

Source	Comment	RH Response
David Hughes	<p>1.</p> <p>Show that the development will be adequately defended from flooding from the Bourne Brook over its lifetime. Any new development should be safe from flooding for the 100yr event with the effects of climate change added.</p> <p>The report suggests the site will flood for this event (although only slightly). It sounds like slightly raising the height of any flood wall could prevent this from happening at all. We would also expect a freeboard on top of the crest of the wall to take into account local turbulence or wave action.</p>	<p>Figure C3 outlines the residual effect of the development site and mitigation measures in the 100 year return period plus climate change.</p> <p>As mentioned in Section 5 of the FRA Report, minimal overtopping of the flood wall will occur during the 1%+CC AEP and 0.1% AEP events from the middle section of the wall, with the 1%+CC AEP flood event only affecting the UoB part of the site.</p> <p>The proposed residential FFLs of 129.15mAOD are very conservative, being 4.68m above ground level.</p> <p>The wall would need to be increased greater than the reported 700mm to ensure no overtopping in the 100+cc event. The wall would need to be 850mm high. The increased wall level allows for 150mm freeboard, as requested by Dave Hughes via email correspondence (15<sup>th</sup> November 2011). The reason the wall height was not set to this level within the original FRA was to allow for access over the wall for the Ops Delivery Team. Providing this would not be an issue, we recommend the wall level is increased.</p>
	<p>2.</p> <p>There is no detail of the proposed flood wall. Where exactly it would be placed and how the Agency would still be able to satisfactorily access the channel of the Bourne Brook for maintenance purposes. Our operations section was very keen that a vehicle access ramp down into the channel should be included as part of the development. The report says that it has been agreed that this could be omitted. I am unaware of this discussion.</p>	<p>The proposed wall would be situated along the boundary of the proposed development site as marked on Figures C1 – C4. Further requirements of the wall are to be discussed prior to site development between the Environment Agency, University of Birmingham and Victoria Hall Ltd.</p> <p>Options to provide access to the river bed were tabled at a meeting held on 3rd August 2011 at the University of Birmingham. Andy Wilson (Environment Agency - Ops Delivery) confirmed that the main reason the EA required access to the channel was to clear the trash screen upstream of the A38 culvert. DH suggested that the trash screens would be better located to the west of the canal embankment where Birse had already constructed a ramp to the river bed and where flood compensation was already built.</p> <p>In conclusion to the discussion, it was agreed that the relocation of the trash screen upstream of the site removes the requirement for vehicular access to the watercourse from the development site (points 7 and 8 in Appendix E).</p> <p>Prior to this decision, VHL /UOB had considered options for ramps located adjacent to the proposed UOB access road bridge. Within the meeting however, it was discussed that ramps adjacent to the proposed bridge would</p>

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		<p>not be required, as the EA mechanical equipment could not pass under the existing foot bridge.</p> <p>Andy Wilson confirmed pedestrian step access points would still be required adjacent to the existing pavillion and adjacent to the new access road bridge. This has been included within the plans for the site.</p> <p>A suitable maintenance regime should also be agreed with the Environment Agency for inspection and clearance of the relocated trash screen upstream of the development site. It is assumed this will fall with the Environment Agency.</p>
	<p>3.</p> <p>It appears that the proposed access bridge will create an afflux effect and raise flood levels in the area. As well as increasing the risk of flooding to the new development, this will also result in deeper flooding on the University campus. Are UoB aware of this and do they still support the proposals?</p>	<p>The impact of the new road bridge has been assessed within this FRA and deemed not to increase flood risk to the development site.</p> <p>Within the University playing fields, the maximum water depth in the floodplain varies as follows, showing a significant decrease in water level as a result of the development and bridge:</p> <p><u>1% plus Climate Change Results:</u>  current situation (defended) 0.8m  previous situation (undefended) 0.79m  proposed situation (defended) 0.72m</p> <p>The only noticeable difference to the flood extent as a result of this change in water level is the addition of a flow route between the university buildings opposite the development site.</p> <p>This route follows the existing road layout and reaches a maximum depth of 0.2m. This small increase in water level at this area of the campus has been accepted by the University of Birmingham, as it is not deemed to compromise the access/ egress to the University campus.</p>

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	<p>4. There needs to be a more specific discussion of emergency arrangement for both developments and the campus. The report says the properties will enrol on the EA flood warning system. But the report also says that the EA does not offer a flood warning service on this river.</p> <p>In the absence of a warning from the EA, the developer would be well advised to consider providing their own emergency warning system for the site via a level monitoring system connected to telemetry alarms.</p>	<p>Section 8 (point 9) within the FRA document states that “The site should be signed up to receive Environment Agency flood warnings <b>in the future, if they are extended to the Bourn Brook</b> and a flood evacuation plan should be implemented during the 1%+CC and 0.1% AEP flood events”. These recommendations have been made as part of the FRA, however, it is beyond the scope of an FRA to develop an evacuation plan for the site.</p> <p>The main access and egress route, via the road link to the Selly Oak bypass is routed away from the watercourse and is not affected by the 5%, 1% or 1% plus climate change AEP flood events following implementation of the proposed mitigation measures.</p> <p>In addition the entrance to the VHL blocks are from the south side and will be designed as 150mm below FFL (125.00). As a result these will provide a dry escape route to the west.</p>
	<p>5. There also appears to be quite deep flooding adjacent to, and on, the UoB site and we require more reassurance that the public will be safe in design events. This seems to mainly occur at the current footbridge crossing. Would it be a possible to engineer a wall and closable flood gate to prevent any spill out southwards onto the development and the new Selly Oak bypass? Admittedly this may cause slightly worse flooding of the UoB playing fields but surely this would be preferable to flooding existing property and highways.</p>	<p>The secondary main access/egress route from the site (pedestrian access to the south from the western end of the site) is flooded from the 1%AEP event. It can be deemed to be impassable from the 1%+CC AEP event, with a possibility it cannot be used during the 1%AEP event.</p> <p>This risk can be mitigated through implementation of an appropriate flood evacuation plan and signing of a flood evacuation route, directing residents to the main road entrance. It is recommended this action is progressed prior to the commencement of the development.</p> <p>Flood water on the downstream side of the development site flows from a low point on the right bank. As can be seen from the attached .avi file, water does not flow out of the Grange Road footbridge onto the development site. Therefore, the implementation of a flood gate in this location would not reduce flood risk to either the development site, or the Selly Oak Bypass.</p>
	<p>To that end I feel we need more clarity on the different phased stages of the development and the specific effects of the floodwall, the new bridge and both phases of building. We appear very close to an acceptable solution, so if you have any enquiries or problems regarding these flood risk related comments, please contact Dave Hughes on (01543) 404899.</p>	<p>It has been agreed with both VHL and UoB that regardless of the phasing of the development, the flood wall would be constructed at the beginning of the construction works.</p>