

Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF

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**From:** Roger Spencer <[Roger.Spencer@arun.gov.uk](mailto:Roger.Spencer@arun.gov.uk)>  
**Sent:** 04 March 2022 16:09  
**To:** Michael Eastham <[Michael.Eastham@arun.gov.uk](mailto:Michael.Eastham@arun.gov.uk)>  
**Subject:** Hampton Park Ph 5

Michael,

As you know, I have forwarded the revised information to Herringtons.

Below are their comments on the initial data with points to be raised in blue

The Eastern Area, discharges towards a lake and irrigation pond before draining at an unrestricted rate into the Norway stream. The SWDS report states that "there was no restriction

of flows from the system". It is not clear whether this included consideration of any restrictions caused by piped outfalls, or the shallow gradient of any of the surrounding ditches (acknowledged later in section 3.26 of the SWDS), that may result in flows being attenuated within the lake or lagoon.

The applicant should provide a sketch plan showing how runoff from these existing areas is assumed to drain freely to the adjacent watercourse. If there are no inlets or outfalls (natural or manmade) from the lake and lagoon, then this sketch plan is not required

The SWDS report relies upon a greenfield runoff rate of 15l/s/ha, which has been agreed previously with the LPA. The calculations used to derive this figure rely on Flood Studies Report (FSR) rainfall data, including a SOIL value of 5 and URBAN value of 0.7. Both of these values have been used in the greenfield runoff calculations used to estimate greenfield runoff rates for the pre-existing site. The justification for uplifting the SOIL class to 5 was due to the existing greenhouses / brownfield nature of the site. Nonetheless, it should be recognised that the URBAN value of 0.7 applied, already accounts for some (and potentially all) of the urbanisation. The applicant should confirm that the prior urbanisation of the site has not already been accounted for in the uplifted URBAN value used for the greenfield runoff calculations. As such, it should be confirmed that the calculations do not "double count" the brownfield nature of the site and result in an overestimate of "greenfield" (essentially brownfield) flows

#### A number of points in respect of water quality

Table 26.2 within Ciria SuDS Manual C753, defines low hazard; driveways, residential carparks and low traffic roads with a partial definition of less than 300 expected traffic movements per day.

The applicant should confirm that the roads within the development site are low traffic, by confirming that traffic movements are not expected to exceed 300 per day.

The SWDS report states "the new swales within the development platforms will not have any longitudinal fall and eventually outfall into the central wetland area, will flow through a swale before it connects into the new ditch passing through the central wetland area and eventually into the Black Ditch".

This appears to contradict both the Main Avenue and East of Wetlands Surface Water Drainage Strategy plan, and the schematic drainage strategy plan undertaken by Banners Gate. Both show several of the swales with outfalls into to the ditches located north of the development site.

As these areas will not drain to the central wetland area, or the new ditch through the central wetland area, further analysis is required to ensure that runoff draining through this separate part of the drainage system will still receive sufficient treatment.

Calculations should be provided to confirm that flows from the 1:1 year event (or suitable alternative of similar frequency e.g. 1:2) will result in the relatively low flow velocities and high residence time required to provide sufficient pollution control benefits.

Similar calculations should be undertaken to assess the likelihood of material being retained within the swales during the 5mm event.

The SWDS report states that precast concrete gully pots will be used as a first line of defense for capturing silt and sediments from the road surface.

It is recognised that this may not be an effective method for managing the quality of water draining from the road. This is evidenced on page 51 of the SuDS manual which states, "although some gully pots and catchpits can trap sediment, their efficiency is strongly linked to the frequency of maintenance, and there are significant risks associated with poor-quality water that is stored in them being remobilised and washed downstream.

As the gully pots are not critical to the pollution treatment calculations this is unlikely to be a significant issue unless they are poorly maintained, or the SuDS provide insufficient treatment for runoff draining from the roads (e.g., as a result of the roads having high numbers of traffic movements, or the ditches providing a lower-than-expected treatment potential).

As the wetland area and new ditch within the wetland are included within the pollution mitigation approach, it is implied that runoff containing pollutants will discharge to the wetland area. The wetland is intended to form part of the site amenity, and the design and access statement states this area is intended to have children explore it (page 28).

Particularly as potentially contaminated highway runoff will be discharged to the wetland area, it is important to confirm whether the landscape design, and ecological mitigation approach both consider the potential impacts of this runoff on the safe and effective use of the wetland area.

The swales are intended to be planted as detailed in the SuDS landscape strategy drawing, prepared by Tetra Tec, and the Ecology Mitigation Strategy prepared by ECOSA.

This planting may reduce the total capacity of the swales, which in turn could result in these being undersized if this is not accounted for within the drainage calculations. The sensitivity of the swale design should ideally be tested for the anticipated growth of vegetation over a season.

Section 3.18 of the SWDS report states "The swales have relatively shallow side slopes no steeper than 1 in 3." It is expected there will be some infiltration through the base and sides (they will not have an impermeable liner), although this has not been modelled in the Micro Drainage calculations.

It is acknowledged that permitting infiltration is likely to improve the swales effectiveness at treating runoff, as acknowledged in Ciria C753, page 322; "the dominant pollutant removal mechanism operating in grass swales is infiltration, rather than filtration, because pollutants trapped on the surface of the swale by vegetation or check dams are not permanently bound". Notwithstanding this, by permitting infiltration opens up the possibility of contaminating the underlying groundwater.

Page 567 of Ciria C753 states, "In England and Wales where the principle destination of the runoff is to a surface water, but small amounts of infiltration may occur from unlined components, then the groundwater indices should be used for the discharge to groundwater, and the surface water indices should be used for the main surface water discharge". Additional calculations should be provided to confirm the discharges will not contaminate the underlying groundwater. If any of the above points i.e. 4.3 of this report result in an increase in the pollution hazard level from low to medium, it is recommended that a groundwater screening assessment is undertaken to confirm whether additional assessment of the possible risk to groundwater is required, as discussed on Page 571 of Ciria C753.

Section 4.33 of the SWDS report confirms that the Micro Drainage Calculations were undertaken using the Modified Rational Method and data obtained from the Flood Estimation Handbook.

In contrast the "greenfield" runoff rates ultimately used to determine the limiting discharge rate of 364l/s have been based on FSR rainfall data.

Additional calculations using FSR rainfall data should be undertaken for the proposed development to ensure consistency in the hydrological data used within the drainage calculations/model

Herrington also note the EA objection to the Central Wetlands Area and mention that increased flood depths could result in the surcharge outlets which was not previously allowed for. If that is the case then a suitable surcharge scenario calculation that accounts for the revised design flood level must be undertaken.

Regards,

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