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**Woollams Playing Fields – Natural Turf Specification Design & Construction Considerations
Hallam Land Management Ltd, (TGMS1284.4– 18 09 2024).**

1. **Specification** – The proposed pitch construction includes earthworks to achieve compliant gradients and contains a primary drainage system (@5 m centres) and secondary bypass scheme (sand bands) to remove surface water and is based on findings from the initial feasibility report and Equivalent Quality Assessment. This drainage scheme is based on a 'Type 5' pitch as per Sport England's Design Guidance Notes for Natural Turf and its installation is essential if cut and fill earthworks or material handling are implemented. It is prudent to note that this drainage system incorporates high levels of sand, aggregates within the drainage to aid with water movement and to maintain good hydraulic conductivity between the surface and the drainage infrastructure below.; during periods of drought, especially during summer, grass cover may suffer along the drain lines in the absence of irrigation as sand has minimal moisture holding capacity. There are construction methodologies to minimise this.
2. **Usage** – As per Sport England's Design Guidance Notes for Natural Turf, a 'Type 5' pitch will provide between 3 and 6 hours of usage per week depending on weather conditions before pitch conditions begin to deteriorate. Overuse of the pitch, particularly in poor weather and ground conditions will contribute to poor surface conditions manifest as mud and loss of grass cover which can irreversibly damage the efficacy of the in-situ drainage scheme. Annual sand topdressing is considered a necessity to protect the secondary drainage scheme. **Please note: If secondary drainage is removed then usage levels will decrease to approximately 2-3 hours of usage per week as per Sport England guidance.**
3. **Rootzone carpet** – A rootzone carpet has been included within the specification to provide a suitable clean buffer between stone content and the playing surface. TGMS recommended that this element of the works is not value engineered and removed.
4. **Irrigation** – The construction of natural turf pitches relies on optimal weather conditions to aid germination and grass plant establishment. In some cases, when construction is carried out in summer and during drought conditions, supplementary irrigation may be required, the costs of which should be factored into the budget. Normally irrigation is not included within a construction project as it is cost prohibitive which is why TGMS normally advocates construction in spring or autumn with higher rainfall and lower temperatures. Hallam Land Management Ltd and St Albans School needs to be aware that good germination is weather dependent and therefore TGMS will assume no responsibility for poor germination during drought conditions. All our specifications do contain an over-seed in the maintenance schedule as a contingency against less-than-ideal growing conditions in the first instance. It is the responsibility of Hallam Land Management/St Albans School to implement or instruct any irrigation during periods of drought (if required).
5. **Outfall** – The drainage design has culminated in outfall designed by others. TGMS will accept no responsibility for outfall deemed unsuitable or inefficient to discharge drainage water for the proposed scheme. This drainage scheme does not include any restricted outfall rates from the pitches. Any subsequent restrictions and impact these restrictions may have on the efficiency of the pitch drainage will be the responsibility of the client. TGMS will

accept no responsibility or liability from any issues arising from using outfall provided by others including the outfall's efficacy. The developer/client has sole responsibility for ensuring all outfalls have the necessary attenuation characteristics when using soakaways, or that all permissions are obtained from either the Environment Agency, local authority or drainage board. These permissions should be in place prior to construction starting.

6. **Invert levels to outfall** – Invert levels to outfall have been based on the drainage scheme and corner levels of the pitches. The invert levels for the points of outfall are fixed therefore it is imperative that outfall solutions provided by others are accurate.
7. **Settlement of drain lines** – Land drainage is prone to differential settlement and the likelihood of some settlement is high, particularly in clayey soils or soils with a high groundwater table due to shrink swell characteristics. The specification includes the following: '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'. It is also worth noting that settlement can occur for 2-3 years and further topping up of drain lines may be necessary outside of the contract period and will be the responsibility of the recipient.
8. **Services** – It is recommended that the Client obtains up to date service plans of the site prior to any development works. It is important to note that the presence of services may inhibit the scope of works.
9. **Maintenance scheme** – With any development, it is imperative that a well-structured intensive maintenance programme is implemented to maintain the development area following large scale investment. Failure to implement the recommended maintenance operations will result in a deterioration of pitch conditions and subsequent availability for use.
10. **Irrigation (post-handover)** – It is imperative that the recipient recognizes the need for supplementary irrigation on an annual basis to prevent the pitches from droughting off, thus impacting on performance characteristics.

Evapotranspiration (the combined removal of water from the soil through evaporation and plant transpiration) is likely to peak at around 5 mm/day which, over a ~28,000 m² playing area (the winter sports pitches combined), equates to 200 m³ of water or 140,000 litres. As a minimum, an irrigation system should be designed to have sufficient water storage or capacity to deliver 70% of this volume in an overnight period of 8 hours (applying water overnight significantly improves water use efficiency because of reduced evapotranspiration, allowing water to soak further into the ground where it can be used more efficiently). This would require 98,000 litres to be applied to return moisture which has been lost.

Matt Young
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