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Mr John Busher
Specialist –Development Management (Majors)
Guildford Borough Council
Millmead House
Guildford
GU2 4BB

7th March 2023

Dear Mr Busher

Re: Urnfield (conditions): Application for approval of details reserved by condition 6 of appeal ref. 23/D/00018/4 | APP/Y3615/W/22/3300200 and GBC ref 23/D/00018/4

I write on behalf of the Merrow Downs Residents' Group (comprising members of Merrow Residents' Association and Downsedge Residents' Association) about the surface water drainage scheme of this development and condition 6 of this appeal decision

The purpose of this letter is to make both you and the case officer aware that we have a number of serious concerns about the submitted documentation to discharge condition 6, Surface Water Drainage Scheme.

Due to the technical nature of the subject this appraisal has been undertaken by one of our members who is a chartered civil engineer with a specialism in water management.

This commentary is set out as a summary against the 5 elements of the conditions with more details given point by point.

After reviewing the documentation, we find that the submitted information does not comply with the requirements set out in the condition because overall this strategy does not safeguard the existing uses of the land surrounding the site. We take the view that the discharge of condition 6 cannot be approved on the basis of the surface water drainage strategy information submitted by the developer.

Our summary of comments is as follows.

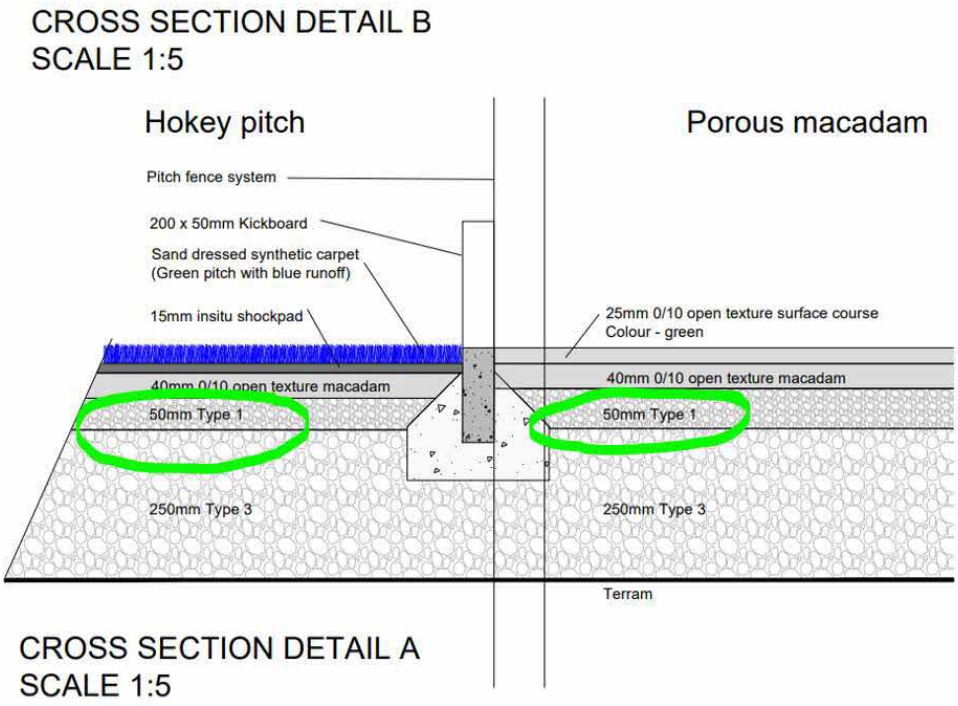
Condition 6 requirements	Summary Comment / deficiency
Evidence that the proposed final solution will effectively manage the	The current calculations underestimate the storage needed by using the FSR

1 in 30 & 1 in 100 (+40% allowance for climate change) storm events, during all stages of the development. The final solution should follow the principles set out in the approved drainage strategy. Associated storage volumes shall be provided using an infiltration-based strategy.	rather than the FEH rainfall and the drainage and the principles of the carpark drainage have changed from the outline application.
Detailed drainage design drawings and calculations to include: a finalised drainage layout detailing the location of drainage elements, pipe diameters, levels, and long and cross sections of each element including details of any flow restrictions and maintenance/risk reducing features (silt traps, inspection chambers etc.).	The calculations provided appear to use certain parameters which effectively underestimate the infrastructure needed and how the proposed construction sections will allow infiltration drainage. Additionally, the design does not contain long sections and cross sections as requested No information around silt traps has been provided.
A plan showing exceedance flows (i.e. during rainfall greater than design events or during blockage) and how property on and off site will be protected	The plan does not show exceedance flow from the existing site and how this will interact with the proposed systems.
Details of drainage management responsibilities and maintenance regimes for the drainage system	These do not address the issues around sediment management especially for filter drains
Details of how the drainage system will be protected during construction and how runoff (including any pollutants) from the development site will be managed before the drainage system is operational.	The proposed documentation does not address how the runoff will be managed during construction. The strategy for pollution control does not comply with the requirements of the SUDS manual and should be revisited.

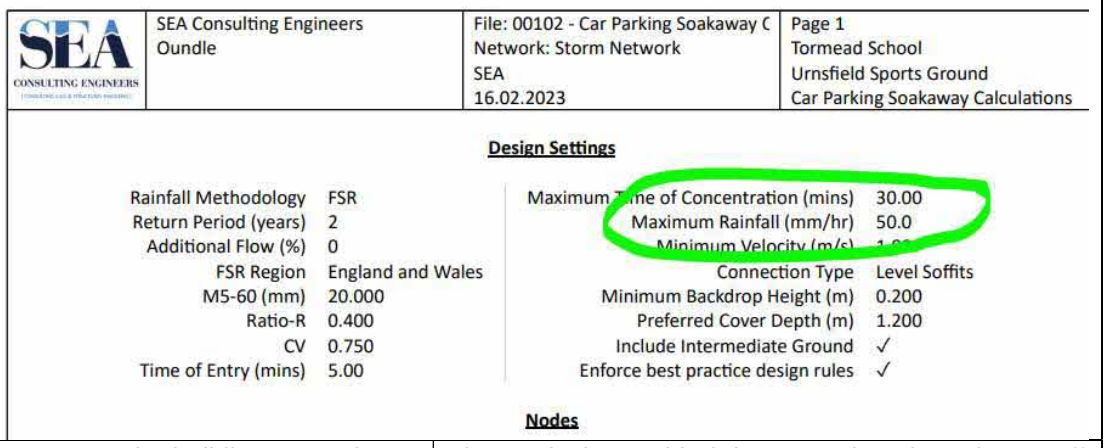
Detailed below are more technical comments based on the submitted report paragraph by paragraph.

Issues / Reference from documents	Why is this important
Para 2.3.2 the site uses FSR rainfall	Whilst FRS rainfall was historically used for sizing piped networks it is known that its use for sizing storage and infiltration systems results in under sizing of systems.

	It is for this reason that the EA's documents (Rainfall_Runoff_Management_for_Developments_-_Revision_E), have published maps to convert from one method to the other. Alternatively the data can be purchased. The drainage strategy submitted with the outline application identified this factor as being 1.18 and **therefore the numbers underestimate the storage by approximately 20%.**
Para 2.3.2 The hockey pitch and athletics track will be formed using a permeable uppers layers draining into a 250mm permeable subbase	The upper layers of the construction are permeable. However, every section contains 50mm of 'type 1' material; this is not a permeable material. Therefore, it will form an impermeable layer within the pitch and prevent water reaching the porous subbase material, and create additional runoff. **Therefore, the current construction information provided shows what are effectively impermeable areas likely to increase the flood risk to 3rd parties. The drainage strategy does not address this risk.**



Para 2.3.2 The hockey pitch and athletics track will be formed using a permeable uppers layers draining into a 250mm permeable subbase	The calculations show that the 216mm of the 250mm depth of subbase material is used for storage. This will not be sufficient if the correct storage allowance is calculated.
Para 2.3.4 The building extensions and parking area will drain via filter drains	The calculations provided in Appendix F cap the maximum rainfall at 50mm/hr, this again leads to an underestimate of the rainfall and therefore the drainage proposed will be undersized. This function in the software was historically included only to align with building regulation calculations.



SEA Consulting Engineers
Oundle

File: 00102 - Car Parking Soakaway C
Network: Storm Network
SEA
16.02.2023

Page 1
Tormead School
Urnsfield Sports Ground
Car Parking Soakaway Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Para 2.3.4 The building extensions and parking area will drain via filter drains	The analysis provided does not show how the runoff (especially from extreme events), can be captured and conveyed from the surface to the pipe network. If the system cannot capture all of the runoff the system is likely to increase overland flow and flood risk to third parties.
Para 2.3.4 The building extensions and parking area will drain via filter drains	The analysis provided does not provide cross sections and long sections as set out in the condition.
Para 2.3.4 The building extensions and parking area will drain via filter drains	In the Landscape and Ecology Management Plan the existing tree/hedgeline is shown to be protected, and this extends to the edge of the carpark (Drawing MUK2896-09 Rev B) whereas the drainage plan shows a filter drain in this location. These plans are in conflict.
Para 2.3.4 a geo-modular soakaway of 6.5m wide x 15.5m long x 1.0m deep will be required.	The calculations show that the scheme requires storage of runoff to a depth of 0.987 m in the soakaway out of 1.0m depth of storage provided, therefore applying the correct rainfall will mean that this element is too small and therefore does not discharge the requirements of the condition.
2.4.2 The proposed new car parking has also been considered	The applicant does not make any differentiation for coach parking in the calculations. Whilst there is no

in accordance with chapter 26 of the SUDS manual. The car parking can be considered a low pollution development .	definitive category for coaches, given the number of coach parking spaces and the length of time the vehicles will be parked, this should be defined as a medium pollution category and therefore the design needs to reflect this risk.

TABLE 26.2 Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-[illegible] car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, [illegible] lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

2.4.4 Comparing the indices set out in both tables it can be seen that the use of permeable paving and filter drains will provide adequate treatment for the surface water from the development	The applicant has correctly identified the filter drains and permeable pavements that can be used to clean runoff. However, the design has not proposed the correct solution because the proposed permeable pavements do not comply with the requirements of the SUDS manual and no details have been provided of the construction of the parking and access routes. The SUDS manual (extract below shows) • Filter drains are not sufficient to provide the correct pollution control on their own as they do not provide sufficient cleaning of Total Suspended Solids (TSS). They only provide 0.4 rather than the required 0.5. • Permeable pavements could be used to comply with the pollution control. However, the applicant is proposing to use porous asphalt and not permeable pavements and

	these do not provide the required pollution control. We have included table 26.4 from the SUDs manual which sets out 300mm of filter material is needed below the surface. This was the strategy in the outline application but not in the submitted surface water drainage strategy. **Therefore, the applicant has not submitted details which discharge the pollution control element of the condition.**

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
[illegible]	[illegible]	[illegible]	0.6
[illegible]	0.8	[illegible]	[illegible]
Permeable pavement	0.7	0.6	0.7
[illegible] basin	[illegible]	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

TABLE 26.4 Indicative SuDS mitigation indices for discharges to groundwater

Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates[1]	TSS	Metals	Hydrocarbons
A layer of dense vegetation underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.6[4]	0.5	0.6
A soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.3	0.3
Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.4[4]	0.4	0.4
Constructed permeable pavement (where a suitable filtration layer is included that provides treatment, and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential[2] of at least 300 mm in depth[3]	0.7	0.6	0.7
Bioretention underlain by a soil with good contaminant attenuation potential of at least 300 mm in depth[3]	0.8[4]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for inflow concentrations relevant to the contributing drainage area.		

2.4.4 Comparing the indices set out in both tables it can be seen that the use of permeable paving and filter drains will provide adequate treatment for the surface water from the development	The details provided in the soft and hard landscaping report confirm that permeable paving is not proposed for the road and car parking and therefore confirming the design does not provide the required pollution control. Additionally, the landscaping plan shows the carpark to be surrounded by kerbs and therefore in conflict with the drainage strategy.
2.5 Maintenance	The submitted material does not identify how the drainage infrastructure will be protected during construction, especially for the pitch where large earth moving machinery will be used and the upper surface needed for infiltration could be compromised.
2.5 Maintenance	The submitted material does not reflect the comments within the SUDS manual for filter drainage around coarse sediments, and therefore it is unclear how the proposals will comply with the identified risks.

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters

	Mitigation indices[1]		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

1 SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and [illegible] set out in the relevant technical component chapters.

2 Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.

3 Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.

4 Where a wetland is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.

5 See Chapter 14 for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: **http://tinyurl.com/qf7yuj7**

6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. SEPA (2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

2.5 Maintenance	The maintenance document sets out that the school will use glyphosate to control plants on the site. We would raise 3 points on this – 1) the biodiversity impacts of using this chemical are known but these impacts are not addressed as part of the Landscape and Ecology Management Plan, which compromises the discharge of that condition (condition 4). 2) Glyphosate is a known carcinogen and the risk to children and other users of the site should be assessed. 3) Guildford Borough Council declared Guildford a pesticide free town, and whilst the declaration does not extend to 3rd parties, guidance should be provided on the impacts.

If the case officer has any questions on any aspect of this letter please do not hesitate to let us know.

Kind regards

Andrew Strawson
Chairman