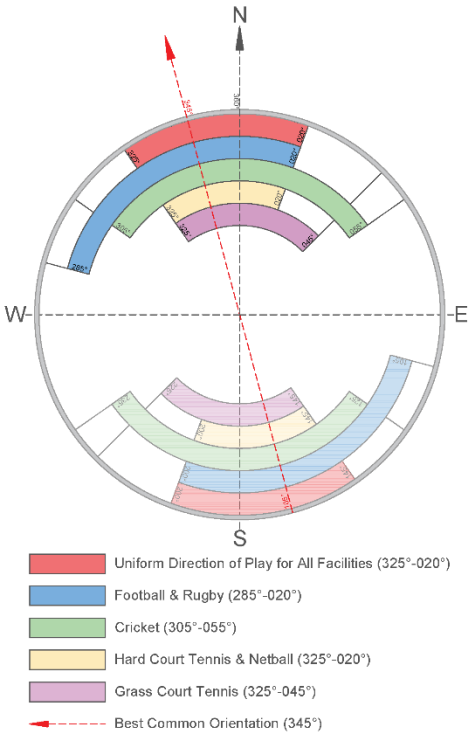


Figure 10 Optimum pitch orientations (Sport England).

From a review of Dorset Cricket League playing regulations, there do not appear to be regulations stipulating minimum boundary dimensions for Dorset Cricket League fixtures. The minimum boundaries will be ca 38 m from the easternmost pitches on the square. The Dorset Cricket League should be consulted on the suitability of boundaries in the layout shown in Drawing TGMS 1180.1-2 – if they are not considered suitable then an alternative site will be required, or an extension of the playing field to the north (and diversion of the public right of way.

There is a significant risk of balls being hit into the road to the south (Dorchester Road) and a ball strike assessment should be completed at the design stage – it is anticipated that this will require the installation of ball stop netting to a minimum height of 15 m to the south of the ground and potentially to the north of the ground given the proximity to the public right of way.

3.3 Hydrology

Climate data obtained from the Flood Estimation Handbook (FEH) indicate that the standard-period average annual rainfall (SAAR) is 935 mm, which is high for England.

It is common to install a ring drain around a cricket square, particularly when the outfield slopes towards the square (as is the case at Puddletown CC). This drainage will require an outfall. There are no adjacent watercourses suitable for drainage outfall. Therefore, an investigation of hydrogeological suitability for soakaway outfall is required, unless connection to the surface water drainage scheme of the new development is possible. There are a number of soakaways on site, including for surface water from the pavilion. This is indicative of the potential suitability of the ground

[1] ECB TS4: Recommended guidelines for the construction, preparation and maintenance of cricket pitches and outfields. Available from: https://www.ecb.co.uk/be-involved/club-support/club-facility-management/surface-types [accessed 27/09/19].

for soakaway outfall but this should be confirmed by carrying out a soakaway test to BRE365 in a suitable location.

There are a two potable water supplies around the outside of the playing field which were used when the site was used for caravanning. These have a surface drain underneath which is then connected to a soakaway (Figure 11 to Figure 13). The main soakaway adjacent to the pavilion is 3.2 m deep and collects surface water from the building (Figure 14).

Figure 11 Potable water supply and drain into soakaway (located in NE corner of playing field).

Figure 12 Connection of surface drain to soakaway.

Figure 13 Soakaway is full of plastic bottle waste.

Figure 14 Main soakaway just to the north of the pavilion takes surface water from the pavilion. Depth is 3.2 m and comprises 1.2 m diameter concrete rings with a 10 course brick access.

The greenfield runoff rate (FEH method) for the playing field is 2.5 L/s. Drain flow for the 1:100 + 40% rainfall event (a typical design rainfall event) is anticipated to be 7.4 L/s (based on a 50% drain recovery). Therefore, depending upon the soakaway infiltration rate and soakaway design, attenuation of the 1:100+40% drain flow (to be confirmed but ca. 7.7 L/s) to the greenfield runoff rate (2.5 L/s) could be required if water is to be discharged off site. This would be confirmed at the design / construction stage.

The Environment Agency have modelled the risk of flooding from rivers and sea, and surface water flooding, as very low (<0.1%) and the site sits within Flood Zone 1.

3.4 Soils and Geology

3.4.1 Soil classification

Soils in the field have been mapped as by the Soil Survey of England and Wales as:

- FRILSHAM association – well drained mainly fine loamy soils over chalk, some calcareous. Shallow calcareous fine loamy and fine silty soils in places.

3.4.2 Geology

Data from the British Geological Survey (BGS) indicate that the field is partly covered (particularly to the west) with superficial 'Head – Clay, Silt, Sand and Gravel' deposits from subaerial slopes. This was formed 3 million years ago in the Quaternary period in an environment previously dominated by subaerial (i.e. not related to water) slopes.

Below this lies the Spetisbury Chalk Member, Cretaceous chalk formed in marine environments 72-84 million years ago.

The geology of the base rock is designated as a Primary Aquifer and is in a primary groundwater source protection zone – which will rule out the use of deep-bored soakaways – any soakaways on site will need to be above the groundwater table as per existing soakaways on site.

3.4.3 Landfill

The site is not registered as historic landfill with the Environment Agency.

3.4.4 Trial Pit Profile Description

Three soil trial pits (TP1 to TP3, Figure 1) were excavated by hand to characterise the underlying soil profile.

TP1 was excavated at the southern end of the field near the top of the slope. The topsoil profile (Figure 11) comprised a 250 mm of fine sandy loam topsoil that was stoneless and friable. Root depth was 250 mm with 20 mm of surface thatch. When examining the topsoil, a single chafer grub (larvae of the beetle *Phyllopertha horticola)* was found at 60 mm below ground level (bgl; Figure 17). These can be a pest in turfgrass environments as the grubs eat the grass plant roots and are extracted from the soil by scavenging birds and badgers. When found in large numbers the effect on turf quality can be devastating. Control is very difficult because there are no approved insecticides for control. This was the only grub observed and should not be of concern at this stage.

Below 250 mm the subsoil remained a sandy loam but slightly more clay content with chalk fragments to 800 mm bgl where the trial hole excavation was ceased.

The groundcover in this area was 100% and predominantly meadow bent grasses (*Agrostis* spp), perennial ryegrass (*Lolium perenne*) and annual meadow grass (*Poa annua*). Ground cover comprised 5-10% broad leaved weeds. There were a number of rabbit excavations across the playing field.

Figure 15 TP1 soil profile.

Figure 16 Top: TP1 topsoil profile. Bottom: Chafer grub, a potential turf pest.

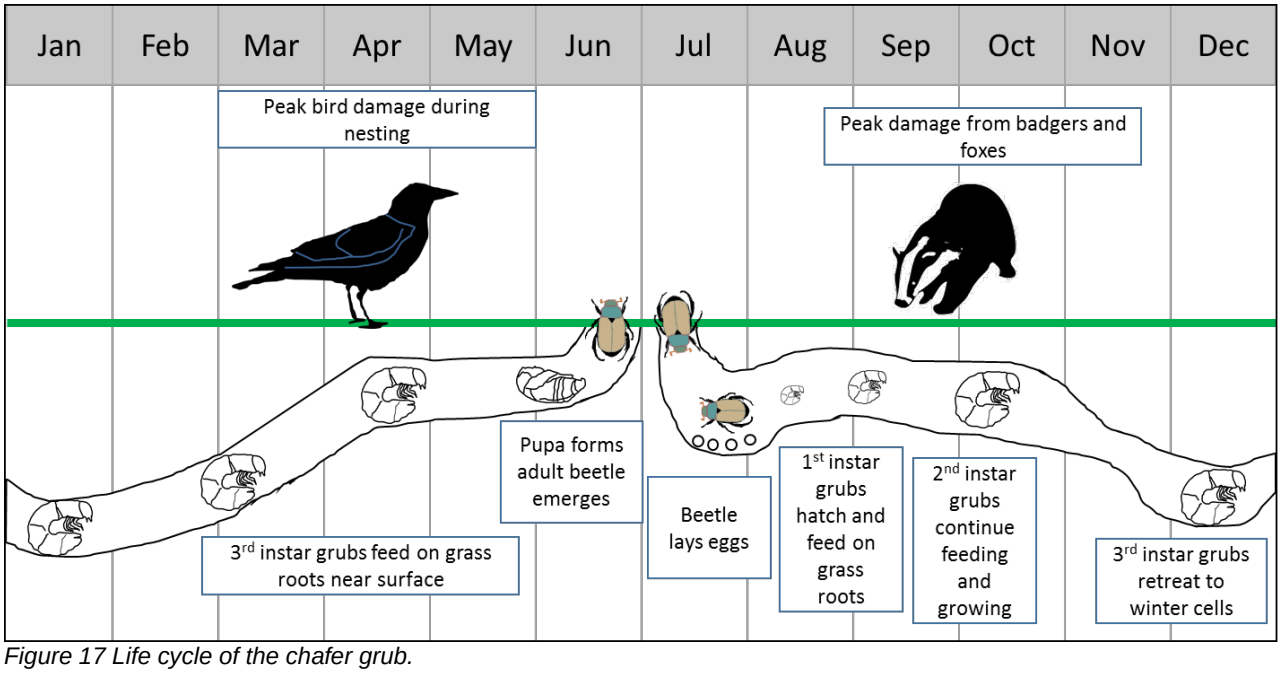


Figure 17 Life cycle of the chafer grub.

Figure 18 TP2 soil profile.

Figure 19 TP2 thatchy surface layer over compact topsoil.

Figure 20 TP3 soil profile.

Figure 21 TP3 well structured, dry topsoil.

TP2 was excavated in the approximate location of the proposed new square. The profile was similar to TP1 and comprised 200 mm of stoneless friable sandy loam soil (laboratory testing confirmed the soil to be a sandy loam (65.8% sand, 31.0% silt, 3.2% clay, see appended soil laboratory testing report). There was 10 mm of thatch that will need to be removed before constructing the cricket square. Root depth was excellent at 250 mm.

Between 200 and 400 mm bgl there were chalk fragments and occasional 10/20 mm diameter stone. Between 400 and 800 mm bgl the subsoil became much redder and coarser with occasional 10-20 mm gravel. The profile was well drained with no ground water.

The groundcover in this area was 90% and predominantly perennial ryegrass (*Lolium perenne*) and annual meadow grass (*Poa annua*). Ground cover comprised 5% broad leaved weeds. There were a number of rabbit excavations across the playing field. No chafer grubs were observed.

TP3 was excavated at the northern end of the playing field. The profile was similar to TP2 and comprised 200 mm of stoneless friable sandy loam soil. There was 10 mm of thatch that will need to be removed before constructing the cricket square.

Between 200 and 550 mm bgl there were chalk fragments and occasional 10/20 mm diameter stone. Between 550 and 900 mm bgl the subsoil became much redder and coarser with occasional 10-20 mm gravel. The profile was well drained with no ground water.

The groundcover in this area was 100% and predominantly perennial ryegrass (*Lolium perenne*) and annual meadow grass (*Poa annua*). Ground cover comprised 20% broad leaved weeds (mayweed, dandelion, daisy, thistle, plantains. Mushroom type fungi were observed. No chafer grubs were observed.

3.4.5 Soils summary

Currently the soils are well draining and investment in outfield drainage is not recommended for cricket. However if the slopes were reduced using cut and fill earthworks, drainage would be required because of the loss of the natural soil structure.

A ring drain around the square is recommended and this should connect to an onsite soakaway (subject to demonstration of suitable soakaway infiltration rates).

3.4.6 Agronomic summary

The current mowing regime means that the outfield is cut too long and the frequency of cutting and the cut height need to be reduced. There is a high weed content and weeds should be removed using a selective herbicide – the field should then be oversown with desirable sport-specific varieties of perennial ryegrass to replace the weeds. The playing field would benefit from aggressive scarification (with removal of arisings) prior to the overseeding to reduce thatch content.

Rabbits will need to be controlled to prevent them digging on any new cricket square – this could include the use of rabbit proof fencing or electric fencing.

3.5 Other items

1. Services: at the design stage it must be established that the cricket square and drainage are not to be constructed over buried services.
2. A WRAS approved tank and pump system, fitted with Category 5 back flow protection should be installed to supply water underground to a hydrant located near the cricket square for irrigation to allow safe preparation of natural turf cricket pitches.
3. Restriction on the use and timing of pesticides and fertilisers might be advised to reduce the risk of drinking water contamination. Best practice in the application of pesticides and fertilisers should always be observed, particularly in relation to application buffers around boreholes and water course and the timing of application to encourage maximum plant uptake.

4. A ball strike assessment is essential at the design stage and this is likely to indicate a requirement for ball stop netting at a minimum height of 15 m. This will require planning permission from the local planning authority.

4 SUMMARY AND RECOMMENDATIONS

4.1 Principal factors affecting the condition of the site

1. **Objective:** To conduct a study to determine the feasibility of installing a new cricket square in Puddletown Recreation Ground for Puddletown Cricket Club.
2. **Site Visit:** A site visit was completed on the 21 August 2019 in dry weather.
3. **Topography:** The playing field comprises a playing area of 1.6 ha but is trapezoidal in shape so that it narrows towards the east restricting the boundary lengths achievable if the football pitch to the west is to be retained. There is a slope of ca 4% down from the southern boundary of the playing field towards the middle where it then shallows to almost horizontal.
4. **Proposed layout**: A six pitch cricket square plus a non-turf pitch can be accommodated but maximum straight boundaries will be only ca 38 m. The suitability for a ground of such dimensions must be agreed with the Dorset Cricket League before investment in the square is made.
5. **Hydrology:** Annual rainfall is on average 935 mm, which is high. There are no adjacent watercourses. Soakaway drainage outfall will be required, there are soakaways on site which are effective at draining the surface water from the pavilion. The site is over a primary aquifer and groundwater source protection zone so all soakaway discharge must be above the groundwater table.
6. **Drainage:** There is not an existing sports pitch drainage scheme in the field. A ring drain around the proposed square is required because of the slope down to the square from the south.
7. **Flood Risk:** The field has a very low (<1:1000) risk of flooding from rivers and sea, or from surface water according to the Environment Agency who map the playing fields in Flood Zone 1.
8. **Soils:** Soils on the existing site are generally SANDY LOAM topsoils over similar subsoils.
9. **Geology:** Superficial quaternary head deposits over chalk. Soils on site are from the head deposits.
10. **Landfill:** The field is not located over registered landfill.
11. **Services:** To be confirmed.
12. **Irrigation:** A WRAS compliant (Category 5) tank, pump and hydrant system should be installed for irrigating the cricket pitches. A temporary irrigation solution might be required if the new sports pitches are seeded in prolonged dry weather.
13. **Planning:** A ball strike assessment is essential at the design stage and this is likely to indicate a requirement for ball stop netting at a minimum height of 15 m. This will require planning permission from the local planning authority. Landlord consent will be required for any works.
14. **Maintenance:** The client must be aware of the additional maintenance requirements for natural turf cricket squares (appended) and cut height of the outfield should be reduced and rabbit damage repaired before any cricket is played.

4.2 Proposed development and indicative costs

4.2.1 Construction of a 6-pitch cricket square with ring drain and water hydrant

A six-pitch cricket square will provide for 18-20 adult games per season. The square can be expanded to the east (not the west) but boundary lengths will become very small. The non-turf match pitch is located to the east because it is most likely to be used for junior cricket with smaller boundaries.

This project should only proceed if the resulting boundary dimensions are agreed with the Dorset Cricket League.

As stated above both the ring drain and the manual watering point are considered essential for this project.

Process
Site setup and preparation
Removal of grass vegetation to disposal off site
Removal of existing non turf cricket pitch (NTP) to disposal off site
Installation of a ring drain and soakaway outfall
Construction of a 6 pitch cricket square
Construction of an ECB approved non-turf cricket pitch
Irrigation tank and hydrant
Ball protection netting
Grow-in maintenance
Prelims

4.2.2 Equipment recommendations

Because there is not an existing cricket square the club should consider the following list of maintenance equipment if the plan is to maintain the facilities in-house:

Essential

1. A cylinder pitch mower (look at the cylinder mowers that offer a cassette system where you can change the cylinder for a scarifying or verticutting reel. The machinery should have easy and precise adjustment of cut height easily to switch from cutting the square to cutting a pitch. Alternatively, two cylinder mowers should be purchased.
2. A versatile reversible scarifier/brush e.g. Sisis Combirake
3. A minimum 3ft, ideally 4 ft cricket roller (the Poweroll and AutoGuide brands provide specialist cricket rollers).
4. A pedestrian spinning broadcast fertiliser spreader.
5. Irrigation sprinkler and hose (32 mm tricoflex hose type)
6. A pitch line marking frame or similar – see www.pitchcare.com or https://www.bmsproducts.com/
7. A hand lute (see SISIS or BMS Products) for topdressing and in-season repairs
8. A single pitch flat sheet cover (see Stewart Canvas or www.total-play.co.uk or other cricket suppliers.
9. An outfield mower, e.g. a ride on triple cylinder mower or 5-gang fairway mower.

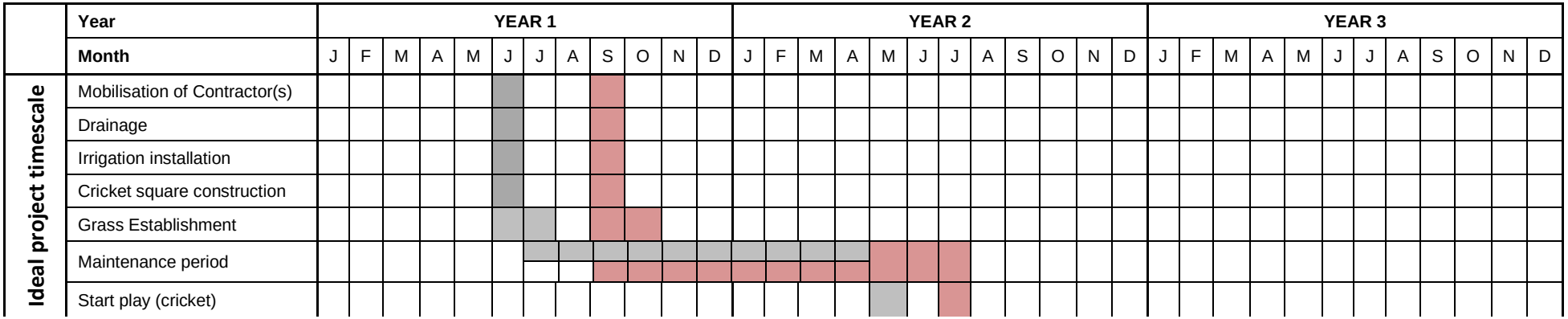
Desirable

10. A pedestrian powered collecting scarifier such as a Sisis Autorake
11. Roll-on covers
12. A pedestrian sarrell roller for helping with seeding etc.

Specialist contractors should be used for the application of pesticides and a specialist cricket contractor for end of season renovations.

4.3 Indicative work programme

The timing of the project is critical - it is essential that the works only take place in good, dry ground conditions, which limits the window for these works. If possible the works should be started in the early summer to allow maximum time for grow in and establishment of the square before winter (grey shading). If it is necessary to start construction later because of cricket fixtures on the existing non-turf pitch then first use will be delayed as per the red shading in the time plan below.



N.B. (in all cases)

1. It is essential that the construction works are only completed under suitable ground and weather conditions to avoid any potential performance-related problems later on. The date for start of play is highly dependent on weather conditions during the construction phase and growing-in period.

2. The precise date for the return to play is highly dependent on the weather conditions that prevail during the construction works and growing-in period. Play/use shall recommence upon approval from TGMS.

4.4 Implications of works on future maintenance, system longevity and usage

4.5.1 Maintenance issues

- By their nature, natural turf cricket squares require intensive maintenance by trained groundstaff. It is essential that adequate allowance is made for annual maintenance which will include pre-season rolling, in-season pitch preparation and repair and end of season renovation. A budget of ca £4,000 per annum is required for the maintenance of a cricket square of this size (excluding labour and VAT).

- 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 the ring drains are kept topped up.

4.5.2 System longevity

- Whilst only a guide, the piped drainage system should have an operational lifespan of approximately 25 years if well maintained (e.g. silt traps regularly inspected and emptied and collector drains flushed).
- The irrigation system should have a design life of 25 years although this will require pump maintenance and potentially pump replacement.
- The cricket square lifespan is directly related to the quality of construction and the quality of maintenance but with very good maintenance (and in particular control of rolling and thatch) the square can last for many years.
- The non-turf cricket pitch will be warrantied as per the ECB approval scheme but allowance must be made for carpet repairs and replacement.

4.5 Outline Project Risk Assessment

The following risks to the project should be considered:

1. **Weather:** good dry weather during construction is essential for project progress, this is particularly sensitive once the vegetation has been removed and the topsoil has been stripped.

2. **Start date:** the project must start on time as per the above Gantt chart, delays in start could mean having to over-winter the project before seeding, adding delay to the start of play that could extend into Year 2.

3. **Location of site:** To be confirmed – access via the car park is restricted.

4. **Timeliness of construction:** it is important that the cricket square contractor appointed has the scale of operation and capacity to deliver this project on time. A premium for highly experienced, well equipped contractors must be valued in the tender process. Cost should not be the only consideration.

5. **Drain line sinkage and establishment challenges:** whenever piped drainage is installed there are challenges with sinkage of the permeable drain back fill and getting grass to establish in the drain runs. The sinkage occurs because the materials settle and compact with time, so construction method and monitoring of the contractor are essential. The grass establishment problems are because the backfill materials are freely draining (so the drains work) and leach nutrients easily. This is mitigated to an extent at the design stage by the

specification of the construction method for the tops of the drains, but this approach is dependent upon the secondary drainage scheme. Routine watering and fertiliser applications to the drain run during establishment will be essential.

6. **Dimensions:** Puddletown CC must consult with the Dorset Cricket League and seek approval in writing for the outfield dimensions indicated in drawing TGMS1180.1-2 prior to this development taking place.

7. **Maintenance:** the surfaces are designed to provide enhanced performance over and above the existing pitches, but this cannot be achieved without careful maintenance during the grow-in and a commitment from the school to increase their annual maintenance budget to follow the appended maintenance programme. The training of volunteer groundstaff is essential for cricket and the IOG courses are recommended. Information on maintenance is available from:
    a. www.groundsmanship.com (maintained by TGMS for Sport England, the ECB and other national governing bodies of sport)
    b. The Institute of Groundsmanship (www.iog.org).

EUROPEAN TURFGRASS LABORATORIES
GEOTECHNICAL (PUTTING GREEN MATERIALS) CERTIFICATE NO. 903-01
ACCREDITED

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15647/2				**PARTICLE SIZE DISTRIBUTION** **SAND / SILT / CLAY** Test Report Number 15647/B Page 1 of 2
100%				Puddletown CC: TP2, 0-200
20/09/19				Sample Received Date & Sample Test Date
dry				Sample Moisture (very wet, wet, moist, dry, n/a)
friable				Sample Consistency (hard, friable, plastic, n/a)
high				Sample Homogeniety (high, medium, low, n/a)
				Particle Size Distribution – ASTM F1632-03 (Reapproved 2018)
65.8				% Sand 0.05 to 2.00 mm
31.0				% Silt 0.002 to 0.05 mm
3.2				% Clay less than 0.002 mm
Sandy Loam				Soil Classification

ASTM Method: F1632-03 (Reapproved 2018)
"Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Root Zone Mixes"

TGMS Ltd
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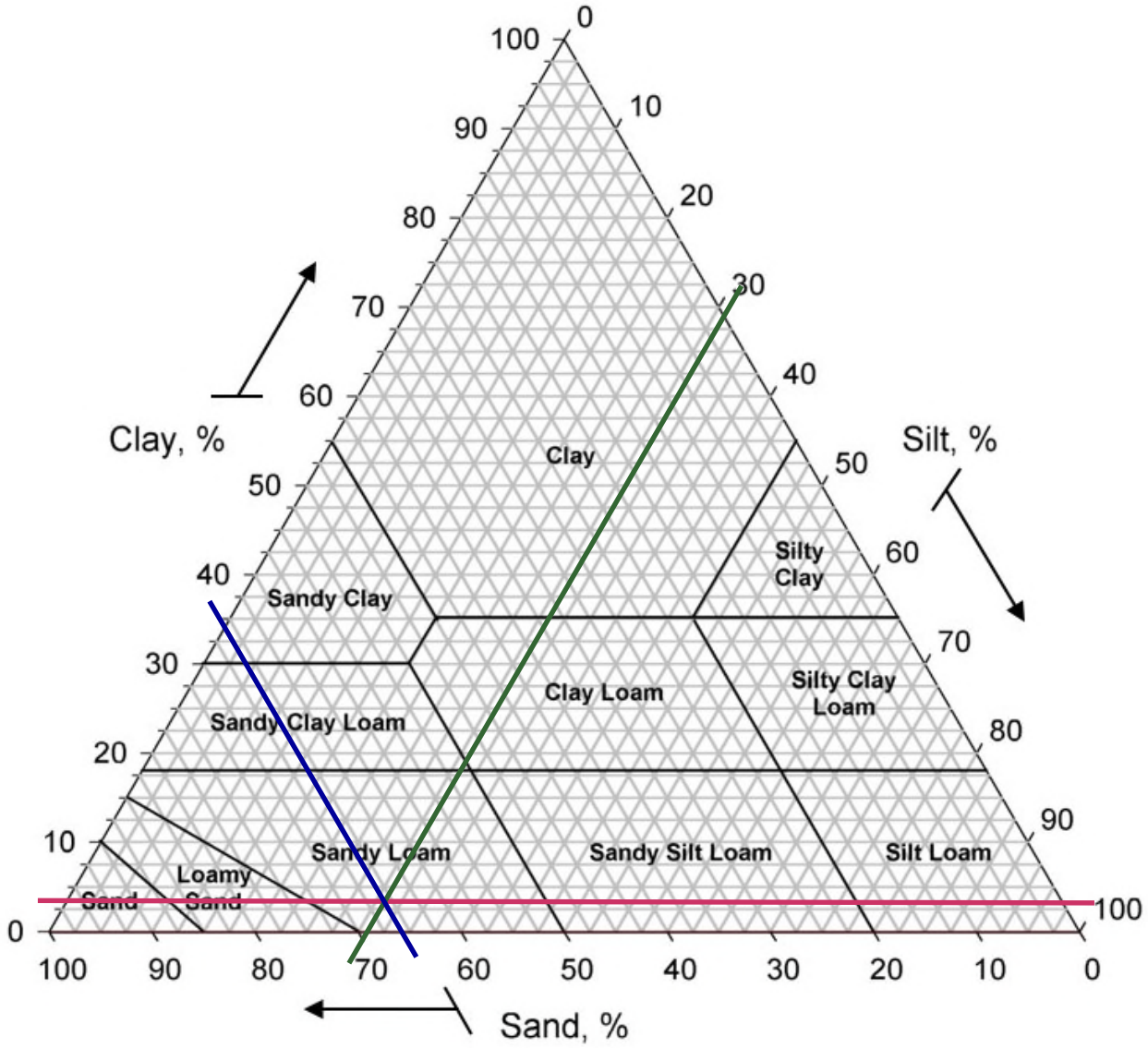
Approved by: Sara Singleton-Price **Date: 2th September 2019**

Managing Director, for European Turfgrass Laboratories Ltd

EUROPEAN TURFGRASS LABORATORIES

Triangle of Texture : Soil Classification

Date of Issue: Sept 2019, Revision 1,
Issuing Authority: Sharon Singleton-Bruce



Soil Sample: TGMS

Test Report 15647/B

			After removal of gravel			
Sample	**% Gravel**		**% Sand**	**% Silt**	**% Clay**	**Soil Texture Classification**
Puddletown CC: TP2, 0-200	0.4		65.8	31.0	3.2	**Sandy Loam**

Signed: Sharon Singleton-Bruce

Date: **25th September 2019** **for European Turfgrass Laboratories Ltd**

EUROPEAN TURFGRASS LABORATORIES
GEOTECHNICAL (PUTTING GREEN MATERIALS) CERTIFICATE NO. 903-01
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europeanturf@etl-ltd.com
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15647/3				**PARTICLE SIZE DISTRIBUTION** **SAND / SILT / CLAY** Test Report Number 15647/C Page 1 of 2
100%				Puddletown CC: TP2, 200-400
20/09/19				Sample Received Date & Sample Test Date
dry				Sample Moisture (very wet, wet, moist, dry, n/a)
friable				Sample Consistency (hard, friable, plastic, n/a)
high				Sample Homogeniety (high, medium, low, n/a)
				Particle Size Distribution – ASTM F1632-03 (Reapproved 2018)
64.6				% Sand 0.05 to 2.00 mm
30.9				% Silt 0.002 to 0.05 mm
4.5				% Clay less than 0.002 mm
Sandy Loam				Soil Classification

ASTM Method: F1632-03 (Reapproved 2018)
"Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Root Zone Mixes"

TGMS Ltd
4 Doolittle Mill, Froghall Road, Ampthill, Bedfordshire, MK45 2ND

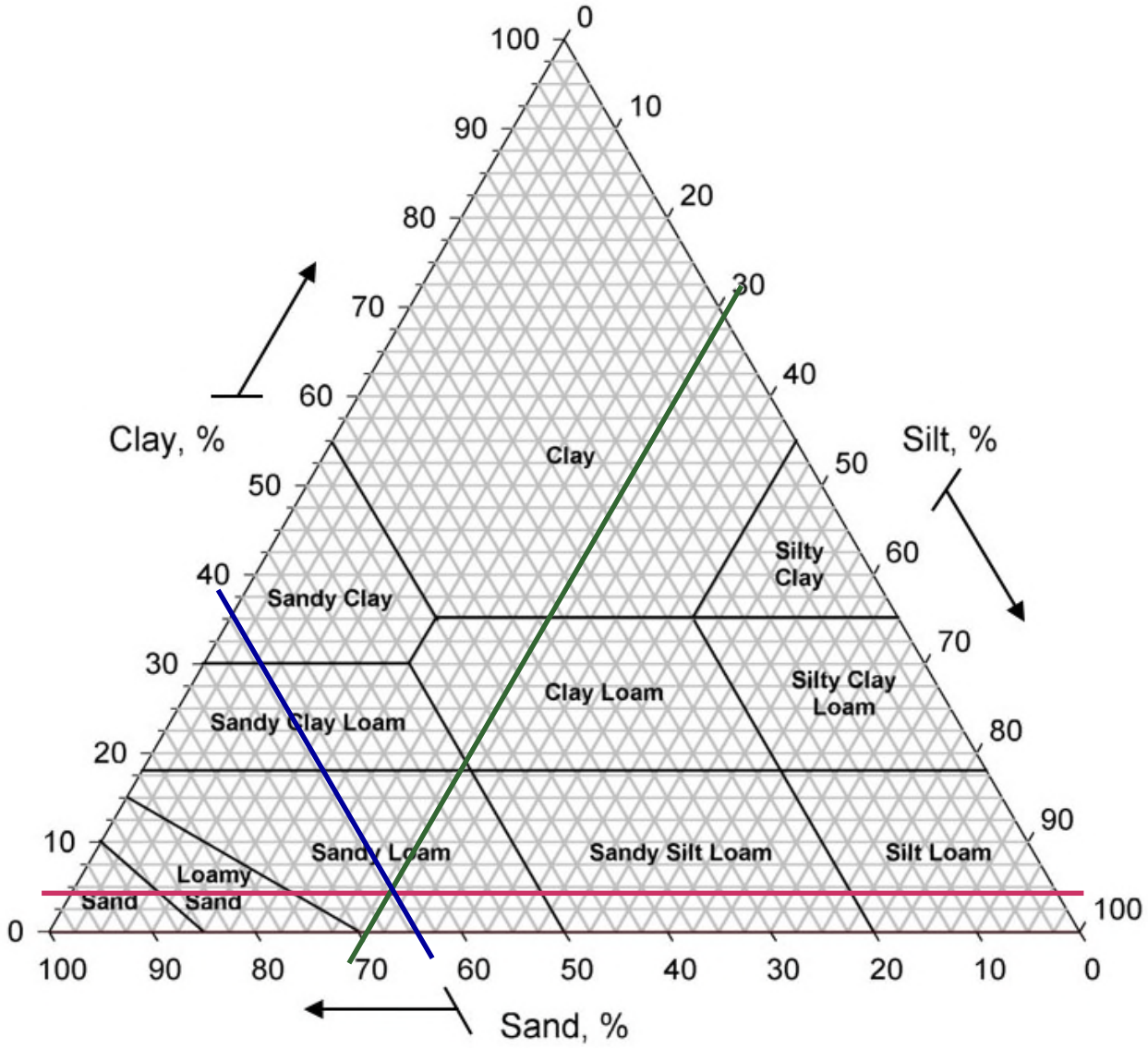
Approved by: Sara Singleton-Price **Date: 25th September 2019**

Managing Director, for European Turfgrass Laboratories Ltd

EUROPEAN TURFGRASS LABORATORIES

Triangle of Texture : Soil Classification

Date of Issue: Sept 2019, Revision 1,
Issuing Authority: Sharon Singleton-Bruce



Soil Sample: TGMS

Test Report 15647/C

			After removal of gravel			
Sample	**% Gravel**		**% Sand**	**% Silt**	**% Clay**	**Soil Texture Classification**
Puddletown CC: TP2, 200-400	8.1		64.6	30.9	4.5	**Sandy Loam**

Signed: Sharon Singleton-Bruce

Date: **25th September 2019** **for European Turfgrass Laboratories Ltd**

EUROPEAN TURFGRASS LABORATORIES
GEOTECHNICAL (PUTTING GREEN MATERIALS) CERTIFICATE NO. 903-01
ACCREDITED

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15647/4				**PARTICLE SIZE DISTRIBUTION** **SAND / SILT / CLAY** Test Report Number 15647/D Page 1 of 2
100%				Puddletown CC: TP2, 400-900
20/09/19				Sample Received Date & Sample Test Date
dry				Sample Moisture (very wet, wet, moist, dry, n/a)
friable				Sample Consistency (hard, friable, plastic, n/a)
high				Sample Homogeniety (high, medium, low, n/a)
				Particle Size Distribution – ASTM F1632-03 (Reapproved 2018)
66.8				% Sand 0.05 to 2.00 mm
24.6				% Silt 0.002 to 0.05 mm
8.6				% Clay less than 0.002 mm
Sandy Loam				Soil Classification

ASTM Method: F1632-03 (Reapproved 2018)
"Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Root Zone Mixes"

TGMS Ltd
4 Doolittle Mill, Froghall Road, Ampthill, Bedfordshire, MK45 2ND

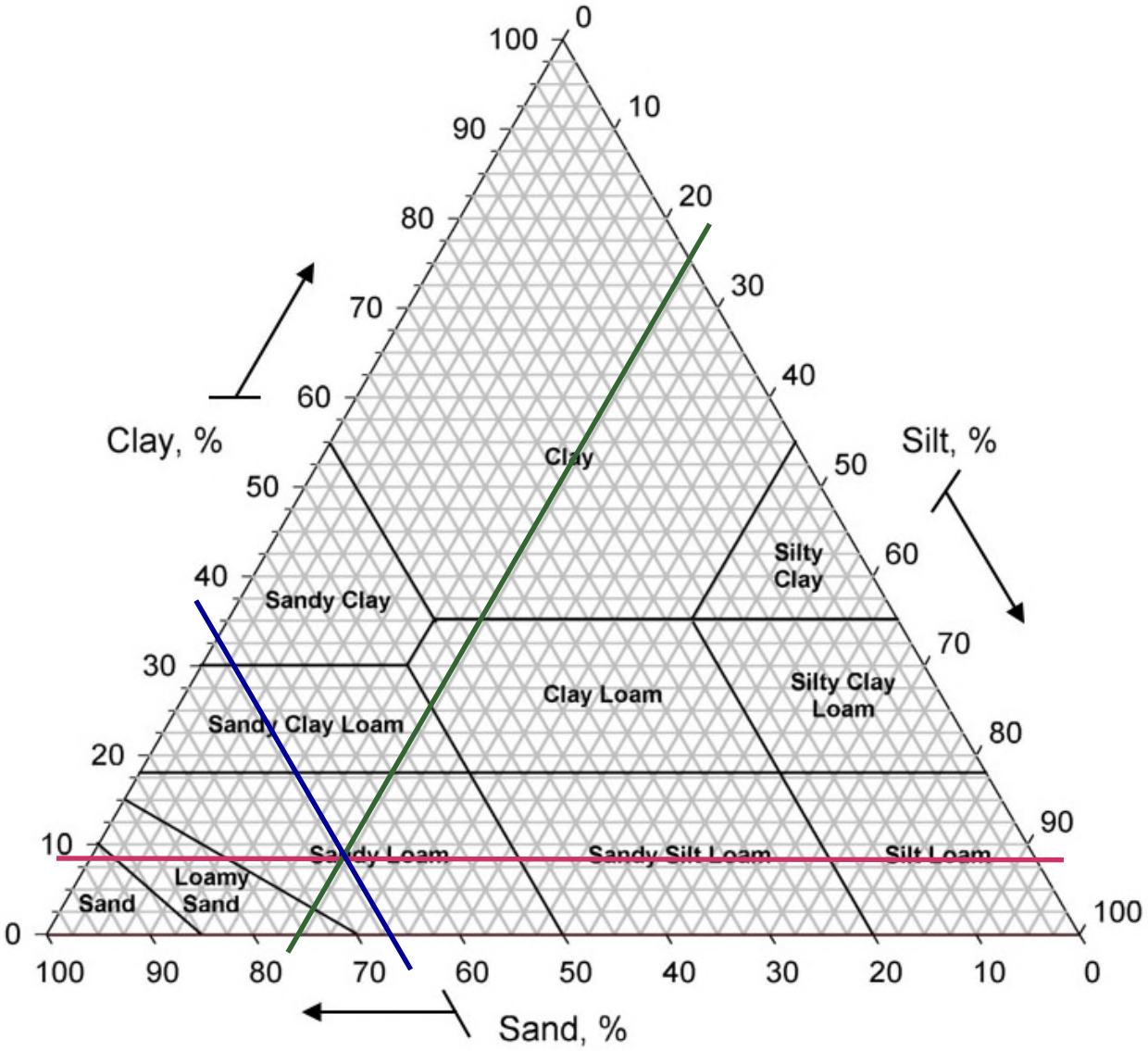
Approved by: Sara Singleton-Price **Date: 25th September 2019**

Managing Director, for European Turfgrass Laboratories Ltd

EUROPEAN TURFGRASS LABORATORIES

Triangle of Texture : Soil Classification

Date of Issue: Sept 2019, Revision 1,
Issuing Authority: Sharon Singleton-Bruce



Soil Sample: TGMS

Test Report 15647/D

			After removal of gravel			
Sample	**% Gravel**		**% Sand**	**% Silt**	**% Clay**	**Soil Texture Classification**
Puddletown CC: TP2, 400-900	9.9		66.8	24.6	8.6	**Sandy Loam**

Signed: Sharon Singleton-Bruce

Date: **25th September 2019** **for European Turfgrass Laboratories Ltd**

NOTES:-

1)

Revisions				
Rev	Date	Description	Drawn By	Checked By
1				

LEGEND:-

- Major Contours - 1m Intervals
- Minor Contours - 25cm Intervals
- 0.00% Gradient
- Test Pit Location
- Inspection Chamber
- Water Meter
- Stand Pipe
- Rubbish Bin
- Bench
- Football Pitch
- Synthetic Cricket
- Cricket Nets
- Old Net Block Base
- MUGA
- Buildings
- Dug Outs
- Hedge
- Gravel Path
- Tree Canopy

TGMS Sports Surface Consultants

TGMS, 4 Doolittle Mill,
Froghall Road, Ampthill,
Bedfordshire, MK45 2ND

Tel: 01525 307060
Web: www.tgms.co.uk
Email: enquires@tgms.co.uk

Drawing Title

Existing Levels

NORTH

Project :	Puddletown CC		
Client :	Puddletown CC		
Consultant :	Iain James		
Date :	10/09/2019	Drawing Status :	Survey
Scale :	1:1000	Paper Size :	A3
Drawn by : OM	Checked by : IJ	Approved by : IJ	

Drawing Number: TGMS1180.1-1

Revision: 0

NOTES:-

1)

Revisions				
Rev	Date	Description	Drawn By	Checked By
1				

LEGEND:-

Proposed Features

- Cricket Square
- Synthetic Cricket
- Indicative 50 yard boundary
- Indicative 3 yard Safety Margin

Existing Features

- Major Contours - 1m Intervals
- Minor Contours - 25cm Intervals
- Bench
- Football Pitch
- Cricket Nets
- Old Net Block Base
- MUGA
- Buildings
- Dug Outs
- Hedge
- Gravel Path
- Tree Canopy

TGMS Sports Surface Consultants

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Drawing Title

Proposed Pitch Layout

NORTH

Project :	Puddletown CC		
Client :	Puddletown CC		
Consultant :	Iain James		
Date :	16/09/2019	Drawing Status :	Feasibility
Scale :	1:750	Paper Size :	A3
Drawn by : OM	Checked by : IJ	Approved by : IJ	

Drawing Number

TGMS1180.1-2

Revision

0