Mark Symons (Jacobs)

Michael.Symons@Jacobs.com

Our ref: AC/2014/120478/01-L01
Your ref: *

Date: 26 February 2014

Dear Mr. Symons

A14 Flood Risk Design Criteria – A14 Improvements

Thank you for your email dated 21st January 2014. We have reviewed the information provided and have the following comments to make.

For ease of reference, we have related our comments back to the reference numbers made within the proposed Flood Risk Design Criteria.

Ref 8) We can confirm that we will have baseline modelling for Main Rivers, Brampton Brook, Great Ouse, Covells Drain and Oakington Brook.

Ref 10) Just to note that we will have undefended models if these are required at all.

Ref 10 –12) We would require confirmation that the new route does not impact on these rivers.

Range of modelled water levels will be available for MR Ellington/Alconbury (this has been supplied for a HA project already), Beck Brook and Washpit Brook, and Cam. These only cover Main River.

Ref 13) We note that there will be no discharge to ground via a soakaway or indirectly through seepage. We understand a meeting is to be held on 10 March 2014, where the proposed surface water management will be discussed further. We have no further comments to make at this stage.

Ref 15) It appears that groundwater flooding will be looked at as a revision of the Site Investigation. It is unclear what form this 'revision' will take, but it appears to be a high level spreadsheet and we are happy to see groundwater flooding as a potential issue.

Ref 18) We agree with this point, please provide floodplain compensation elsewhere on site on a level for level basis, referred to as direct compensation in the CIRIA report 624 "Development and flood risk - guidance for the construction industry" (2004). It must also be on land that is currently outside of the floodplain.

Ref 19) Please also note that any extension to a culvert or new culvert will require

flood defence consent. Any new scheme or activity is assessed for Water Framework Directive (WFD) compliance.

Ref 20) We recommend bridging the watercourses where possible rather than culverting.

We are generally opposed to the culverting of watercourses because of the adverse ecological, flood risk, human safety and aesthetic impacts. Watercourses are important linear features of the landscape and should be maintained as continuous corridors to maximise their benefits to society.

We will consider each application to culvert a watercourse on its own merits and in accordance with our risk-based approach to permitting. We will only approve a culvert if there is no reasonably practicable alternative, or if we think the detrimental effects would be so minor that a more costly alternative would not be justified. In all cases where it is appropriate to do so, applicants must provide adequate mitigation measures; accept sole ownership and responsibility for future maintenance.

We recognise there are situations where culverting may be unavoidable in practice, such as short lengths for access purposes or where highways cross watercourses. In these cases, open span bridges or diversion of the watercourse must be considered first as alternatives to culverts.

Applicants will be required to prove why culverting is both necessary and the only reasonable and practicable alternative, and to provide information to show that it will not have a detrimental effect on flood risk and the habitat(s) and species present, or that mitigation measures can be put in place to reduce these effects.

The length of any culvert should be restricted to the minimum necessary to meet the applicant's objective. The proposal must include appropriate assessment of flood risk and environmental impact. The applicant should take into account the possible effects of climate change and future development in the catchment on the watercourse when calculating the capacity of the culvert. Mitigation measures such as mammal ledges must be incorporated within the design, and the work must be carried out using best working practice to minimise environmental impact.

Design requirements:
Agree design to convey the 100year climate change flow.

In general, the culvert should be larger than needed for flow considerations alone to incorporate environmental requirements. The minimum culvert diameter shall be no less than 600mm (900mm for roads), as smaller sizes are prone to regular blockage. Culverts under motorways, major roads and other deep fills shall have a minimum of 1200mm headroom to allow access.

The applicant shall support the proposed culvert sizing with appropriate calculations without reference to the size of existing culverts upstream or downstream. However, the proposed culvert shall, in general, be no smaller than any adjacent culverts

downstream.

The likelihood of future re-grading, the cost of culvert replacement and the culvert hydraulics will be considered by the Environment Agency when approving the diameter and invert level.

The following recommended culvert sizes incorporate a freeboard allowance to reduce the risk of floating debris blocking the culvert:

Calculated	**Recommended**
Dia. required	Dia. provided
450 mm	600 mm
900 mm	1200 mm
1350 mm	1800 mm

Ref 22) We do not recommend the use of safety screens. Upstream screens shall only be used where there is a real danger to children, or where industrial rubbish or tree branches are likely to block the culvert and cause major flooding. The screen shall be designed for easy raking and have a horizontal top section which allows additional flow capacity when the inclined section becomes blocked. Raking of the screen remains the owner's responsibility.

Ref 23) We are in agreement with these points.

Ref 27) We recommend improving the existing runoff rates, especially in highly urbanised areas where there may be surface water drainage issues.

Ref 30) Any temporary works within 9 metres of a Main River will require flood defence consent

There should be no spoil stored within the 100year plus climate change outline.

Please note, as of the 3rd February 2014 we now charge for providing detailed advice to developers and their consultants. Whilst we are a statutory consultee for some stages of the NSIP Process (Scoping, Section 42, Application Stage, Hearing etc) we are not funded to undertake technical discussions at the pre-application stages. We are therefore informing you of the potential costs for this (and ongoing) communications/advice if required.

Our charge is £84 per hour and we do not charge VAT. Further information on our charged-for service is available on our website at: http://www.environment-agency.gov.uk/research/planning/33580.aspx

We hope that this information is of assistance to you. If you have any further queries please do not hesitate to contact us.

Yours sincerely

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