

PROJECT	DATE	BY	REFERENCE
5017735 – Cowplain School of Hart Plain Avenue, Cowplain, Waterlooville, Hampshire, PO8 8RY	04/12/2023	GB	5017735-TN-CC

TITLE	REV
Sports Pitch & Drainage – Construction Site Supervision, Records and Compliance	-

1. RIDGE & PARTNERS LLP – SERVICES

Ridge & Partners LLP have been appointed by Fed3 Projects Ltd to monitor, for compliance, the on-site construction activities for the construction of the Sport England Pitch and Drainage Works at Cowplain School, Hart Plain Avenue, Cowplain, Waterlooville, Hampshire, PO8 8RY (the “Application Site”).

Site visits were scheduled, once a week, for a period of eight (8) weeks for the on-site Sport England Pitch and drainage construction monitoring and recording services, predominantly comprising quality compliance inspections, reports and sign offs. The site works were compared and contrasted with Contractor’s scope and design, Employer’s Requirements and Sport England requirements together with materials guarantees and warranties.

A preliminary site visit was carried out by Ridge & Partners LLP on Thursday 27th April 2023 to view the existing site in readiness for the Contractor to commence Works; no abnormal risks were observed, and the site was observed to be clear of any obstructions.

The Contract to “Supply Sports Field Drainage Design and Works at The Cowplain School” was signed by the parties on 13 July 2023. The Employer is Cowplain School, and the Contractor is Kestrel Contracts Ltd.

2. PURPOSE OF THIS TECHNICAL NOTE

This Technical Note covers the period from 25 July 2023 to 11 October 2023 and has been prepared to confirm construction compliance confirmed by site observations and recording services during our on-site inspection visits only, including quality compliance checks, reports and sign offs. Ridge & Partners LLP site observations were compared and contrasted with Contractor’s scope and design, Employer’s Requirements and Sport England requirements together with materials guarantees and warranties. In essence, site observations included the following;

The Contract Documents, including but not limited to:

- Contract Design Drawing No. GMA 0930.27-1 Rev7.
- Employer’s Requirements and design details/specifications and construction drawings.
- Contractors H,S&W plan and Construction Management Plan
- Contractors contact details and authorised persons list.
- Contractors working hours and approved programme.
- Contracts equipment and tools list.
- Material list and approvals.
- Lists of Contractor guarantees/warranties.

3. SITE LOCATION

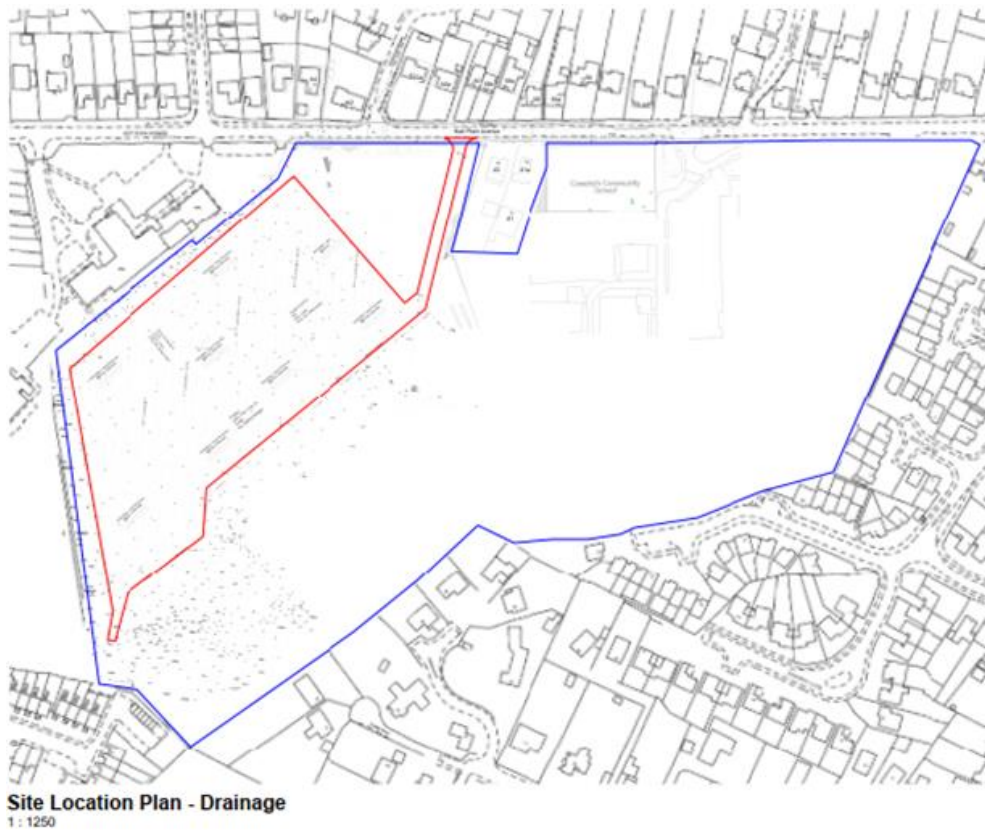


Figure 1 – Site Location – Sport Pitch and Drainage (Red Line)



Figure 2 – Proposed Sport Pitch Location (grass area)

4. SITE DESIGN

The Sport England Pitch and drainage design was carried out by Grounds Management Association Ltd as shown in Appendix A: Cowplain School, Drainage Design, drawing No. GMA 0930.27-1 Rev7.

The proposed drainage scheme is a Sport England Type 4 system comprising lateral drains at 4m centres with sand grooves. The outfall is into the existing surface water drainage system via an existing connection with flows restricted to the Greenfield 1 in 1 year runoff rate for the site. The detention basin is designed to be ephemeral and not permanently wet. The arisings from the works were partly used in creating the bund around the detention basin and extra material was disposed of elsewhere on site in agreement with the school.

Grounds Management Association Ltd have attested to the design complying with Sport England design guidance for Type 4 pitches – pipe drained with sand grooves as detailed in Natural Turf for Sport, 2011: Sport England. Please see Appendix B - Grounds Management Association Ltd design confirmation letter.

5. SITE CONSTRUCTION

As per Contract Clause 16: [Time of Performance], stated as: “ *The completion date for the Works is the 8th September 2023, with the 12 month maintenance period completing September 2024*”. It was reasonably agreed that rainfall causing the ground to become un-workable would be grounds for an extension of time.

The Contractor set up his site establishment including a new entrance gate with initial plant and materials delivered during the week commencing 17th July 2023.

Further Ridge & Partners LLP site visits occurred on:

1. Tuesday 25 July 2023
2. Monday 07 August 2023
3. Monday 14 August 2023
4. Monday 21 August 2023
5. Monday 28 August 2023
6. Monday 04 September 2023
7. Monday 11 September 2023

During the Works, heavy rainfall caused stoppages, recorded as twenty-two (22) working days of critical delay leading to the accepted, entitled, Construction Completion Date of 11 October 2023. All Works were carried out in accordance with Appendix A: Cowplain School, Drainage Design, drawing No. GMA 0930.27-1 Rev7. Inspections during each weekly site visit assessed the design and construction compliance as well as any issues arising. Site Inspection Forms were signed-off for each stage-activity completed, please see Appendix C: Site Inspection Request Form.

Notwithstanding the Construction Completion date of 11 October 2023, the Contractor had proposed that the twelve (12) months maintenance period commences from 29th September 2023 to 28th September 2024, being twelve (12) months from the actual date of seeding for the Sports England Pitches. This date was also proposed in the Contractors recommended maintenance particulars; please see Appendix D: Maintenance Guidelines for Sport Pitches. After the Sport Pitch seeding the Contractor completed minor additional works associated with the long-jump and adjacent detention basin. The Contractor left the Site secure, and safety checked.

The final administrative handover of the Site, to the Client, is awaiting issuance of the Contract Construction Completion Certificate, for this phase of Works, following seeding and pending maintenance.

6. SPECIFICATION FOR EXISTING OUTFIELD

Site Clearance and Preparation Works

- Remove old synthetic cricket wicket and dispose off site.
- Remove the two-lane long jump facility and dispose off site.
- Mow grass and dispose off site.
- Apply total herbicide.

Earthworks to Outfield

- Levelling of playing field

Drainage to Outfield

Works as per drawing 'GMA 0930.27-1 Cowplain School – Drainage Design Rev7'

- Supply and install main collector drain.
- Supply and install carrier drain.
- Supply and install 80mm lateral drains.
- Supply and install inspection chamber.
- Supply and install Hydrobrake chamber.
- Excavate and shape a detention basin of approx. 115m³.
- Supply and install 100mm carrier drain to existing outfall chamber from Hydrobrake chamber.
- Supply and install precast GRC / pre-cast headwalls and instal in basin sides.
- Supply and install sand grooves (following year from seeding).

Finishing Works

- Supply and apply pre-seed fertiliser.
- Supply and drill specified seed.

Line Marking

- Supply and apply line marking for a 6-lane running track.
- Supply and apply line marking for 1 adult football pitch and 1 youth football pitch.
- Supply and apply line marking for 1 rugby pitch.

Other Works

- Installation of a new long jump and pit (1 lane only). Rubber topped edgings to sandpit, polymeric surface to run-up, two layers of macadam.
- Supply and install sports equipment.
- The spreading of arisings on site to an area of approx. 1000m².
- The total arisings from the drainage works is around 339 m³. The wildlife area is around 4900 m² so if the arisings are spread over say 1000 m² (avoiding scrub and trees and the suds scheme) then this will raise that area by around 34 cm.

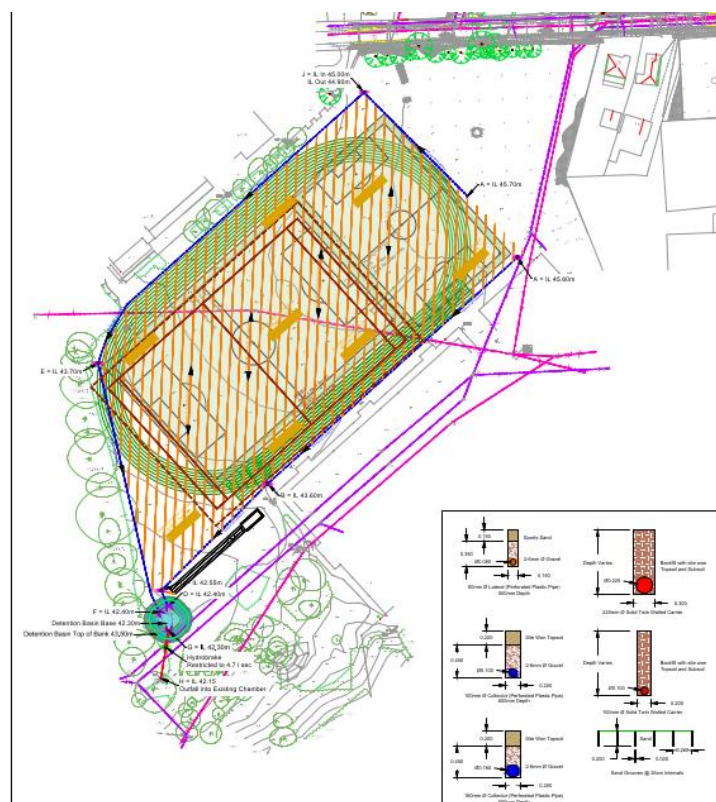


Figure 3 – Proposed Sport Pitch & Drainage Works

Sport England, the Football Foundation and Hampshire FA has required that the following list forms part of the works to be undertaken, (Kestrel responses are in red):

- Strip upper 10 mm of vegetation and thatch dispose off-site. **Kestrel are to undertake.**
- Apply gypsum **Kestrel are to undertake.** In addition to calcium sulphate specific sports **itch fertiliser will be applied.**
- Topsoil cultivation repeatedly to break down thatch and mix through upper 100 mm. **Kestrel are to undertake**
- Stone bury. **Kestrel are to undertake**
- Final box grading of the surface. **Kestrel are to undertake**
- Supply and spread 5 mm of specified sand material. **Kestrel will ameliorate more than 5mm**
- Decompaction and loosening works. **Kestrel are to undertake**
- Supply and use temporary irrigation. **If the weather dictates it we, Kestrel, have a fully mobilise facility which could be deployed on site.**
- Strip topsoil to temporary pile. **Kestrel are to undertake**
- Place arisings. **Kestrel are to undertake**
- Replace topsoil. **The topsoil is to be pushed back, as allowed for within tender/contract.**
- Reinstatement including fertilisation and seeding. **Kestrel are to undertake, in addition full final cultivations will be undertaken.**
- Install sand grooves using a Blec Vibramaster or similar. **This is to be undertaken as secondary drainage.**
- Apply a 3mm sand top-dressing using the same sand as used in the grooves. **As part of the ongoing maintenance and the 12 month maintenance period included within Kestrel contract.**
- Fertiliser application and overseed at 30 g m. **As part of the ongoing maintenance and the 12 month maintenance period included within Kestrel contract.**
- Maintain to achieve minimum standard at handover (GMA Good and Sport England) **.Kestrel have a 12 month growing in period within our contract.**

7. SUMMARY OBSERVATIONS

A preliminary site visit was carried out on Thursday 27th April 2023. Photographic records were taken. No untoward risks were observed.

The Contractors commencement, during the week starting 17th July 2023, provided site safety and security fencing, an entrance haul-road, Contractor's equipment and an initial compound set up.

The 1st site construction visit was held on Tuesday 25th July 2023. The Contractor, Kestrel Contracts Ltd, was observed to have mobilised a tracked excavator, installed a new access gate and completed an access haul road with a compound hardstanding area into the site for proposed Contractors Equipment.

Kestrel had removed the existing high-jump surfacing and existing cricket pitch surfacing. The new access haul road and compound hardstanding area was reported to be made of the existing long jump rubble, 6F5 and a finish layer of Type 1 stone. Road and pavement kerbing protection plates were observed at the site entrance. The entire area was observed to be securely fenced. Ridge & Partners LLP met with School Administrator Kelly Webb and Kestrel representative Gary Smith. Formalities of signing in and out in the school reception were observed for safety facilitation.

Further site visits were conducted on Monday 07th August 2023, through to Monday 11th September 2023.

The Contractor, Kestrel Contracts Ltd, was observed to have complied with all criteria and design drawings throughout the construction phase. Joint inspections, with school representatives and the Contractor, were carried out during the construction phase.

8. SUMMARY

Kestrel Contracts Ltd has completed the Sport England Pitch construction in accordance with the Sport England specification for type 4 pitch design by Grounds Management Association Ltd. Site Inspection Forms were signed-off during the construction phase site visits to produce the summary in Appendix C. Seeding of the new Sport England Pitch was carried out on 29 September 2023. A twelve (12) months maintenance period is currently in progress.

The as-built survey drawing of the completed works can be found in Appendix E. The as-built drawing also records the lateral drain cross sections, collector drain cross sections and carrier drain cross sections, ranging from 80mm diameter to 225mm diameter respectively, as well as the sand groves cross sections.

A series of photographs are provided for information.

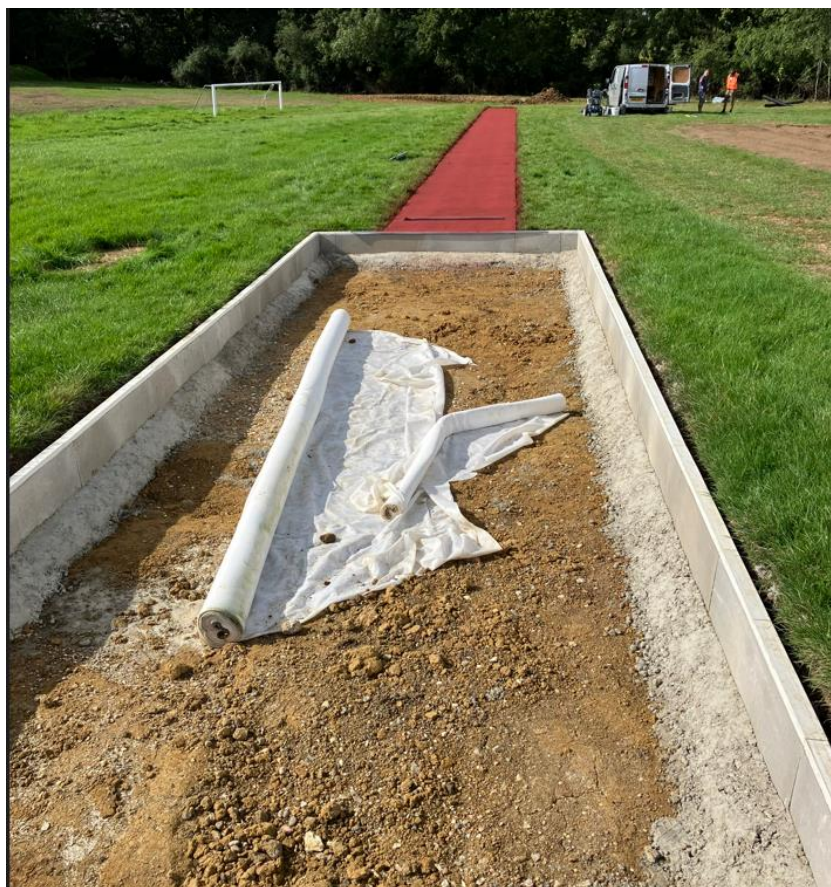
PHOTOGRAPHS



Picture 1: New site entrance with Road/pavement protection plates (kerb plates not yet on site)



Picture 2: Initial Pitch Preparations



Picture 3: Long Jump under Construction



Picture 4: Pitch Construction underway



Picture 5: Pitch Construction underway



Picture 6: Pitch Construction underway



Picture 7: Pitch Construction underway



Picture 8: Pitch Construction underway



Picture 9: One of the new 100mm dia. Collector Drains



Picture 10: New Sport Sand groves drainage lines



Picture 11: View across new sport pitch with setting out for new lateral drains at 4m c/c



Picture 12: View across new sport pitch with setting out for new lateral drains at 4m c/c



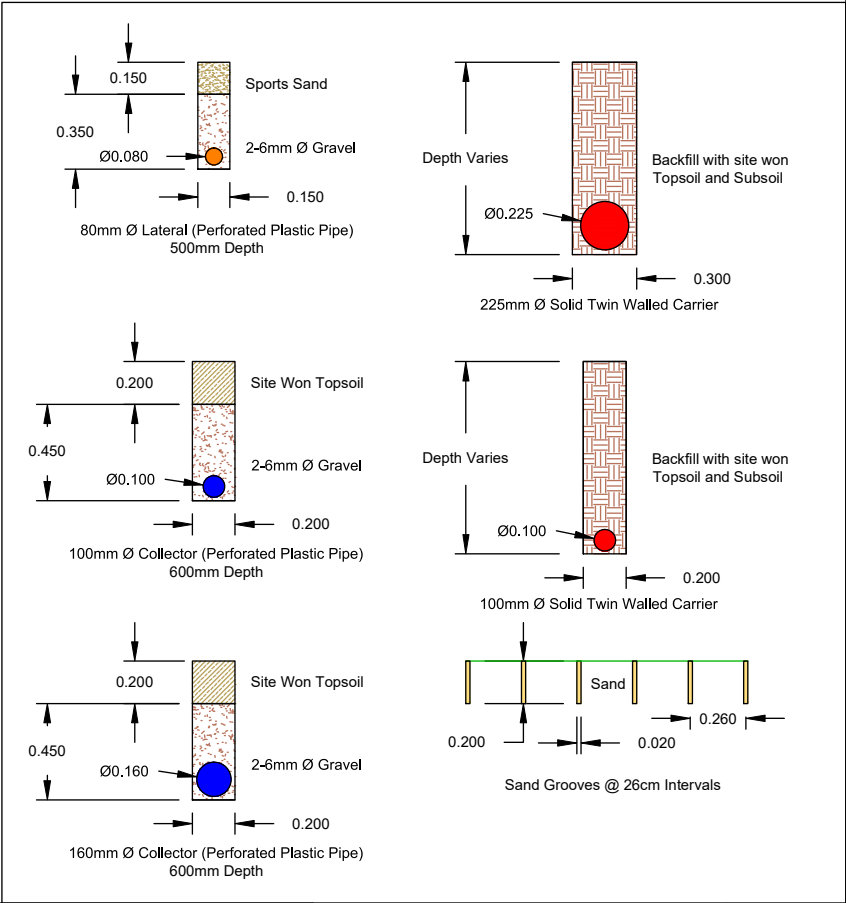
Picture 13: View across new Sport Pitch



Picture 14: View across new Sport Pitch

APPENDIX A

DRAINAGE DESIGN



Legend	
	Contours - 50cm Intervals
	Spot Level
	80mm Ø Laterals @ 4m Intervals
	100mm Ø Collector
	160mm Ø Collector
	100mm Ø Solid Twin Walled Carrier
	225mm Ø Solid Twin Walled Carrier
	Indicative Sand Grooves @ 26cm Intervals
	Inspection Chamber
	Inspection Chamber / Hydrobrake
	Headwall
	Detention Basin - Base Level 42.30m
	Detention Basin - 1:3 Slopes
	Football Pitch
	3m Wide Safety Margin
	Rugby Pitch
	Running Track
	Long Jump
	Storm Water Utilities
	Foul Water Utilities

Revisions				
Rev	Date	Description	Drawn By	Checked By
1	22/07/2022	Site boundary updated. Pitch layout and drainage amended to fit.	OM	AV
2	26/07/2022	Rugby Pitch and Long Jump Pit added to layout.	OM	AV
3	03/08/2022	Legend updated, explanatory notes added.	OM	AV
4	04/08/2022	Background mapping amended, explanatory note added.	OM	AV
5	18/08/2022	Long Jump Pit amended.	OM	AV
6	19/07/2023	Drainage design amended.	OM	AV
7	21/07/2023	Drainage design amended around long jump pit.	OM	AV

Drawing Notes:

1) The proposed drainage scheme is a Sport England Type 4 system comprising Lateral drains at 4m centres and sand grooves. The outfall is into the existing surface water drainage system via an existing connection with flows restricted to the Greenfield 1 in 1 year runoff rate for the site. The detention basin is designed to be ephemeral and not permanently wet. The arisings from the works will be partly used in creating the bund around the detention basin and any extra will need to be disposed of elsewhere on site in agreement with the school. There is considerable scope for this within the wetland area.

2) The arisings from the drainage works (approx 339 m³) will be spread over an area of around 1000 m² in the habitat area below the 3G pitch avoiding trees and drainage infrastructure. This will be done by stripping around 200 mm of topsoil to a temporary store, placing the arisings to a typical depth of 34 cm and covering with reserved topsoil before grading into existing levels.

Drawing Status	
Design	
INDICATIVE ONLY	
PROJECT	
Cowplain School	
CLIENT	
Cowplain School	
DRAWING No.	
GMA0930.27-1 Rev 7	
Job No.	GMA0930.27
Scale	1:750 / 1:25 @ A2
Drawn By	OM
Date	20th July 2022
Consultant	Alex Vickers
Drainage Design	

APPENDIX B

GROUNDS MANAGEMENT DESIGN LETTER

Gary Smith
Kestrel Contracts Ltd
Pamber Farm,
Bramley Road,
Basingstoke,
Hampshire, RG26 5EZ

15 September 2023

Dear Gary

I am writing to confirm that the drainage design for the natural sports pitches at Cowplain School conforms to Sport England design guidance for Type 4 pitches – pipe drained with sand grooves as detailed in Natural Turf for Sport, 2011. Sport England.

Yours sincerely



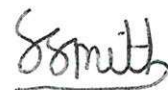
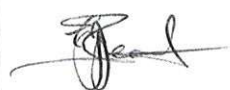
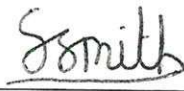
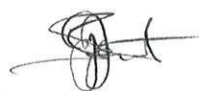
Alex Vickers

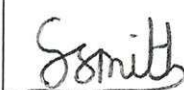
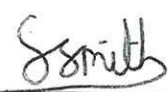
GMA Consultant

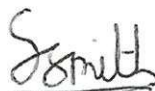
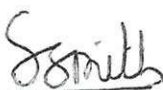
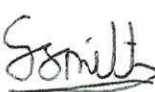
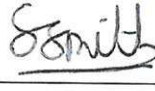
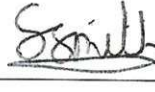
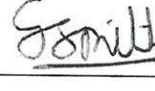
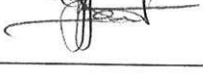
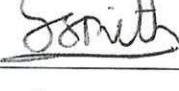
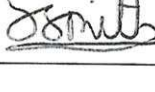
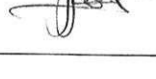
APPENDIX C

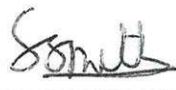
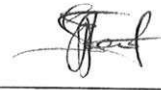
SITE INSPECTION REQUEST FORM

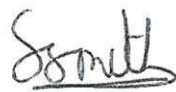
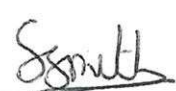
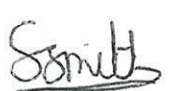
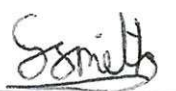
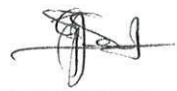
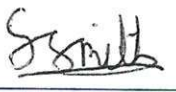
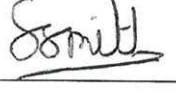
The Cowplain School
Inspection Request Form

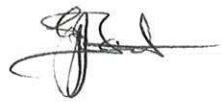
1. Temporary Haul/Compound Area			
Aspect of Work	Date/Month Completed	Kestrel Contracts Ltd Signature	Ridge and Partners LLP Signature
1.1 Installation of gates to act as site access	June 2023		
1.2 Installation of road plates on pavement directly outside gates	June 2023		
1.3 Excavation of the topsoil to the area for temporary haul road/compound area	July 2023		
1.4 Installation of materials for temporary haul road/compound area. Including; terram, 6F5 and type 1 stone	July 2023		

2. General Site Enabling Works – Excavation			
Aspect of Work	Date/Month Completed	Kestrel Contracts Ltd Signature	Ridge and Partners LLP Signature
2.1 Excavation and backfill of the existing double long jump	July 2023		
2.2 Excavation and backfill of the existing cricket wicket	July 2023		
2.3 Excavation and backfill of 1nr shot put	July 2023		

3. Natural Sports Pitches			
Aspect of Work	Date/Month Completed	Kestrel Contracts Ltd Signature	Ridge and Partners LLP Signature
3.1 Cut and then koro off area - arisings to remain on site and distributed in open space	August 2023		
3.2 Rip the surface with shaker raker	August 2023		
3.3 Power harrow the outfield	August 2023		
3.4 Stonebury the entire area	August 2023		
3.5 Confirm surfaces are level and within the correct tolerances	August 2023		
3.6 Remove redundant inspection chamber in outfield	August 2023		
3.7 Creation of a swale	August 2023		
3.8 Drainage pipe and material delivered to site	August 2023		
3.9 Lateral drains to be installed at 4m centres as per the drainage drawing	September 2023		
3.10 Main drains to be installed as per the drainage drawing.	September 2023		
3.11 Laterals drains to be connected via junctions	September 2023		
3.12 Inspection chambers to be installed	September 2023		
3.13 Headwalls to be installed	September 2023		

3.14 Sand amelioration operation to be carried	September 2023		
3.15 Cultivations to surface	September 2023		
3.16 Pre -seed fertiliser to be applied	September 2023		
3.17 Seeding to be applied (A20 seed)	Sports Outfield – September 2023 Area by Swale – October 2023		

4. Single Lane Long Jump Construction			
Aspect of Work	Date/Month Completed	Kestrel Contracts Ltd Signature	Ridge and Partners LLP Signature
4.1 Excavation of the area	August 2023		
4.2 Installation of treated timber kickboards to act as edging	August 2023		
4.3 Installation of terram to the sand pit area and runway area.	August 2023		
4.4 Installation of type 1 stone sub-base to runway area	August 2023		
4.5 Installation of rubber top kerbs to the sand pit area	August 2023		
4.6 Installation of 2nr troughs to the runaway area	August 2023		
4.7 Installation of macadam base to the runway area	August 2023		
4.8 Installation of polymeric surface to runaway area and line markings	September 2023		

4.9 Installation of sand to sand pit area	Delayed to a later date – as requested by The Cowplain School		
---	---	--	---

APPENDIX D

MAINTENANCE GUIDELINES FOR SPORT PITCHES

The Cowplain School – Maintenance Schedule

Kestrel Contracts Ltd maintenance period commences 12 months form date of seeding.
Date of seeding was 29th September 2023.

Kestrel Contracts Ltd maintenance from 29th September 2023 – 29th September 2024

- Mowing – circa. 24nr cuts
- Fertiliser Applications – 3nr
- Weed Killing/Herbicide Application on one occasion
- Aeration on one occasion
- Overseeding on one occasion
- Sand topdressing on one occasion
- Topping up drain lines on one occasion
- Secondary drainage in the form of sand grooves

Aeration, overseeding, sand topdressing, topping up of drain lines and secondary drainage will take place in spring/summer 2024.

Mowing:

Rule of Thumb:- Mow more often, but, less at a time. Never remove more than one-third of leaf growth with any single mowing operation i.e. if the grass is 40mm tall, then, "the cut" should be less than 13mm. An allowance of approximately ten days should be made between lowering the height of cut

Mowing is the most basic of cultural practices in that it influences most other cultural operations. Mowing also encourages good turf density. Therefore, more regular mowing will increase turf grass density, which is essential for pitch playability.

Turf grasses should only be mown under dry and cooler conditions. When present, dew must be removed by either light brushing or by dragging a rope across the pitch to break up and disperse the dew before mowing. Midday mowing in the Summer under higher temperatures should be avoided. During the playing season the pitches should be maintained with a height of cut of between 25 mm and 30 mm and during the summer months between 30 mm and 50 mm. The sward should not be allowed to grow beyond 60 mm between cuts. If growth has been excessive between cuts then the height of cut should be gradually lowered in stages of 5 mm -10 mm until the desired height is obtained. Grass clippings should either be removed or dispersed.

Mowing should ideally be undertaken with cylinder mowers of either self propelled or towed gang units. There should be at least 6 blades in each cylinder and achieve at least 100 cuts per metre. If possible clippings should be removed. Alternatively rotary mowers are acceptable but the quality of cut will be reduced.

Cutting direction should be alternated through 90 degrees between each cut. Generally the direction should follow the same line as the side or base lines of the pitches. If grass clippings are not removed then the frequency of cut should be sufficient to prevent the accumulation of dense grass clippings on the surface which would be detrimental to future grass growth.

Cutting Other Areas: The off-pitch areas including banks should be maintained with a height of cut of no higher than 50 mm – 60 mm. Mowing should be undertaken using a suitable rotary or cylinder mower. The frequency of cut should be sufficient to prevent the accumulation of dense grass clippings on the surface which would be detrimental to future grass growth.



Fertiliser:

Autumn Fertiliser Applications

Apply an autumn fertiliser of no greater than 4% Nitrogen content at a rate of 35g/m². Phosphorus should be no greater than 6% and potassium 10%. Iron and Magnesium may be within the formulation. The equipment for application should be accurately calibrated and suitable to apply a uniform application. Fertiliser application should occur during late October and again in November with a low nitrogen slow release fertiliser. Cutting should not follow within two days. Ideally, fertilisation should occur prior to a forecasted period of rainfall.

Spring and Summer Fertiliser Applications

Apply a spring fertiliser of no greater than 12% Nitrogen content at a rate of 35g/m². Phosphorus should be no greater than 6% and potassium 10%. Iron and Magnesium may be within the formulation. Application should be as for Autumn application. Fertiliser application should occur during late March and provisionally every six to eight weeks depending on sward health. Cutting should not follow within two days. Ideally, fertilisation should occur prior to a forecasted period of rainfall.

Late Summer Fertiliser Application

Apply a late summer fertiliser of no greater than 4% Nitrogen content at a rate of 35g/m². Phosphorus should be no greater than 6% and potassium 10%. Iron and Magnesium may be within the formulation. Application should be as for autumn application. Fertiliser application should occur during September and cutting should not follow within two days. Ideally, fertilisation should occur prior to a forecasted period of rainfall. End of Season Pitch Renovations During the end of season renovation period the following works should be undertaken sequentially.

Irrigation:

Rule of Thumb: -Irrigate less often, but more at a time.

Deep but infrequent watering (together with adequate drainage capabilities) encourages a strong, healthy and extensive root system, which is imperative for sustaining pitch playability.

Excessive irrigation and soil moisture should be avoided at this will promote shallow rooting and the possible onset of Black Layer.

Definition of Black Layer: As the name suggests, Black Layer is sometimes a continuous layer usually just below the turf which is distinctly black. The chemical definition is a deposit of metal sulphides caused by the activity of anaerobic bacteria.



What causes a black layer? Black layer is an accumulation of metal sulfides in pore spaces of soil. Its presence is an indicator that redox potential is low and that hydrogen sulfide is being released. Hydrogen sulfide is toxic to turfgrass plants, and it is a likely cause of the turf decline associated with black layer.

Infiltration is the rate of movement of water into the soil, whereas, percolation is the rate of (downward) movement of water through the soil).

A dry soil may have a very high initial infiltration rate. A dry soil may have a very high initial infiltration rate, but as the soil pores become filled with water (saturated) the infiltration rate decreases sharply. In a saturated soil the infiltration rate is equal to the rate at which water moves through the soil profile.

The infiltration rate and percolation rates are critical physical properties of the soil that must be considered when applying irrigation both of these properties determine the rate at which water can be effectively applied to a soil.

Irrigation is performed primarily to provide an adequate supply of moisture for turf grass growth. Sports turf is also irrigated to wash-in fertilisers and some pesticides following applications; to maintain sufficient surface germination moisture after seeding and sprigging procedures; and modify surface temperatures when required by a practice known as “syringing” (small amounts of water for cooling).

Apply irrigation only when necessary and in quantities as required.

With the drainage installed by Kestrel to the Sport England specification, excess water will not be issues together with the limited capabilities of the site.

Aeration:

Rule of Thumb: Aerate and alleviate compaction if required.

Aeration (the introduction of oxygen and removal of carbon dioxide) in pitch is a vital cultivation practice to ensure correct soil water-to-air ratios which largely determine the proper growth and recuperative capacity of the turf. Aeration, amongst other benefits, also alleviates compaction which prevails on all heavily trafficked surfaces.

Compacted soils (usually related to poor drainage) is deficient of air /oxygen; limits the penetration of water and nutrients; discourages soil microbial activity; inhibits root growth; induces excessive thatching; and, ultimately influences pitch surface characteristics, playability and player injuries.

The surface should be verti-drained using 19 mm solid tines set to penetrate at least 200 mm. The amount of heave should be as great as possible to prevent surface disruption. The site should be in a suitable condition to accept the level of tine penetration as above but not too soft that the equipment causes surface disruption from wheel marks. The verti-drain should be used to reduce hardness of the playing surface which should be between 35 g and 200 g when measured by the STRI method of test using a 0.5 kg Clegg Impact Hammer from a drop height of 0.55 m.

Topdressing:

Topdressing is the practice whereby thin layers of sand are applied annually during active grass growth and worked into the turf surface by means of brushing or drag matting. The purpose and benefits of topdressing include:

- Thatch control
- The smoothing and levelling of surface low spots and ruts due to wear
- Promoting recovery from injury or disease
- Increasing turf grass density when conducted together with vertical mowing.

It is essential that the texture, particle size diameter of the material is never less than that of the soil/growing medium onto/into which the topdressing is to be applied. Similar hydraulic values of material must be used for each application of topdressing.

Deviation from these principles will result in layering (subsurface compaction/impaired drainage) and "black layer" which are conditions that are not conducive to turf grass growth and are difficult to rectify.

Kestrel recommend one 8mm top dressing (circa 300 tons for all three pitches) per year to be carried. The dressings should be applied in dry weather and ground conditions from a suitable top-dressing equipment. Any drain lines showing subsidence should be top-dressed level with a suitable approved top-dressing sand or tennis loam.

Overseed:

The playing surface should be over-seeded at a rate of 20 g/m² using suitable equipment. This should be carried out once a year in dry conditions.

Weed, Pest & Disease Control:

The need for weed control should be assessed and a selective turf herbicide applied to the surface if required. Ideally the playing surface should be maintained so that broadleaved weed does not exceed 10 %. Application should use suitable low drift equipment and by a certified operator. A risk assessment and spray records should be made. Application should be undertaken only in ideal conditions and once a threshold level of weeds has been identified. Application should only be made during active weed growth and at time to prevent exposure to the site users and general public to the herbicide.

The need for pest control should also be assessed and if required the appropriate pesticide applied. The use, supply, storage and advertisement of pesticides are regulated by a number of pieces of legislation including, for Great Britain, the Control of Pesticides Regulations (COPR) and Plant Protection Products Regulations (PPPR). PPPR is the newer legislation and implements a European Directive (91/414/EEC) which regulates 'Plant Protection Products', these include agricultural pesticides and growth regulators. The use of pesticides is also regulated by COSHH (the Control of Substances Hazardous to Health).

The need for disease control is monitored throughout the year. If disease is detected, then the appropriate action can be taken. The appropriate action varies/depends on what disease is detected.

APPENDIX E

COWPLAIN SCHOOL - AS BUILT DRAINAGE DESIGN



Legend

Contours - 50cm Intervals

Spot Level

80mm Ø Laterals @ 4m Intervals

100mm Ø Collector

160mm Ø Collector

100mm Ø Solid Twin Walled Carrier

225mm Ø Solid Twin Walled Carrier

Indicative Sand Grooves @ 26cm Intervals

Inspection Chamber

Inspection Chamber / Hydrobrake

Headwall

Detention Basin - Base Level 42.30m

Detention Basin - 1:3 Slopes

Football Pitch

3m Wide Safety Margin

Rugby Pitch

Running Track

Long Jump

Storm Water Utilities

Foul Water Utilities

Drawing Notes:

1) Background mapping and existing levels taken from drawing CVUJ804-001 "Topographical Survey with drainage invert levels" by Clear View Surveys.

Explanatory Notes:

1) The proposed drainage scheme is a Sport England Type 4 system comprising Lateral drains at 4m centres and sand grooves. The outfall is into the existing surface water drainage system via an existing connection with flows restricted to the Greenfield 1 in 1 year runoff rate for the site. The detention basin is designed to be ephemeral and not permanently wet. The arisings from the works will be partly used in creating the bund around the detention basin and any extra will need to be disposed of elsewhere on site in agreement with the school. There is considerable scope for this within the wetland area.

2) The arisings from the drainage works (approx 339 m3) will be spread over an area of around 1000 m2 in the habitat area below the 3G pitch avoiding trees and drainage infrastructure. This will be done by stripping around 200 mm of topsoil to a temporary store, placing the arisings to a typical depth of 34 cm and covering with reserved topsoil before grading into existing levels.

Revisions				
Rev	Date	Description	Drawn By	Checked By
1				

Drawing Status

As Built

PROJECT

Cowplain School

CLIENT

Cowplain School

DRAWING No.

GMA0930.27-2

Job No.

Scale

Drawn By

Date

Consultant

GMA0930.27

1:750 / 1:25 @ A2

OM

5th October 2023

Alex Vickers

As Built

Drainage Design

Grounds Management Association
28 Stratford Office
Village Walker Avenue
Wolverton Mill
East Milton Keynes
MK12 5TW
Tel: 01908 312511

Data copyright © GMA 2023



RIDGE



www.ridge.co.uk