

DC/25/2006 Outline application - 6 Red Flag drainage issues

1. Non-Disclosure/accounting of Surrounding Flood Risk

The applicant's drainage report (file 1 of 3) at 2.4.3 states: "This map shows that the majority of the site is at very low risk of surface water flooding". It does not however, mention that there is HIGH risk of surface water flooding of adjacent sites to the north of the proposed site. This is a clear non-disclosure of known-fact flood risks that the proposed site will cumulatively add to, and is in direct contravention of local planning requirements ie - at 4.2.5 SuDS Policy 4: "Where a site or its immediate surroundings have been identified to be at flood risk, all opportunities to reduce the identified risk should be investigated at an early stage and subsequently incorporated at the detailed design stage." It is therefore not correct for the council to delay this consideration to 'reserved matters'. The Committee should refuse to accept the plans until the developer submits a "Cumulative Impact Assessment" that proves their discharge will not worsen the known 1-in-30 year flood zone at the site boundary.

2. Incorrect calculation of limiting discharge flow

The developer has calculated the natural runoff for a 3.9-hectare pre-development field, yet the actual housing plot they are piping and building on is only 0.935 hectares. The developer should have used 0.935ha to calculate his discharge limit.

By claiming the drainage rights of a field four times larger than their actual positively drained development, they have artificially inflated the limiting "discharge rate" at which they are allowed to discharge water into the village ditch. This is a direct breach of the West Sussex LLFA Proforma, which strictly requires discharge rates to be based only on the "positively drained area" (0.935ha).

This is far from a minor "reserved matter" for later resolution; it is a site viability failure. If the calculation is corrected to the actual 0.935ha area, the permitted discharge limit drops significantly. To meet this lower, legal limit, the developer would need to build a much larger attenuation pond to hold the water back for longer. There is a good probability that a correctly sized, safer basin will not fit on this site alongside 38 houses. The Committee must therefore demand a formal re-calculation based on the true 0.935ha footprint before any outline decision is considered.

3. A flooded outfall means a larger attenuation volume

The analysis of the designed pipes and storage structures, assumes "a free discharge" of water into an empty ditch. However, local evidence proves the ditch is frequently full. The water in the ditch will "drown" the hydro-brake, meaning the discharge will be far less than the 5.9l/s which

is designed for. The excess water that cannot get into the ditch, will back up in the network/basin/tanks causing the water levels to rise and create a flooding risk. You have previously responded that this is a reserved matter to be addressed at the next planning stage. I respectfully disagree as this issue could have severe implications for the layout of the site and even the number of houses the site can viably support in order to be safe. The council should demand that the calculations are re-run assuming a flooded outfall ditch before any deciding committee meeting takes place.

4. Use of outdated non validated rainfall model

For the modelling of storms the developer has used a statistical generic rain intensity. (p25 a SAAR of 831mm in doc 1 of 3) . However the NPPF requires that 'latest available information' to be used. In this case the local .gov rainfall gauge data from Itchingfield demonstrates that the baseline average is now already unrepresentative of the catchment's actual state. Annual rainfall in 2023 and 2024 was circa 970mm. The locally recorded data proves the catchment is now significantly wetter than the rainfall model assumes, meaning the catchment area will likely be more saturated than the generic base of 831mm will predict for future years – the future is already here. It is a legal requirement to follow NPPF Paragraph 167 Footnote 55-ie "must effectively use the information available". Slinfold is already regularly receiving rainfall well above the SAAR level AND is a cause of flooding in Hayes Lane and Lyons Road. On 4th January 2024, the .gov Itchingfield rain gauge recorded a 24-hour peak of 35mm, which resulted in the documented flooding of Lyons Road. I challenge the developer to run a 'Verification Storm' using this 35mm/24hr observed data. If the current model cannot replicate the known flooding at this intensity, then it proves the whole drainage design and its assumptions are not safe. This could have far reaching consequences re number of houses, and area of hard surfaces.

5. Multiple Calculation Errors

When designing drainage systems there is a mandatory allowance that has to be made for the increase of hard standing areas in the site due to extensions over time, known as urban creep. This allowance seems to have not been accounted for; (See page 39 doc 1 of 3, A% setting =0). This is despite the developer at 7.5.2 (in doc 1 of 3) assuring the council and public that the allowance has been made. "The designed drainage scheme can satisfactorily retain a critical 1 in 100 year storm event with a 45% climate change allowance and 10% Urban creep."

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	999.9		

Another mistake is that instead of 45% being used for climate change allowance for increased rainfall, a figure of 40% has been wrongly used for the 30yr critical storm. As seen below..

 Causeway	Charles&Associates Consulting	File: 22-011 - SW Network 2.pf Network: Tom Butler 27/06/2025	Page 7					
	Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%							
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	N2 S1	472	35.682	0.804	6.7	1.4208	0.0000	SURCHARGED
480 minute winter	N2 S2	472	35.682	0.841	6.3	1.4862	0.0000	SURCHARGED
480 minute winter	N2 S3	472	35.682	0.924	10.0	1.6329	0.0000	SURCHARGED
480 minute winter	N2 S4	472	35.682	0.969	5.9	1.7124	0.0000	SURCHARGED
480 minute winter	N2 S6	472	34.679	0.037	1.8	0.0649	0.0000	OK
480 minute winter	Outfall	472	34.600	0.027	1.8	0.0000	0.0000	OK
480 minute winter	Tank 1	472	35.682	0.468	9.7	73.7247	0.0000	SURCHARGED
480 minute winter	Tank 2	472	35.682	0.582	8.4	64.4381	0.0000	SURCHARGED
480 minute winter	N2 S5	472	35.682	0.993	7.4	1.7548	0.0000	SURCHARGED

Yet on page 22 of doc 1 of 3 the developer states "All events up to and including the 100 year + 45% climate change event will be catered for within the proposed system."

The cumulative consequence of both these errors is that the attenuation volume that has been designed for is less than is required.

Another problem is the pipe layout of the site shows multiple instances of pipes being designed at gradients that have insufficient gradients and are below requirements of WSCC for them to be adopted. Eg the northern branch has 600mm pipe laid at 1 in 580 gradient, this is too flat (should be a min of 1 in 450) and will cause water velocity to be below the minimum of 1m/s which in turn will lead to silting up of the pipes. This layout is shown below – marked in red circles.

I have to ask why these issues have not been flagged as design problems by the software. The answer seems to be that a setting in the software ('Design Settings' file p39 in doc 1 of 3) that would have 'Enforce best practice design rules' has been disabled (marked with an 'x' as shown below).

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Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	999.9		

This software feature is designed to automatically flag violations of mandatory UK standards, such as self-cleansing velocities and minimum pipe gradients. By not performing this compliance check, the developer is not transparent about the presence of 'Negative Flows' and insufficient self cleansing velocities that I have identified above. As it stands, this design cannot meet basic adoptable standards despite its erroneous classification as a 'pass'.

6. Use of non WSCC preferred underground tanks

The design uses the most difficult to maintain storage devices – 2 x honeycombed underground tanks. These are notorious for losing volume due to sediment. The drainage calculations for 30yr and 100yr assume NO sediment is present, this is an impossibility in a clay catchment area. Instead of underground tanks, either oversized concrete pipes should be used or the size of the proposed basin needs increasing. At the very least the worst case critical storms should be run with a 20% reduction in the stored volume of water in the tanks.