

[REDACTED]

From: Barna, Roberta (EXT) [REDACTED] >
Sent: 12 August 2026 12:22
To: Chris Johnston
Cc: Emily Summers; Planning (SMDC); DCsupport; Andrew Dowell
Subject: New Buildings Farm Solar Farm (SMDC - SMD/2025/0388 and ESBC - P/2026/00149) - LLFA Response (Rev 2)
Attachments: Flood Risk Assessment V3 Part 2_Received 13.03.2026.pdf

Good Afternoon,

Please find attached our consultation response for SMD/2025/0388 and P/2026/00149 - New Buildings Farm Solar Farm.

Staffordshire County Council Flood Risk Management position

We have reviewed the submitted information and there is insufficient detail provided assessing flood risk on site for us to be sure the proposals are viable without increasing flood risk without further information. We would therefore recommend that planning permission is not granted until this has been resolved. Where necessary for context I have included [LLFA](#), [Developer Response](#), LLFA Rev 2.

Hydraulic Modelling

- Solar PV arrays will be raised approximately 0.8 m above ground level and therefore will not interact or displace flood water. PV arrays are located within surface water flood depths however the flood depths are significantly lower than the PV lowest infrastructure height (0.8 m) and therefore will not be impacted in an extreme or prolonged rainfall event. Surface water flood models representing solar farms do not include the solar panels within the model as it is not possible to do so within a 2D domain. Solar panels themselves are impermeable, however are located on racking with a minimal footprint on permeable ground and therefore can be excluded from the model and the solar panel underlying conditions should be represented to provide the most accurate modelling.

The point of the post-dev modelling is to simulate the impact of the development but the solar panels themselves have not been simulated hence why there is only a minor difference described in the post-dev modelling results. As the site is located within an area with surface water flow paths we need to see the impact of the proposals on these flow paths. I have attached a hydraulic modelling report from a FZ3 study where there are amendments in the 2D element of a fluvial model to simulate the impacts of the solar infrastructure on flood flows within the 2D domain. The methodology (in Section 4.2.1) outlines how the panel constriction to overland flows is estimated and applied to the 2D domain. This is included as an example of a sensible and proportionate methodology to evaluate the impacts of solar panel infrastructure on flow paths, we are happy for alternative method suggestions but we do need to see some representation of the flow restrictions for us to evaluate the impacts.

- Please clarify what surface changes have been made (in Table 4 of your modelling report) it would be good to see the land use mapping post-dev to see how the roads / additional infrastructure have been represented.
- Transformers are partially located within very shallow surface water depths as per the modelling results (see modelling report) however will be slightly raised from ground level and therefore would be unaffected during extreme rainfall events by shallow depths. In terms of

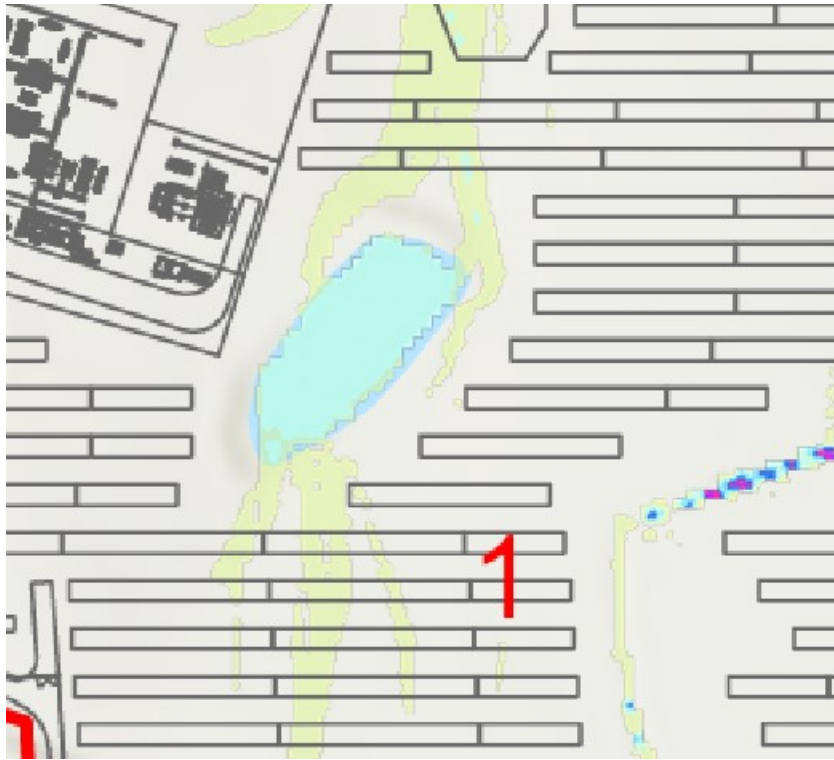
the representation of the transformers (this is outlined in section 4.2.2 of the example report) where a 2D z-shape has been used to raise the inverters and substations above existing ground levels as a conservative representation on their impact on flow paths in the post-dev scenario. Again this is only an example of how this can be done but these features haven't been represented in your post-dev modelling so we do need to see an evaluation of their impacts on the surface water flow paths.

- **Post-dev modelling will simulate the inputs of the formal drainage network (method TBC by modeller).**

Section 3.10.1 states that the inputs from the formal drainage of the substation drainage strategy and the addition of the substation itself could not be included in the modelling as it couldn't accurately be represented in flood modeller.

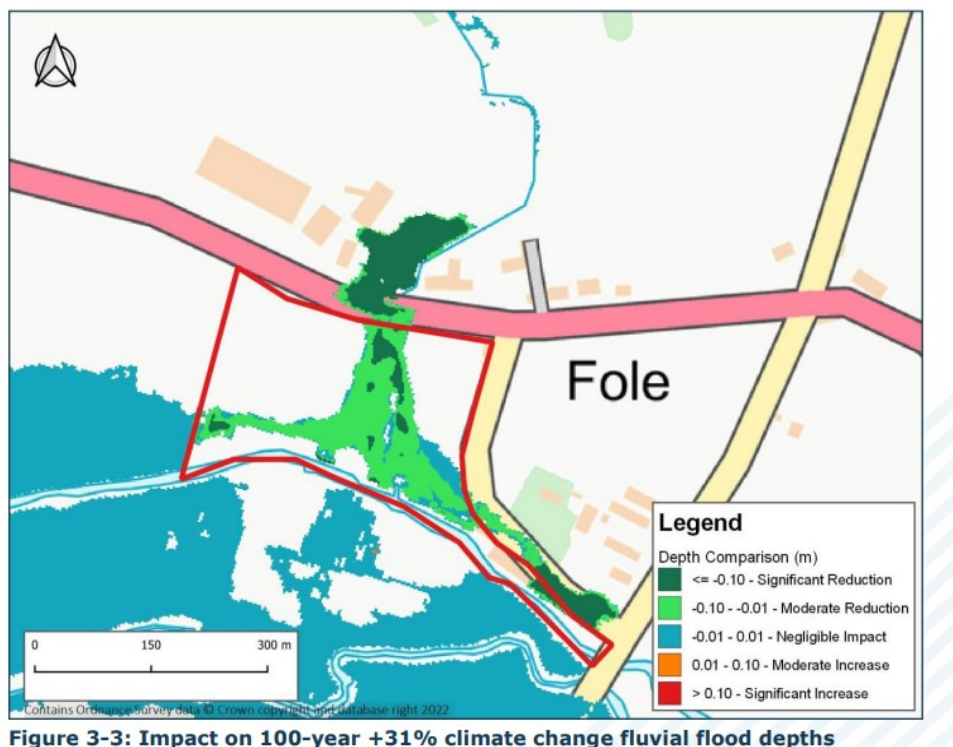
If you do not have an alternative method to represent this in the 2D domain, as per the methodology outlined for transformers can the substation area just be raised to simulate the diversion of surface water around it as per the methodology with the transformers.

- Have the new road surfaces been represented as impermeable within the post-dev modelling?
- This would be a conservative estimate in the case of infiltration not occurring as the drainage report states that infiltration will not be possible due to the clay soils. If the roads have not been represented as a surface change within the model a suggested method would be: The roads need to be represented as impermeable rainfall losses (100% runoff generation) and the Manning's values need to be increased to show the routing behaviour that the different surfacing will have compared to the surrounding grassland.
- *In terms of the drainage strategy if the modelling demonstrates no adverse impact on flood risk to third party land with the conservative proposals of the roads as impermeable (in the case of no infiltration) then there is no need to provide additional formal drainage for the roads themselves, just the permeable surfacing.*
- The FRA references a cross-contour perimeter swale around the downstream boundary of the site – this needs to be represented in the post-dev modelling (we appreciate the detail isn't designed at this point so just a generic zshape will be a suitable representation for outline).
- Please clarify the representation of the existing water levels within existing ponds within the Lidar, it might be that you would need to add a water level as a z-shape so they're not artificially adding storage to the model that isn't there e.g. pond in screenshot below (but should be considered for all existing ponds within the 2D domain).



- The key point of the modelling is to demonstrate that there will be no adverse impact on flood risk to third party land as a result of the development.

The results (Section 5 and 6 of the modelling report) shows the Development does not increase flood risk to third parties. The modelling demonstrates that the proposed solar farm does not materially increase surface water flood risk across the site or to third party land during the 1%AEP including 25% climate change. The assessment therefore demonstrates that the development can be accommodated without increasing flood risk elsewhere. This will need updating in line with the amendments to the post-dev modelling that we have outlined. In addition to easily evaluate the changes, please provide a comparative depth overlay (example screenshot below of how this can be done) to show no adverse impact on third party flood risk as a result of the proposals.



- A sensitivity run will simulate the impact of water levels within the receiving watercourse on the impact of the model results. (i.e. baseline dry run, sensitivity – wet run). This may require different return periods for the northern watercourses and the watercourse through the centre of the site as it was described that the northern tribs were much larger and steeper than the central watercourses. Modeller to provide commentary on this.

During the meeting it was discussed incorporating a water level within the water course to provide a worse-case scenario. A flow boundary with a hydrograph of the 50% AEP was included within the model, the results showed overtopping of the watercourse for the 50% AEP alone (without rainfall) showing inaccuracy within the results and therefore the flow boundary was excluded from the model.

On the basis that the catchment descriptors don't indicate a purely rainfall fed catchment* for these watercourses and we have accepted the rainfall runoff modelling as a proxy for any fluvial analysis in this case, we do need some more evidence on this point. The comments in the report explain that the model showed overtopping in the event that a flow boundary was added and hence it was removed. The purpose of the sensitivity analysis is to evaluate the impacts of any fluvial influence on these watercourses and any additional mitigation required to manage the impacts AND if the development would have any additional risk to third party flood risk in this event that would require amendments to the scheme as proposed.

** The BFIHost values don't support the rainfall-only catchment assumption. Values around the 0.4 range are more indicative of a mixed catchment response (fluvial and rainfall) rather than purely rainfall fed because they indicate that there is a groundwater contribution. The catchment areas of the catchments are also not small which is another usual indicator of a purely rainfall fed catchment. Further to this the report states that there is evidence of subsurface land drainage with outfalls to the Bromley catchment watercourse suggesting that you've got additional inflows apart from purely surface water into the watercourse.*

Drainage Strategy

- Likely to be answered in the results of the updated hydraulic model but the evaluation of exceedance doesn't make sense at Figure 4 of the Drainage Strategy (see screenshot). The caption says the development is not within the exceedance flow pathway but shows the development located within the flow pathway – please clarify and provide an updated assessment of exceedance for the formalised substation drainage.



None of the Development infrastructure or third-party property exists within the exceedance flow pathway.

Please re-consult us at flood.team@staffordshire.gov.uk when amended details are received. If you are minded to approve these applications contrary to this advice, we request that you contact us again to allow further discussion.

Kind Regards
Roberta

Please note my working days are Monday to Wednesday.



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