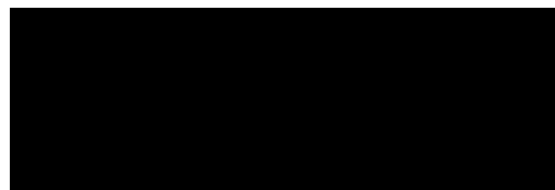


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SPECIFICATION FOR THE CONSTRUCTION OF A NEW WINTER SPORTS PITCH AND TWO MUGAS AT FELPHAM PLAYING FIELDS.

Kestrel Contracts

7th October 2021

REVISION RECORD					
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TGMS and PSD Agronomy are trading names of Professional Sportsturf Design (North West) Ltd. Company number 01957538.
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1.1 FORM OF TENDER

PROJECT TITLE: **The construction of a winter sports pitch and two MUGAs at Felpham Playing Fields.**

We (Tenderer's name to be entered) hereby tender and undertake to perform the whole of the works/services required in and associated with the Project for **Barratt Homes** according to the Specification, Work Schedules, Preliminaries and Drawings examined by us for the firm price sum of:

.....(pounds)

.....(pence)

(£ : p) excluding VAT.

Further we are prepared, when called upon to do so, to enter into and sign a contract, the full terms of which we have read, for the due and proper completion of the works/services.

We understand that we are tendering at our own expense and that the Client is not bound to accept the lowest or any tender.

We declare that we are not party to any scheme or agreement under which:

- we inform any other person the amount of our tender; and/or
- we have fixed the amount of any tender in accordance with a price fixing arrangement.

We accept that the Client is entitled to cancel the contract and to recover from us the amount of any loss resulting from such cancellation if it is discovered that there has been any corrupt or fraudulent act or omission by us which in any way induced the Client to enter into the contract.

We declare that all goods materials and workmanship will meet the appropriate British Standard Specification or British Standard Code of Practice issued by the British Standards Institution or equivalent European standard current at the date of the contract.

We undertake in respect of all persons employed by us or with whom we sub-contract to comply with the Equality Act 2010, Disability Discrimination Act 1995, the Commission for Racial Equality's Code of Practice issued under the Race Relations Act 1976 aimed at eliminating discrimination and promoting equality of opportunity and the Council's whistleblowing policy enforced from time to time (which can be provided upon request).

We undertake not to transfer, assign, or sub-let any portion of the contract nor create any lien or charge on premises, goods or equipment connected with or forming part of the contract, without the written consent of the Client or its duly authorised officer.

We agree that if, before acceptance of this tender, an error in computation of the tender is detected in the priced document submitted by us we will be given details of the error and the opportunity of confirming the total tender sum or withdrawing the tender.

We agree that the insertion by us of any qualifications to this tender or any unauthorised alterations to any of the tender documents will not affect the original text but will cause the tender to be liable to rejection.

We agree that this tender will remain open for acceptance by the Client and will not be withdrawn by us for a period of 90 days from the last date fixed for the receipt of tenders or any notified extension thereof.

We certify that this is a bona fide tender.

Tenderer's Name

.....

Address

.....

.....

.....

Telephone

.....

Facsimile

.....

Signature*

.....

Name

.....

Date

.....

Witness

.....

Name

.....

Date

.....

* Where the Tenderer is an incorporated association the Company Secretary or a duly authorised Director should sign. In the case of a partnership a Partner should sign. In the case of an individual the Proprietor should sign.

2. PART II: DESIGN SPECIFICATION

2.1 INTRODUCTION AND SITE INFORMATION

2.1.1 Site location and access

- The site is situated at: Felpham (otherwise known as Stanover) Playing Fields, Felpham.
- Post Code: TBC

The existing site is former open agricultural land and has not been previously developed. As part of the residential development ground levels in this part of the site were raised through the placement of site won fill materials.

2.1.2 Relevant site investigation

Wilson Bailey Geotechnical & Environmental Ground Investigation report J02105/DB/c01

2.1.3 Arrangements to visit the site can be made by contacting

Contact Name: Bradley Slingo

Company: Barratt Homes



2.1.4 CDM (2015) Regulations

The Contractor appointed for this work will be the Principal Contractor.

2.2 GENERAL SCOPE

The work proposed in this specification shall be as follows:

PART A: NATURAL TURF PITCH - EARTHWORKS, DRAINAGE AND ESTABLISHMENT

- Site clearance and initial cultivations (undertaken by others)
- Topsoil strip (undertaken by others)
- Earthworks – Cut and Fill (undertaken by others)
- Topsoil return (undertaken by others)
- Imported topsoil return
- Topsoil re-grading
- In situ stone removal works
- Installation of a piped drainage scheme at 3 m wide centres
- Final cultivations
- Fertilisation and seeding
- Installation of secondary drainage (sand grooves)
- Fertilise and overseed
- Sand topdressing
- Reinstatement of damage
- As-built survey, O&M Manual and H&S File

PART B: AGRONOMIC MAINTENANCE to HANDOVER

- Mowing
- Fertiliser application
- Herbicide (if required)
- Overseeding
- Aeration
- Sand topdressing
- Pesticide/Fungicide application (if required)

PART C: CONSTRUCTION OF 2 MULTI-USE GAMES AREAS (Type 1)

- Installation of stone sub-base (top 250 mm, remaining to be installed by others linked to a Permavoid system).
- Installation of porous macadam base course.
- Installation of porous macadam wearing course.
- Colour coating. (if required)
- Line marking.
- Installation of a mowing strip.
- Installation of perimeter fencing.
- Reinstatement.
- Court testing and certification.
- Warranties.
- As-built survey.

These specifications relate to the sports surface construction works only. The Contractor will be required to provide all temporary fencing to ensure site security and protect the public. Please refer to the Schedule of Drawings (Table 1) for earthworks and layout.

Table 1 Schedule of Drawings.

Drawing No	Title
TGMS0614.28-1	Felpham Playing Fields – Drainage Design
TGMS0614.28-2	Felpham Playing Fields – MUGA Layout, Build Up and Fencing

General Notes

- All drainage and earthworks to be carried out using equipment fully equipped with laser grade control.
- All ancillary equipment to be fitted with low ground pressure tyres.
- The position and layout of the drainage system, as indicated on the attached drawing, may be amended to take account of local factors encountered on site.
- Contractors must be aware: allowance shall be made for topping up trench lines following settlement occurring during the 12-month period following drainage installation, including as a result of natural soil shrinkage in dry weather.
- Diesel or any other deleterious matter shall be prevented from contaminating the site etc. Any such matter allowed to pollute the site shall be removed together with all affected soil and/or plant material and carted to tip at the Contractor's own expense. Any material necessary to make good the soil formation or plant material will be provided by the Contractor and will be of the type and quality of the original material prior to damage, and must be approved by the Contract Administrator.
- Stones are a particular safety hazard and are a key component of Performance Quality Standards. The Contractor should note that the imported materials must not include stones or any material outside the specified particle size distribution.
- Provisional sums will not be considered as a compliant bid, and the specification must be achieved for the price stated by the Contractor in the tender return documents.
- It is the Contractor's responsibility to conduct searches to determine the presence of any services and utilities running through, over and/or around the working area. Contractors should conduct site investigations to determine the location of any service or utilities as per good health and safety procedures. All this should be before the commencement of any work on site.
- Prior to start on site, the Contractor shall prepare a photographic Schedule of Condition and agree same with the Contract Administrator.
- The works listed below are not necessarily to be conducted in chronological order. It is the responsibility of the contractor to implement all items specified to the desired standards irrespective of the order that they are presented in this document.

2.3 DETAILED SPECIFICATION

PART A: EARTHWORKS, DRAINAGE AND ESTABLISHMENT

Item	Operation
P1	The Contractor shall allow for all necessary fencing and signage in order to secure the working and site compound areas and haulage routes in order to protect members of the public from the works. It is anticipated that Heras fencing shall be used to demarcate the working areas and site compound. Footpath crossing points shall be marked appropriately. The location for deep excavations (e.g. inspection chamber construction) shall be protected with Heras (or similar) fencing.
P2	The Contractor shall allow for compliance with all relevant Health and Safety regulations including the Construction Design and Management regulations (CDM) 2015. This shall include performing the role of Principal Contractor.
P3	The Contractor shall allow for the provision of all welfare facilities for staff.
P4	The Contractor shall allow for the mobilisation and demobilisation of all necessary plant to complete the project.
P5	The Contractor shall allow for compliance with all Conditions of Contract.
P6	The Contractor shall locate and mark the path of the electrical cables in and around the project area. The Contractor will be responsible for making good any damage caused by construction.

FOR INFORMATION ONLY: The sub-formation (cut and fill earthworks) has been prepared by others (including gradients and falls). The methodology for sub-formation preparation is not detailed within this specification. This specification begins with the importation and placement of topsoil following preparatory works conducted by others.

FOR INFORMATION ONLY: The drainage design and specifications contained within this document is based on gradients contained within Drawing 'Engineering Layout 5292:01 Rev H' produced by MJA Consulting on behalf of Barratt Homes. TGMS will not be held responsible for any changes in gradients by others which may affect the efficacy of the drainage scheme specified within this document.

A1	Setting out
A1.1	The Contractor shall set out the working area. Please refer to drawing TGMS0614.28-1 Drainage Design for details. If the Contractor requires, TGMS can provide a setting out service for a fee (fee available on request).
A2	Topsoil Importation
A2.1	Following final grading and trimming of the subsoil (by others) and prior to drainage installation, an approved Sandy Loam topsoil shall be imported, placed, and spread within the working area of the natural turf football pitch including the safety run-offs.
A2.2	Imported topsoil should be an approved Sandy Loam textured topsoil suitable for sports use and comprising particle sizes in the following range: 70-85% Sand, 0-10% Clay and 0-20% Silt.
A2.3	The chosen topsoil shall be free of stones >15 mm diameter, shall have no glass or other physical contaminants and shall have a minimum saturated hydraulic conductivity of not less than 15 mm h ⁻¹ when compact (at a test dry bulk density of not less than 1.50 g cm ⁻³).

- A2.4 The topsoil shall carry current (within the previous 6 weeks prior to being spread) valid analysis certificates that prove that it conforms to the above specification. In addition, the topsoil must comply with the British Standard for Topsoil (BS3882:2015), be suitable for sports pitch use and be free of all physical, biological and chemical contaminants. All certificates shall be provided by the Contractor for approval by the Contract Administrator or their representative prior to work commencing. All analysis should be undertaken by a laboratory that complies with Good Laboratory Practice and/or is UKAS Accredited ISO 17025:2017 for topsoil analysis.
- A2.5 Samples of the delivered topsoil shall be taken by the Contractor at the rate of 1 Nr. 0.50 kg sample / 250 m³ of topsoil. These shall be retained on site for subsequent analysis. Should these fail to meet the above requirements, the soil material imported and spread will need to be removed and replaced at the Contractor's expense.
- A2.6 The topsoil shall be placed in layers of approximately 75 mm and lightly consolidated in order to achieve a final dry bulk density of between 1.2 – 1.3 g cm⁻³ and a finished level that is blended into surrounding hard and soft landscaping. Topsoil depth including site won material and imported material should be nominally 200 mm deep and not exceed 400 mm in total.
- A2.7 A stone separation operation shall be undertaken to remove all stone >20 mm in any dimension from at least the upper 75 mm depth of topsoil. This shall be undertaken with a modified potato harvester, beach cleaner or other suitable approved equipment and may require multiple passes to achieve the specification. The stones shall be disposed of on-site. Care should be taken not to contaminate imported material with stones from site won material.
- A2.8 Surface level uniformity of the placed topsoil shall achieve a tolerance of no more than a 20 mm deviation beneath a 2.0 m straight edge.

A3 Drainage installation

- A3.1 Trench excavation
- 3.1.1 Please refer to the accompanying Drawing **TGMS0614.28-1 Drainage Design** for the layout of the drainage scheme. Drain cross sections are also presented.
- 3.1.2 The trenches shall be clean cut, with a level base, to the dimensions given in **Item A3.2**.
- 3.1.3 All trenches shall be excavated with machinery fitted with laser grade control.
- 3.1.4 Excavation shall begin at the outfall, the profile to be established at the outfall, and carried upstream with adjustments for grade and depth as work proceeds.
- 3.1.5 Any under drains encountered are to be marked so they can be renovated and connected into the new system if considered viable.
- 3.1.6 All spoil from this operation shall be disposed of on-site.
- A3.2 Trench dimensions
- 3.2.1 Lateral drains (80 mm Ø plastic perforated pipe)
- Depth 0.450 m below nominal ground level.
 - Grade at natural fall of finished surface and not less than 0.50% (1:200).
 - 3.0 m spacing.
 - Not less than 0.150 m wide.
- 3.2.2 Collector drain (160 mm Ø plastic perforated pipe).
- Depth 0.500 m below nominal ground level.
 - Grade at natural fall of finished surface on the southern goal line.

- On the western touchline, the gradient of the collector drain shall be engineered from IC1 to IC2 at 0.73% to achieve an invert level at IC2 of 2.53 metres (50 mm higher than the invert level to the attenuation basin).
- The collector drain gradient from IC3 to IC2 shall be engineered at a 1% gradient to achieve an invert level at IC2 of 2.53 metres (50 mm higher than the invert level to the attenuation basin)
- The collector drain gradient from IC4 to IC3 shall be engineered at a 0.73% gradient to achieve an invert level.
- The collector drain gradient to IC4 shall be at the natural fall of finished surface.
- These gradients mirror the original gradients for the collector drain as proposed by MJA Consulting.
- Please refer to the accompanying Drawing TGMS0614.28-1 Drainage Design.
- Not more than 0.200 m wide.

A3.3

Gravel backfill for lateral and collector drains

- 3.3.1 The material shall be clean, hard, gravel or chippings (e.g. quartz or quartzite) with dimensions not greater than 6 mm and not less than 3 mm. The calcium carbonate content shall not exceed 10%.
- 3.3.2 The material shall be free of fines and placed in a 25 mm layer on the trench floor prior to laying the pipe (unless the trencher cuts a “V” shaped trench base when the pipe can be laid directly on the trench floor).
- 3.3.3 The gravel backfill shall be placed immediately and carefully over the pipe to within 170 mm of the surface. Any damage to the pipe shall be made good at the Contractor's expense.

A3.4

Sand fill material for lateral and collector drains

- 3.4.1 The sand shall comply with the following grading:

– V. coarse sand (2.0 – 1.0 mm)	<5%
– Coarse sand (1.0 – 0.5 mm)	10 – 20%
– Medium sand (0.5 – 0.25 mm)	55 – 70%
– Fine sand (0.25 – 0.15 mm)	10 – 20%
– V. fine sand (0.15 – 0.05 mm)	<5%
- 3.4.2 The sand shall have a capillary rise of no more than 250 mm when compact (1.65 Mg m^{-3}),
- 3.4.3 The sand shall have at least 15% air-filled porosity in the top 50 mm of the capillary rise, and
- 3.4.4 The sand shall have a saturated hydraulic conductivity of at least 300 mm h^{-1} when compact (1.65 Mg m^{-3}).
- 3.4.5 The sand shall be non-saline (electrical conductivity $< 0.75 \text{ dS m}^{-1}$), and contain less than 0.5% (w/w) CaCO_3 .
- 3.4.6 The sand shall have a pH in the range of 5.5 – 7.0.
- 3.4.7 Provision shall be made to top up the drain runs to take account of natural settlement of material within the trenches such that a level playing surface is achieved. Any settlement below stated levels during the first 12-months post installation shall be made good at the Contractor's expense. This includes settlement as a result of natural soil shrinkage due to dry weather.

A3.5

Pipe laying

- 3.5.1 Pipes shall be laid to the correct depth stipulated above and to an even grade.
- 3.5.2 Drainage depth is to be measured from finished ground levels (unless indicated otherwise).

- 3.5.3 The pipe shall be corrugated plastic corresponding to EN1401-1:2019. There should be no damage to the pipe. Upper ends of drain runs shall be plugged to prevent ingress of soil or animals.
- 3.5.4 Solid main drains shall be solid, smooth, twin-walled plastic pipe to EN1401-1:2019.

A3.6 Junctions and connections

- 3.6.1 Connection of lateral drains to the collector drain shall be made with purpose made junctions as required (80/160 mm).
- 3.6.2 The collector drain shall be let into the outfall inspection chamber and caulked with a sand/cement mix concrete to make good the pipe/wall seal.

A3.7 Inspection chambers

- 3.7.1 Inspection chambers to be positioned as indicated on the accompanying plans and detailed in the work schedules.
- 3.7.2 Chamber can be constructed of brick, concrete or plastic (conforming to BS 7158).
- 3.7.3 It shall be large enough to permit access for cleaning, jetting and rodding.
- 3.7.4 A sump of at least 150 mm below the lowest pipe shall be incorporated to act as a silt trap.
- 3.7.5 The top of the chamber shall be set level with the ground surface.
- 3.7.6 The cover loading (to BS EN 124) for the inspection chamber on the playing surface shall be Class B125.
- 3.7.7 Synthetic turf shall be fixed to the inspection chamber covers (in turf areas only).

A3.8 Outfall

- 3.9.1 Outfall and flow rates are to be determined by others following installation of the pitch drainage works, and connection to outfall is by others.

A4 Cultivations

A4.1 Upon completion of the installation of drainage infrastructure, the topsoil in the development area (i.e. pitches, embankments and surrounds) shall be cultivated in order to produce a tilth suitable for the cultivation of fine-leaved Perennial Ryegrass species. It is acceptable to cultivate over the drain lines to assist with grass plant germination; a maximum of 50 mm sand/soil cover shall be present over the drain lines.

A4.2 A further stone separation operation shall be undertaken to separate all stones >20 mm in any dimension from at least the upper 50 mm depth of topsoil and all sharps e.g. flints, glass and ceramics >10 mm from the upper 30 mm depth of topsoil. This shall be undertaken with the appropriate equipment and may involve hand picking. The stones shall be disposed of on-site in an approved location.

A4.3 Surface level uniformity of the finished surfaces shall achieve a tolerance of:

- no more than a 10 mm deviation beneath a 3.0 m straight edge on the playing surfaces and safety margins,

no more than 20 mm deviation beneath a 3.0 straight edge elsewhere.

A5 Fertilisation

A5.1 The cultivated area shall be fertilised with an appropriate pre-germination fertiliser of 10:15:10 formulation at a rate of **70 g m⁻²** at least 3 days prior to seeding. This should be lightly worked into the seedbed during final cultivations.

A6 Seeding

- A6.1 A suitable 100% Perennial Ryegrass seed mix shall be drilled @ **50 g m⁻²** in at least three directions. The seed mix shall be made up from at least three varieties each with a minimum rating for the mean of live ground cover and visual merit of 7.0 as listed in the latest BSPB Turf grass Seed Book, Table S1: Perennial Ryegrass, Sports Uses.
- A6.2 Seeding is to include all embankments, surrounds and batter slopes as a result of the cut and fill earthworks.
- A6.3 The seed shall have a certified germination of not less than 80% and a certified purity of not less than 90%. Total weed seed content shall not be more than 0.5% and the total content of other crop seeds shall not exceed 1%.
- A6.4 If necessary, the seeded area shall be lightly rolled to settle and firm the surface.

A7 Installation of sand grooves [INTO ESTABLISHED GRASS SWARD]

- A7.1 The sand grooves shall be installed into an established grassed surface. Please note, sand grooves must not be installed during drought conditions or when a period of drought is expected. Sand grooves must be topped up if sand levels have dropped below surface level (even as a result of periods of drought), any topping up is to be included in the price of sand grooves and will not form part of the 24 mm sand topdressing as specified in this document.
- A7.2 Using a Redexim Vibra-Sandmaster, sand grooves shall be cut through the surface at approximately a 90° angle to the lateral drains and should intercept with the permeable backfill in these drains. The sand grooves shall be approximately 20 mm wide x 200 mm deep and shall be spaced at approximately 260 mm centres. It is imperative that new blades are used in the Sandmaster to achieve the requisite depths.
- A7.3 The sand grooves are to be filled with washed sand of predominantly 0.125 to 1.0 mm particles. The sand shall:
- 7.3.1 be the same material as that to be used for topdressing,
 - 7.3.2 Comply with the following grading:

- V. coarse sand (2.0 – 1.0 mm)	<5%
- Coarse sand (1.0 – 0.5 mm)	10 – 20%
- Medium sand (0.5 – 0.25 mm)	55 – 70%
- Fine sand (0.25 – 0.15 mm)	10 – 20%
- V. fine sand (0.15 – 0.05 mm)	<5%
 - 7.3.3 have a capillary rise of no more than 150 mm when compact (1.65 Mg m⁻³)
 - 7.3.4 have at least 10 % air-filled porosity in the top 50 mm of the capillary rise.
 - 7.3.5 have a saturated hydraulic conductivity of at least 300 mm h⁻¹ when compact (1.65 Mg m⁻³) at 15 cm tension.
 - 7.3.6 be non-saline (electrical conductivity < 0.75 dS m⁻¹), and contain less than 0.5% (w/w) CaCO₃.
 - 7.3.7 have a pH in the range of 5.5 – 7.0.
- A7.4 If necessary, flat roll the surface to restore surface levels.

A8 Sand Topdressing [Following Sand Groove Installation]

- A8.1 Apply the first of three applications of 8 mm of sand topdressing (24 mm in total) of the following specification:
- V. coarse sand (2.0 – 1.0 mm) <5%

- Coarse sand (1.0 – 0.5 mm) 10 – 20%
- Medium sand (0.5 – 0.25 mm) 55 – 70%
- Fine sand (0.25 – 0.15 mm) 10 – 20%
- V. fine sand (0.15 – 0.05 mm) <5%
- Saturated hydraulic conductivity >300 mm h⁻¹.
- pH 5.5 – 7.0.
- Contain less than 0.5% (w/w) CaCO₃.
- Compliant with Tier 1 Classification.

A8.2 Following each application, the surface shall either be brushed or drag-matted to work the sand into the surface.

A8.3 NOTE: Sand shall not be applied if the turf is under stress (e.g. drought conditions).

A8.4 Following the installation of sand grooves, the development area shall be overseeded using the same seed mixture as that used in the original establishment of the site at a rate of 25 g m⁻².

A8.5 Following the overseed, the development area shall be fertilised to encourage germination and plant development. The contractor shall specify the appropriate fertiliser using section B2 as a guide.

A9 Reinstatement of damage

A9.1 All damage caused by plant and vehicle movement to the playing fields and identified / agreed with the Contract Administrator shall be made good by:

- 9.1.1 Cultivating the affected area to below the depth of damage using a rotary cultivator or similar equipment. Care must be taken with the timing of this operation to avoid smearing on the base of the cultivation. Any weeds, rubbish and stones over 20 mm gauge must be removed and disposed of on-site as directed by the Contract Administrator.
- 9.1.2 A seedbed should then be prepared using a power harrow.
- 9.1.3 Pre-seeding fertiliser (10:15:10) to be applied @ 70 g m⁻² over the reinstated area a minimum of 5 days prior to seeding.
- 9.1.4 A suitable Perennial Ryegrass dominated seed mix shall be drilled at a rate of 35 g m⁻² in two directions. The seed mix shall be made up from at least three varieties each with a minimum rating for the mean of live ground cover and visual merit of 7.0 as listed in the latest BSPB Turf grass Seed Book, Table S1: Perennial Ryegrass, Sports Uses.
- 9.1.5 The seed shall have a certified germination of not less than 80% and a certified purity of not less than 90%. Total weed seed content shall not be more than 0.5% and the total content of other crop seeds shall not exceed 1%.
- 9.1.6 The finished levels for seeding shall, unless otherwise indicated on the drawings, be perfect to the surrounding contours and 25 mm above any adjacent hard surfaces.

A10 As-built survey, O&M Manual and H&S File

A10.1 An as-built/laid survey of the construction shall be carried out and provided to the Client in both pdf and dwg formats. The survey should indicate the location and type of all materials used including the drainage and the relevant diameters and depths of the installation. If the Contractor requires, TGMS can provide a fee for carrying out this service (fee available on request).

- A10.2 Information on materials and methods used, and the operation and maintenance of all systems. This should be provided to the Contract Administrator for inclusion in the O&M manual and H&S files as per the requirements of CDM 2015.

PART B: AGRONOMIC MAINTENANCE to HANDOVER

Item	Operation
B1	<u>Mowing</u> . The Contractor shall carry out the first cut with a rotary mower when the grass has reached a height of 60 mm. The first three cuts shall maintain the grass at 40 mm. Checks for stones; hand-picking will be carried out if necessary, before each cut. After the first three cuts, the Contractor shall cut the development area at a height of 35 mm with low ground pressure cylinder mowing equipment for the remainder of the contract period. During this period the grass must never be allowed to exceed a height of 50 mm. It is anticipated that 30 cuts will be required in total.
B2	<u>Fertiliser</u> . The Contractor shall allow for 4 fertiliser applications to maintain healthy growth and colour throughout the contract period. Plan for the application of fertiliser to commence 4 weeks after grass establishment using the following programme as a guide: Mar 10:5:15 at 350 kg/ha Jun 20:5:15 at 350 kg/ha Aug 15:5:15 at 350 kg/ha Oct 10:5:20 at 350 kg/ha
B3	<u>Weed control</u> . The Contractor shall plan for the application of an approved selective herbicide 6 months after establishment at a time TBC by the contract administrator. This shall be applied at least two weeks after any fertiliser treatment and at a time when grass growth is strong and healthy. Do not apply herbicide during periods of potential turf stress i.e. if the weather is hot and dry or if the weather is frosty. Apply herbicide strictly according to the manufacturer's label recommendations.
B4	<u>Overseeding (if required)</u> . The development area shall be overseeded using the same seed mixture as that used in the original establishment of the site at a rate of 25 g/m ² .
B5	<u>Aeration</u> . Verti-drain the development area on two occasions (April and September) when ground conditions are suitable (sufficient water content to allow penetration of Verti-drain tines to full operating depth).
B6	<u>Sand topdressing</u> . 2 x 8 mm applications. Sand to comply with the following specification: - V. coarse sand (2.0 – 1.0 mm) <5% - Coarse sand (1.0 – 0.5 mm) 10 – 20% - Medium sand (0.5 – 0.25 mm) 55 – 70% - Fine sand (0.25 – 0.15 mm) 10 – 20% - V. fine sand (0.15 – 0.05 mm) <5% - Saturated hydraulic conductivity >300 mm h⁻¹. - pH 5.5 – 7.0. - Contain less than 0.5% (w/w) CaCO₃. - Compliant with Tier 1 Classification.

After application, the surface shall either be brushed or drag-matted to work the sand into the surface. Sand shall not be applied if the turf is under stress (e.g. drought conditions).

- B7 Pest and disease control. Pest and diseases should be controlled using an approved control agent if required.

PART C CONSTRUCTION OF 2 MULTI-USE GAMES AREAS

Item	Operation
P1	The Contractor shall allow for all necessary fencing and signage in order to secure the working and site compound areas and haulage routes in order to protect members of the public from the works. It is anticipated that Heras fencing shall be used to demarcate the working areas and site compound. Footpath crossing points shall be marked appropriately. The location for deep excavations (e.g. inspection chamber construction) shall be protected with Heras (or similar) fencing.
P2	The Contractor shall allow for compliance with all relevant Health and Safety regulations including the Construction Design and Management regulations (CDM) 2015.
P3	The Contractor shall allow for the provision of all welfare facilities for staff.
P4	The Contractor shall allow for the mobilisation and demobilisation of all necessary plant to complete the project.
P5	The contractor shall allow for compliance with all Conditions of Contract.

IMPORTANT, FOR INFORMATION ONLY: The sub-base construction of the MUGAs is based on industry standards comprising 250 mm of aggregate below porous macadam. It is understood that a Permavoid crate system is to be located beneath the MUGA's for the purposes of drainage and attenuation. It is the client's responsibility to ascertain the overall depth of aggregates required above the Permavoid system including any connections to outfall. Connections to Permavoid, including any relevant pipework, is not included within this specification.

C1 Design and performance requirements

- C1.1 The objective of the work is to construct 2 Nr. Multi-Use Games Areas able to accommodate ball rebound sports. The surface shall satisfy the current (at date of current construction):
- Type 1 MUGA as detailed in the Sport England Design Guidance Note 'Artificial Surfaces for Outdoor Sport', published by Sport England, London.
 - Type 1 MUGA as detailed in the SAPCA Code of practice for the Design, Specification and Testing of Bases for Outdoor Synthetic Sport Areas.

C2 Quality of materials and workmanship

- C2.1 Where and to the extent that materials, products and workmanship are not fully specified they are to be:
- Suitable for the purposes of the Works stated in, or reasonably to be inferred from, the contract documents.
 - In accordance with good building and/or engineering practice, including the relevant provisions of current British/European Standards.
 - Work will not progress past key stage inspections (to be agreed at pre-contract meeting) without approval from the Contract Administrator.

C3 Setting out and enabling works

C3.1 The Contractor shall set out the working area. Please refer to drawing **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing** for details.

C4 Perimeter edging

C4.1 Edgings shall be precast concrete kerbs (e.g. 50 mm x 150 mm x 900 mm) to BS 7263:2001, well haunched in concrete on mass concrete foundations. Movement joints shall be installed at an appropriate spacing. The maximum gap between the outer kerb face and any adjacent perimeter fencing shall be 10 mm. Kerbs shall be laid to a true line and level with adequate upstand for the macadam surfacing. For layout and cross sections see drawing **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing**.

C5 Sub-base construction – DOT Type 3 Stone Layer

Important, please note: The sub-base for the MUGA construction has been designed by others including Permavoid attenuation. It is imperative that the aggregates in-situ are sufficiently clean, of the requisite depth and stiffness and have sufficient infiltration characteristics; this specification deals with the construction of the upper 250 mm of the aggregate sub-base prior to laying of the porous macadam surface.

C5.1 The sub-base shall be constructed to a consolidated depth of 250 mm.

C5.2 The sub-base should be formed from virgin aggregates of a reduced fines grade of crushed rock complying with the requirements of the Department of Transport Specification for Highways Work for Type 3 sub-base materials and comprising 30% porosity when fully consolidated.

C5.3 All aggregates shall be non-porous and frost resistant; test certificates to be provided by the aggregate supplier.

C5.4 The surface level tolerance shall be ± 10 mm of the design level and, when checked using a 3 m straight edge, there should be no deviation > 10 mm in any direction. Consideration should be given to laying the final layer with a laser paver to achieve the tolerances set out above. If a more stable surface finish is required for macadam paving, the top 50 mm can be formed from Aggregate Industries 'Suds Aggregate' 20/4 product.

C5.5 The installed sub-base shall have a compacted density of 95% of the maximum dry density when tested in accordance with BS5835 (there shall be no detectable movement under the roller used to compact the surface) and have a target stiffness of 60 MPa (min 40 MPa) when tested with a lightweight deflectometer (300 mm plate, contact stress of 100 kPa (7.1 kN impact force)). The testing should be carried out at 10 m centres across the courts. *Results from the testing shall be submitted for approval prior to the application of the macadam course.*

C5.6 The sub-base shall have a permeability of > 500 mm/hour when compact and measured according to BS EN 12616-2013. *Results from the testing shall be submitted for approval prior to the application of the macadam course.*

C6 Macadam surface

C6.1 The MUGA's are designed as a porous system. The surface of the courts shall incorporate two layers of open-textured bitumen macadam (to BS EN 13108-7, BS EN 13043).

- C6.2 Binder course Macadam course comprising 40 mm compacted thickness (minimum compacted thickness not less than 35 mm at any point) of an open textured binder course of 20 mm nominal size aggregate conforming to BS EN 13108-7 and the SAPCA Code of Practice for the construction and maintenance of Tennis courts. To be laid as per supplier installation guides; note supplier might insist on approved installation subcontractor.
- C6.3 The surface level tolerance shall be ± 10 mm of the design level and, when checked using a 3 m straight edge, there should be no deviation > 10 mm. No joint shall vary in level by more than 2 mm. There shall be no imperfections within the macadam course
- C6.4 Surface course Macadam course comprising 25 mm compacted thickness layer of an open textured wearing course of 6 mm nominal size aggregate (e.g. Aggregate Industries SuperSport 6 or similar) conforming to BS EN 13108-7. The material should be capable of passing the slip resistance tests detailed in **Item C11**. To be laid as per supplier installation guides; note supplier might insist on an approved installation sub-contractor.
- C6.5 The surface level tolerance shall be ± 10 mm of the design level and, when checked using a 3 m straight edge, there should be no deviation > 6 mm. There should be no discernible cross joints. No joint shall vary in level by more than 2 mm. There shall be no imperfections within the macadam courses.
- C6.6 The finished surface shall have an in-situ infiltration rate exceeding 150 mm/hour (as per BS EN 12616). Carry out infiltration rate testing at three (3 Nr) locations across each court prior to the commencement of colour coating and line marking.

C7 Perimeter Mowing Strip

- C7.1 The surrounding outer perimeter of each MUGA (outside the fence) that is not adjacent to a retaining structure will be a mowing strip as per the cross section presented in **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing**.
- C7.2 Mowing strips are to be formed of the same two-layer, porous Macadam specification as detailed in **Item C6**.

C8 Line Markings

- C8.1 Supply and install line markings as per the requirements of Client. Line markings on drawings are to be confirmed following the planning process.
- C8.2 Line markings shall comprise proprietary water based polyurethane sports paints, augmented with aluminium oxide aggregate (or alternative as per manufacturer's recommendations) for increased slip resistance as required, to comply with relevant National Governing Bodies and the slip testing requirements.
- C8.3 Paints and binders to be mixed accordingly to the manufacturer's instructions and applied at the recommended application rates.
- C8.4 The quality of paint shall ensure that there are no significant signs of fading, flaking or cracking over a period of three years.

- C8.5 Paints should be applied via an airless spray technique to ensure a uniform spray fan with a feathered edge so that there are minimal discernible lines on the painted surface.
- C8.6 The Macadam shall be allowed to cure and the surface should be clear of grease and oil. This normally takes a minimum of three weeks in the British summer.
- C8.7 Painting should only be undertaken in fine and dry weather (min temp 5°C)
- C8.8 Each coat should be allowed to cure before further paint application.
- C9 Fencing**
- C9.1 Please refer to the accompanying drawing **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing** for fencing layout and cross sections. All fencing works shall be undertaken in accordance with the appropriate sections of BS EN 15312:2007 A1:2 Free access multi-sports equipment – requirements, and the current SAPCA Code of Practice for the Construction and Maintenance of Fencing Systems for Sports Facilities.
- C9.2 The 3.00 m high 'Tennis Fencing' shall comprise welded mesh, spacing 200 mm vertical x 42.85 mm horizontal x 6 mm vertical and twin 8 mm horizontal wires.
- C9.3 The bottom of the fencing panels shall be positioned 10 mm above the concrete edging of the remaining courts.
- C9.4 Fence posts shall be hollow section measuring a minimum 80 mm x 40 mm. Fence posts shall be set at 2.525 m centres.
- C9.5 All posts shall be set in concrete footings of minimum size 450 mm x 450 mm x 850 mm increased as required for local ground conditions.
- 9.5.1 The post holes shall be excavated neatly and with vertical sides.
- 9.5.2 Concrete mix: GEN1 or ST2 – to BS EN 206-1 using 20 mm nominal size graded aggregates. An alternative for small batch: the mix should not be leaner by mass than 1 part cement to 10 parts 20 mm nominal graded aggregates.
- 9.5.3 All concrete should be thoroughly compacted prior to the initial set
- C9.6 All mesh and posts shall be galvanised in accordance with BS EN ISO 1461. Post caps shall be fitted to tops of all hollow section posts. Fence posts and mesh shall be galvanised and polyester powder coated in accordance with BS EN 6497. Colour to be RAL 6005 Moss Green.
- C9.7 There shall be no protruding fence (or other) fixings within or outside the court boundaries. All anti-tamper fixing bolts shall be assembled with heads inside and bolts trimmed to within 6 mm of the nut. All fixings should include a rubber anti-rattle clip. The trimmed ends should be burred and treated or shear head nuts used. On low level fencing no mesh end or straining wire shall cause hazards to players, or spectators, particularly children.
- C9.8 Fencing heights shall be as shown on drawing **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing**
- C9.9 Supply and install 2 Nr. single access gates of dimensions minimum 1.50 m (w) x 2.5 m (h) as per **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing**. The bottom of gate shall be positioned 10 mm above concrete edgings. The gates must conform to the Disability Discrimination Act, 2005.

- C9.10 Supply and 2 Nr. double-leaf gates of dimensions 3.00 (w) x 2.5 m (h) as per drawing **TGMS0614.28-2 Felpham playing Fields – MUGA Layout, Build Up and Fencing**. The bottom of gate shall be positioned 10 mm above concrete edgings. The gates must conform to the Disability Discrimination Act, 2005. The double gates shall have a removable lintel and panel to allow access.
- C9.11 All gates shall be hung plumb, level and secure for full opening without interference. Gate latches shall include provision for padlocks. Bolts on gates shall be captive and lockable both shot and withdrawn. Bolt sockets shall be set in concrete.
- C10 Reinstatement**
- C10.1 On completion of the works the site shall be left in a clean and tidy condition. All damage caused to surrounding areas and surfaces shall be reinstated in full to the satisfaction of the Employer using similar materials to the existing.
- C10.2 All damage to hard landscaped areas caused by plant and vehicle movement (including the compound and haul routes) and identified / agreed with the Contract Administrator shall be reinstated to match existing or as per above specification where appropriate.
- C11 Performance Testing**
- C11.1 Following 8 weeks of use, the Contractor should appoint a suitably qualified third party test house to test the courts for the following:
- 11.1.1 The slip resistance should be ≥ 60 and all test positions shall give mean results within ± 5 of the overall mean for the court (based on BS EN 16837).
- 11.1.2 Surface regularity as per BS EN 13036-7 requirements – requirement; no undulation greater than 6 mm.
- 11.1.3 Water permeability as per BS EN 12616 requirements – requirement; ≥ 150 mm/h.
- C11.2 Practical completion will not be achieved until TGMS (or other competent authority appointed by the Client) are satisfied that these standards have been achieved.
- C12 Warranties**
- C12.1 Repairs under Warranty. The Contractor shall undertake as part of the warranty that any remedial work or repair necessary under the terms of the Warranty in respect of failed seams or joints, or loss of adhesion will be completed within 14 days of notification in writing by the Employer. The Contractor shall further undertake as part of the Warranty that any other remedial work or repair necessary under the terms of the Warranty will be completed within 28 days of notification in writing by the Employer and that repairs will be carried out with materials identical to the original installation and at such times as may be agreed with the Employer such that the planned programme of activities shall not be affected.
- C12.2 Macadam. All workmanship and materials will be to a standard, which ensures the tolerances stipulated in the specification are maintained, and the entire court surface, will remain fit for purpose for a period of 12 years. The contractor shall provide details at the tender stage on the length of warranty provided for the macadam surface.
- C12.3 Fencing. All workmanship and materials will be to a standard, which ensures the tolerances stipulated in the specification are maintained, and the entire perimeter fencing and all fixtures and fittings will remain fit for purpose for a period of 10 years.
- C13 As-built survey and O&M Manual and H&S File (if required)**

- C13.1 Conduct as-built survey of constructed site including location of drainage and any other infrastructure. If the contractor requires, TGMS can provide a surveying service for a fee (fee available on request).
- C13.2 Information on materials and methods used, and the operation and maintenance of all systems. This should be provided to the Contract Administrator for inclusion in the O&M manual and H&S files as per the requirements of CDM 2015. As part of this O&M manual, the contractor shall supply instructions on maintenance and safe use to the Client.

2.4 WORK SCHEDULES

Please refer to the accompanying MS Excel spreadsheet:

TGM0614.28 Barratt Homes Felpham Playing Fields Natural and Artificial Sports Surfaces Work Schedules 07 10 2021.xlsx

2.5 INDICATIVE WORK PROGRAMME

With respect to timescales for completing the project, it is recommended 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.

Indicative programme – Natural Turf Pitch

Activity	Year 1												Year 2											
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Contractor mobilisation																								
Total herbicide application																								
Earthworks																								
Topsoil import																								
Stone removal																								
Drainage installation																								
Cultivations, fertiliser and seeding																								
Initial agronomic maintenance																								
Secondary drainage																								
Pitch ready for play (full use)																								

Notes:

N.B. 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 the Contract Administrator.

2.6 DESIGNERS ASSESSMENT OF RESIDUAL RISK

2.6.1 The project:

- Name: Felpham Playing Fields.
- Nature: Natural turf sports pitch construction.
- Location: Felpham Playing Fields, Felpham.

2.6.2 Nature of work:

PART A: NATURAL TURF PITCH - EARTHWORKS, DRAINAGE AND ESTABLISHMENT

- Site clearance and initial cultivations (undertaken by others)
- Topsoil strip (undertaken by others)
- Earthworks – Cut and Fill (undertaken by others)
- Topsoil return (undertaken by others)
- Imported topsoil return
- Topsoil re-grading
- In situ stone removal works
- Installation of a piped drainage scheme at 3 m wide centres
- Final cultivations
- Fertilisation and seeding
- Installation of secondary drainage (sand grooves)
- Fertilise and overseed
- Sand topdressing
- Reinstatement of damage
- As-built survey, O&M Manual and H&S File

PART B: AGRONOMIC MAINTENANCE to HANDOVER

- Mowing
- Fertiliser application
- Herbicide (if required)
- Overseeding
- Aeration
- Sand topdressing
- Pesticide/Fungicide application (if required)

PART C: CONSTRUCTION OF 2 MULTI-USE GAMES AREAS (Type 1)

- Installation of stone sub-base (top 250 mm, remaining to be installed by others linked to a Permavoid system).
- Installation of porous macadam course base course.
- Installation of porous macadam wearing course.
- Colour coating. (if required)
- Line marking.
- Installation of a mowing strip.
- Installation of perimeter fencing.
- Reinstatement.
- Court testing and certification.
- Warranties.
- As-built survey.

2.6.3 Timescale for works:

12 Weeks + initial agronomic maintenance.

2.6.4 Existing drawings:

See Table 1 above.

2.6.5 Existing environment:

The site currently comprises existing open farm land which requires re-grading and material import prior to drainage installation, cultivations and re-seeding.

2.6.6 Residual risk to construction workers:

1. Tetanus.
2. Injury from vehicle movements in and around site.
3. Excavations >0.5 m.
4. Potential fall hazard from exposed trenches prior to backfilling.
5. Fertiliser application.
6. Herbicide application.
7. Materials handling, including bulk materials handling.

2.6.7 Residual maintenance risks:

1. Handling, storage and application of pesticides.
2. Handling, storage and application of fertilisers.
3. Dust (soil).
4. Manual handling.
5. Use of machinery including tractors, mowers, rollers and others.
6. Vibration.
7. Confined, deep spaces (maintenance of inspection chambers)

2.6.8 Residual operator risks:

1. Risk of acute and chronic sport injury – this risk has been minimised through the use of industry approved products and systems, material selection, the use of industry best practice design and the use of performance testing. It is the recipients responsibility to maintain the surfaces following pitch handover so that these performance and safety standards are maintained.
2. The use of sports facilities during the construction phase (this risk is owned by the Contractor and the Client and behaviour; coordination and communication are as important as physical control measures such as fencing and signage).

2.6.9 Construction materials that are hazardous to health:

1. Fertiliser
2. Soil
3. Herbicide
4. Cement

2.6.10 Site wide elements:

The working areas and haul routes shall be fenced with Heras fencing, or similar, to delineate these areas. This fencing shall be maintained until handover to the Client.

2.6.11 Method statements & risk assessments to be provided by contractor:

1. Topsoil import, placement and grading
2. Primary drainage installation
3. Secondary drainage installation
4. Herbicide application
5. Fertiliser application

2.7 METHOD STATEMENTS

ITEM	Brief method statement (Continue on additional sheets if required)	Type / name of equipment you intend to use	Is equipment owned by the contractor?	Is equipment rented?	Will work be sub-contracted?	How many staff will be on site?
1. Topsoil import, placement, and grading						
2. Primary drainage installation						
3. Secondary drainage installation						
4. Herbicide application						
5. Fertiliser application						

2.8 SUBCONTRACTORS

Please specify the names and contact details for any subcontractors that you intend to use during the project (please continue on a separate sheet if necessary):

Name	Contact Details	Role

2.9 REFERENCES

Please provide references from three recent (last 2 years) schemes where you have carried out work of a similar nature and value. Please give name, address and telephone number for the referees.

Name:	Contact Details:	Nature of work / project value (£):

2.10 CONFIDENTIALITY

This presentation is confidential and is only for the use of officers of Barratt Homes. Without the specific consent in writing of TGMS or Professional Sportsturf Design (NW) Limited (PSD), no copies of this presentation are to be made and information contained herein should not be communicated to any third party. At the request of TGMS or PSD all copies of this document, in whatever form, are to be returned.

2.11 CONTACT DETAILS

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