SPR EA1N and EA2 PROJECTS

DEADLINE 13 – COMMENTS ON DEADLINE 12 FLOOD RISK RELATED SUBMISSIONS

Interested Party: SASES **PINS Refs:** 20024106 & 20024110

Date: 5 July 2021 **Issue:** 1

INTRODUCTION

1. A series of submissions relating to flood risk were made at deadline 12 by variety of parties as follows:

    a. Comments of Suffolk County Council as Lead Local Flood Authority, REP12-098;

    b. Environment Agency, REP12-085;

    c. Applicants Responses to Rule 17 questions, REP12-056; and

    d. Applicants Comments on SASES Post Issue Specific Hearing 16 Submission, Section 2.1 of REP12-034.

2. This response has been drafted with the assistance of Clive Carpenter of GWP Consultants.

SUFFOLK COUNTY COUNCIL

Section 3.1 Infiltration Test Results

3. SCC conclude the infiltration tests are not in accordance with CIRIA and BRE 365 methodology, because the tests are extrapolated, but still conclude the tests are sufficient for initial feasibility.

    GWP agree the tests are not in accordance and consequently over-estimate the infiltration rates. However the tests were also not excavated to the same depths as the proposed infiltration basins and due to their geometry measure horizontal permeability whereas basins will be dominated by vertical permeability – which can be an order of magnitude lower.

4. SCC support northern basin being attenuation only due to the low infiltration rates.

    GWP notes the infiltration values considered inadequate are greater than those stated as the acceptable minimum in previous SCC submissions of 10mm/hr. We contend the SUDS hierarchy response should be to increase the size of the basin to ensure sufficient infiltration can occur, not to abandon infiltration. In not following the SUDS hierarchy the SCC is in breach of its own policy.

5. SCC note the coverage of the infiltration testing is inadequate (on the northern side) to demonstrate the viability of an infiltration only scheme for the southern basin.

Conclusion

GWP concludes the SUDS hierarchy is not being followed due to a lack of evidence submitted by the Applicants. This is unacceptable – on this basis the submittal of no information supports attenuation ponds only. The Applicant should address the knowledge shortfall, not be enabled to adopt hybrid schemes because of a lack of infiltration testing.

GWP note groundwater flood risk to Friston village resulting from the infiltration basins, as well as rising groundwater levels (due to the basins) reducing the infiltration basin performance have not been mentioned by SCC – yet both issues challenge the viability and acceptability of the infiltration options – see further paragraph 16 below.

Section 3.1 OODMP

6. SCC agree to a hybrid and attenuation designs for the two basins.

   GWP disagree with this conclusion. Both basins meet the minimum infiltration rate previously requested by SCC of 10mm/hr. The reason the Applicant does not pursue infiltration only is because of the limited area available for infiltration due to lack of land availability and other landscaping and biodiversity constraints and requirements. The SCC decision to move away from infiltration only is not therefore based on flood risk alone, but on the viability of infiltration constrained to the areas defined in the Applicants' DCO applications.

7. SCC states outfall discharges will be acceptable at QBAR.

   GWP reiterates previous concerns that i) QBAR has not been adequately defined and ii) 1 in 2 Year storms do flood the village and hence restricting flows to QBAR does not ensure flood risk increase is prevented.

8. SCC as LLFA state that SCC Highways are to confirm acceptability of cover for proposed outfall pipe underneath Church Road. In the comments of Suffolk County Council as Local Highways Authority, it has confirmed at paragraph 3.6 that pipes approximately 300 mm below existing road surface would be acceptable to the LHA.

   Whilst this might be acceptable from a highways perspective, it is difficult to see how this would work from a flood risk perspective given the depth of the Friston watercourse below the surface of Church Road. In this context it should also be remembered that it is the top of the discharge pipe which is 300 mm below the road surface, the bottom of the pipe would be lower than 300mm depending upon the diameter of the pipe. Appendix 1 shows a series of images of measurements taken of the depth of the Friston watercourse adjacent to the south side of Church Road. These show the Friston watercourse is not sufficiently deep to accommodate a pipe 300 mm below the surface of Church Road.

   The watercourse would require significant works to deepen it along its entire length to achieve SPR's objective. Such works are outside of the order limits. It would then need ongoing work to maintain the level. However there is no evidence that SPR have surveyed the watercourse to ensure adequate capacity and fall so that the watercourse would be fit to mitigate flood risk should it be deepened.

   These images also are also a demonstration of the risk of blockages and siltation on which SASES has previously commented.

Conclusion

GWP note the viability of the outfall option has therefore not been proven. As neither the infiltration nor surface discharge options have been proven to be viable, then the development viability remains unproven.

OCoCP

9. SCC generally are unsatisfied with the OCoCP.

10. SCC state they will need a detailed breakdown of the impermeable surfaces of the construction phase.

    GWP would point out the construction phase flood risk is due to an increase in run-off from any surfaces that have vegetation removed and not just those considered to be impermeable. Furthermore the flood risk in Friston is partially due to sediment deposition, which will increase significantly from the de-vegetated areas. Therefore the Applicant needs to demonstrate the viability of managing run-off from ALL disturbed areas, not just impermeable areas.

Conclusion

GWP contend the Applicant has not demonstrated the viability of construction phase drainage. Indeed the Applicant appears to still not understand the requirements of construction phase drainage.

ENVIRONMENT AGENCY

11. The EA agrees to the Applicants' commitment to any additional inspection or maintenance works.

    It is a concern that the actual need for inspection and maintenance work is not definitively stated by the use of the word "any", nor is there any emphasis on the importance of such works.

    To be consistent with requirement 41 in the draft DCO the reference should not just be to work nos. 30 and 41 but also 34 (operational access road) and 38 (cable sealing ends). It is of concern that the Environment Agency is not aware of the flood risk from these structures showing a lack of familiarity with the projects in general. In fact the principal concern of Environment Agency seems to be their avoidance of responsibility for inspection and maintenance works.

    GWP queries why the EA has not commented on the additional flood risk to the Main River which passes through the middle of Friston Village.

STATEMENT OF COMMON GROUND (APPLICANTS, SCC AND ESC)

12. The SoCG states that SCC have agreed to the various elements of the OODMP, whilst SCC does not agree to the various elements of the OCoCP.

    GWP refers to the more detailed responses above with respect to the OODMP. The Applicants have not adequately characterized the watershed flood flows (including QBAR),

nor the flood risk receptors, nor the groundwater flood risk. As such any drainage options which utilize a QBAR – which both basins do in the current design – are therefore fundamentally flawed as the assumption made is the QBAR is both accurate and does not cause flooding. The QBAR is however poorly defined and has not been proven to not cause flood risk.

APPLICANTS RESPONSES TO RULE 17 QUESTIONS

13. The Applicants respond to questions regarding bunds around SUDS structures by describing these to more likely be achieved by reprofiling of the site to create landscape mitigation.

    GWP states that this demonstrates the soft engineering approach being taken by the Applicant to contain storm water of 10,000's m3 immediately above a residential village, despite the risk to life from failure of these basins to be proximal to that regulated by the Reservoir Act. Water retention structures of this volume need to be properly engineered and maintained and not constructed of landscaped materials, with no allowance for controlled over-topping and erosion prevention. This landscaping approach to flood water retention is inappropriate in any location but especially a few 100m uphill of a residential village.

14. The Applicant states the construction phase drainage will have no impact on other landscaping and archaeological issues.

    GWP contends the Applicants do not understand the amount of construction phase storm water storage, routing and treatment required, as demonstrated in them limiting construction phase drainage to just the infrastructure platforms and therefore the Applicant has no sound basis for evaluating impacts on and constraints on drainage from these other matters.

APPLICANTS COMMENTS ON SASES POST ISSUE SPECIFIC HEARING 16 SUBMISSION

15. **ID4** - The Applicant is referring to no standards and a 1 in 15 Year RP for construction phase design. A lack of standards is irrelevant – the singular point is whether the development in its construction phase creates an increase in flood risk to Friston village and whether this can be mitigated. This is a matter of policy. The Applicant needs to demonstrate they will not increase flood risk during the construction period. They have not assessed the risk adequately nor have they demonstrated they can adequately mitigate it. 1 in 15 Year Return Period is wholly inadequate given the elevated flood risk to Friston.

16. **ID5** - See SASES previous submissions in respect of the defects in Infiltration Testing – REP12-118. The Applicants refer to a lack of groundwater being encountered in the trial pits. These trial pits were no deeper than 1.2m. Groundwater on the site is likely to be encountered at greater depth than this, but still sufficiently shallow to potentially interfere with the performance of the infiltration basins due to groundwater rising into the pits. The site is 6km from the coast and the terrain has an elevation of 16-18m AOD. Typical shallow groundwater flow gradients in aquifers are 3 in 1000m. So the site could conceivably have a groundwater level of 18m AOD. Evidently this is not the case, probably due to ground elevations below 10m AOD in and south of the village, but the likelihood the groundwater is shallow (<5m) is high, and is sufficiently shallow that it could i) interfere with the basin performance and ii) create a groundwater flood risk in the village. The Applicants have failed to investigate the groundwater regime at all.

17. **ID6** - There is a clear hydraulic link between the site and the village. There is an increase in pluvial flood risk due to the development that requires mitigation. The model referred to is uncalibrated and challenged by the village residents regarding its accuracy. There is a wealth of photographic evidence of flooding in Friston on an annual basis.

18. **ID7** - see comment on ID4.

19. **ID8** - see comments in relation to the OODMP above.

20. **ID9** - SASES in addition to submissions already made in relation to inspection and maintenance refer to its comments relation to the submission by the Environment Agency above.

21. **ID10** - Overflow structures need to be properly engineered as they will contain 10,000 m3 of water immediately upstream of a residential village. Landscaped earthworks which will erode are unacceptable. This needs to be expressly referred to in the OODMP and the OLEMS.

APPENDIX 1

IMAGES OF DEPTH OF FRISTON WATERCOURSE ON THE SOUTH SIDE OF CHURCH ROAD – THE LOCATION FOR THE OUTFALL PIPE

These six images were taken on the morning of 3 July 2021. A length of timber laid on the road surface was employed with a spirit level on top to ensure accuracy in respect of the level of the road surface.

1. Extent prior to cutting back nettles

2. After removing vegetation

3. Depth at left hand corner when facing south = 320mm

4. Depth in the centre = 200mm

5. Depth towards right hand side = 175mm

6. Depth at right hand corner = 280mm