DRAINAGE & FLOOD RISK CONSULTATION

PROJECT: A29 Realignment: Land to the north of Eastergate and north-west of Barnham, PO22 0DF.

Reference:	**WSCC/052/20**	**Recommendation:**		
Revision:		Insufficient Information:	Objection:	No Objection:
Date:	18 January 20	X		

References:

A. Comments from the Lead Local Flood Authority (LLFA) on the FRA for Proposed A29 Realignment January 2019.
B. Flood Risk Assessment for A29 realignment dated October 2020.
C. WSP Memo: A29 Realignment Phase 1 Drainage dated 24 October 2019.
D. West Sussex LLFA Policy for the Management of Surface Water
https://www.westsussex.gov.uk/media/12230/ws_llfa_policy_for_management_of_surface_water.pdf
E. Appendix E: Drainage Design and Road Alignment Provided by Capita / Jackson.
F.

1 INTRODUCTION

1.1 West Sussex County Council (WSCC) Lead Local Flood Authority (LLFA) has been consulted on the above proposed development in respect of drainage & flood risk.

1.2 This response should be viewed in the context of the LLFA's earlier formal response to the Planning Application made in January 2019 (Reference A).

1.3 It should be noted that the LLFA has provided input to the design process though attendance at project meetings over the past three years. In responding to this application the LLFA will address two key questions:

- Will the development as proposed increase flood risk elsewhere?
- Is the drainage approach consistent with national and local policy?

2 FLOOD RISK

2.1 The LLFA largely concurs with the assessment of flood risk set out in the FRA dated October 2020 (Reference B). The risk of flooding from groundwater sources at the site is therefore considered to be Medium-High (paragrpah 4.5.4 of Reference B). The risk of flooding from pluvial / overland flows changes across the geographical extent of the scheme. The southernmost point of the site, has a low risk (between 0.1% and 1% annual exceedance probability);the western most point of the site has a medium (between 1% and 3.3% AEP) and high (greater than 3.3%) risk of flooding from surface water following the route of Fontwell Avenue (paragraph 4.4.1 of Reference B).

2.2 As a discrete impermeable linear structure, in order to satisfy the requirement of no increase in flood risk elsewhere, the realigned A29 effectively has to manage the run-off associated with a 1:100 storm event plus 40% allowance for climate change and demonstrate this through approved run-off and attenuation storage calculations. Additionally, the routing / design of the road must be such that it doesn't either impede existing flow routes or generate new flow routes so as to adversely affect people / property upstream or downstream. The Drainage Strategy will be considered further below.

2.3 The LLFA supports the principle of managing storm run-off by infiltration methods for the northern section of phase 1 and attenuation and controlled discharge for the southern section of phase1 with the proviso that the detailed design for infiltration will need to be subject to further groundwater monitoring and adjustments of invert levels, footprints and storage volumes accordingly. It is noted that calculations for storage volumes included in Reference C have been based upon default values for the coefficient for volumetric run off (Cv) that is contrary to the West Sussex LLFA Policy for the Management of Surface Water (Reference D paragraph 5.3.3) and detailed design should use a Cv of 1.0 for the impermeable area only. Additionally, an FSR rainfall model has been used in calculations rather than FEH (paragraph 5.2.6 of Reference D).

2.4 The LLFA is unclear why for Attenuation Basin 4, no betterment is proposed and reference has been made to WSCC Highway Drain Criteria and Document W5-074-A-TR-1 'Preliminary rainfall runoff management for developments' that refers to the practicable minimum limit on the discharge rate being set a 5l/s. To the LLFA's knowledge this document was published in 2005 and the practicable minimum limit on discharge can be signficiantly lower than 5l/s i.e. as low as 2l/s that would allow the achievement of betterment at this location. The LLFA recommends that Captia / Jackson be asked to review the discharge at this location.

Effect of the realigned road on flow paths

2.5 Over the past three years, the design for the road has evolved. Reference E includes the folowing statement in relation to Attenuation Pond 3:

The WSP Flood Risk Statement Report (FRS) identified the catchment (referred to as Area 1) currently discharging to the Barnham Lane Ditch. The proposed alignment of the A29 will isolate 7.8ha of the existing catchment from the ditch, this equates to a reduction in greenfield runoff of 16.4 l/s. Therefore, the proposed discharge rate of 1.8l/s from pond no. 3 is a betterment to the net discharge into the Barnham Lane Ditch.

2.6 What is not clear from the current proposals is whether this run off from the isolated 7.8ha is now draining to? Reference E includes the statement: *The proposed road alignment should therefore incorporate culverts with sufficient capacity to accommodate flows from the existing greenfield run-off.* It is recommended that confirmation is sought that this run off has been taken into consideration in the downstream storm flow calculations.

3 DOES THE DRAINAGE APPROACH ADHERE TO NATIONAL AND LOCAL POLICY

3.1 The SUDS manual recommends a minimum distance of 1m between the base of an infiltration structure and the maximum groundwater level. The LLFA recognises that majority of Arun District Council lies on the coastal flood plain where the opportunities to achieve this standard are very limited. In this respect the localised variation to standard practice by Arun District Council that allows the achievement of some infiltration, wherever it is feasible, and the approval of hybrid infiltration / attentuation arrangements is supported.

3.2 The detailed calculation of storm flows and attenuation volumes is not currently compliant with West Sussex LLFA policy as set out in Section 2.

3.3 The LLFA considers that the piecemeal treatment of Phase 1 of the A29 independantly from both Phase 2 of the A29 and from the BEW development itself is not wholly with the spirit of the EIA Regulations and is sub-optimal in terms of achieving an overall comprehensive draiange strategy for masterplanning. This point was made in the LLFAs first formal response (Reference A). We also concur with the comment in paragraph 9.1.8 of Reference C: …*It is highly recommended that due consideration of the proposed Phase 2 development is allowed for in any SuDS features. Also, significant cost and time saving could be achieved by working with the developers by integrating the drainage schemes*.

4 CONCLUSIONS

4.1 The LLFA concurs with the assessment of flood risk set out in the FRA.

4.2 Calculations for pluvial run off and attenuation storage do not currently comply with the LLFA Policy for the Management of Surface Water.

5 RECOMMENDATION

5.1 It is recommended that the applicant re-submits the Drainage Strategy to respond to the points set out in Section 2.

R C Drabble
Flood Risk Engineer (Sustainable Drainage)