

Our Ref: 01/07/MS

Your Ref:



1<sup>st</sup> July 2015

Barratt East Scotland  
Telford House  
3 Mid New Cultins  
Edinburgh  
EH11 4DH

For the attention of [REDACTED]

Dear Sir,

**Proposed Development at Frogston Road East  
Response to City of Edinburgh Council memo of 11<sup>th</sup> December 2014 (Ref; 14/04860/FUL)**

This letter is in response to City of Edinburgh Council's (CEC) memo of 11<sup>th</sup> December 2014 regarding the flood risk assessment for the Frogston Road East site in Edinburgh (Ref; 14/04860/FUL).

CEC raised a number of issues related to flood risk and drainage. These points are addressed below.

***Point 2: Legislative and Policy Aspects***

We acknowledge that an updated version of SPP was released in July 2014, between the date of the Kaya Consulting flood risk assessment report (November 2013) and the CEC response. SEPA has also released an updated version of their Technical Flood Risk Guidance for Stakeholders. We have reviewed the SPP and the SEPA guidance and confirm that the report and its conclusions are consistent with the new policies and guidance.

***Point 4. Hydrological Analysis***

CEC is happy with flows used in the flood risk assessment. No further response is required.

***Point 5.1. Model set-up***

CEC is happy with modelling approach considered. No further response is required.

### ***Point 5.2. Model Results***

The model was run in steady state and there were no stability issues. There was no calibration data for the study area, but a sense check of the results was undertaken and the results were considered reasonable.

### ***Point 5.3. Model Sensitivity Analysis***

A flood map for the 50% blockage scenario is shown in Figure 1. This is consistent with the scenario considered in the Kaya flood risk assessment report sensitivity analysis. We note the CEC memo suggested a 60% blockage, but we assume this should have noted 50%, consistent with the blockage used in the Kaya sensitivity analysis. A run was undertaken with 60% blockage and it resulted in a minor increase in flood levels (around 0.06 m), which would produce a minor change in the flood extent (not visible on scale of Figure 1). This minor increase is because flood waters are already overtopping the bridge decks for 50% blockage.

### ***Point 7. Surface Water Drainage Strategy***

Detailed surface water drainage plans are being developed by others.

### ***Point related to Appendices***

CEC noted that the downstream flood levels on the A701 road crossing (downstream of site) were higher than the bridge deck, while upstream levels were lower than the deck. The representation of the bridge in the model was reviewed and the following changes made;

- The bridge was originally represented as a 'Deck/Roadway' opening in HEC-RAS. Using this modelling method the model predicted an increase in the critical flow depth at the downstream end of the opening, raising the water level at the downstream bridge face. Based on the surveyed bridge opening, see Figure 2, the model representation was changed to a box culvert, which was felt to be more appropriate given that the bridge is a modern road crossing.
- The downstream road deck level was set too low in the original model. Based on the survey data the deck was raised by around 0.4 m. The original model used had taken a level on the downstream face of the bridge, while a review of the survey data of the roadway showed higher levels on the road.

With the new bridge representation the model long profiles and upstream/downstream sections of the crossing are shown in Figures 3 and 4. The predicted water levels at the bridge no longer overtop the road. The changes had no effect on flood levels within the site. Flood levels within the site are controlled by the two crossings (old pipe bridge and Old Burdiehouse Road crossing) at the downstream end of the site, with no impact of the A701 structure on flood levels.

### ***Point related to Drainage Design***

Detailed surface water drainage plans are being developed by others.

## Closure

We trust that the above provides the information required. However, if you have any questions related to this letter, please do not hesitate to contact the undersigned below.

Yours faithfully,

Director

**Figure 1: 200 year floodplain with 50% bridge blockage**

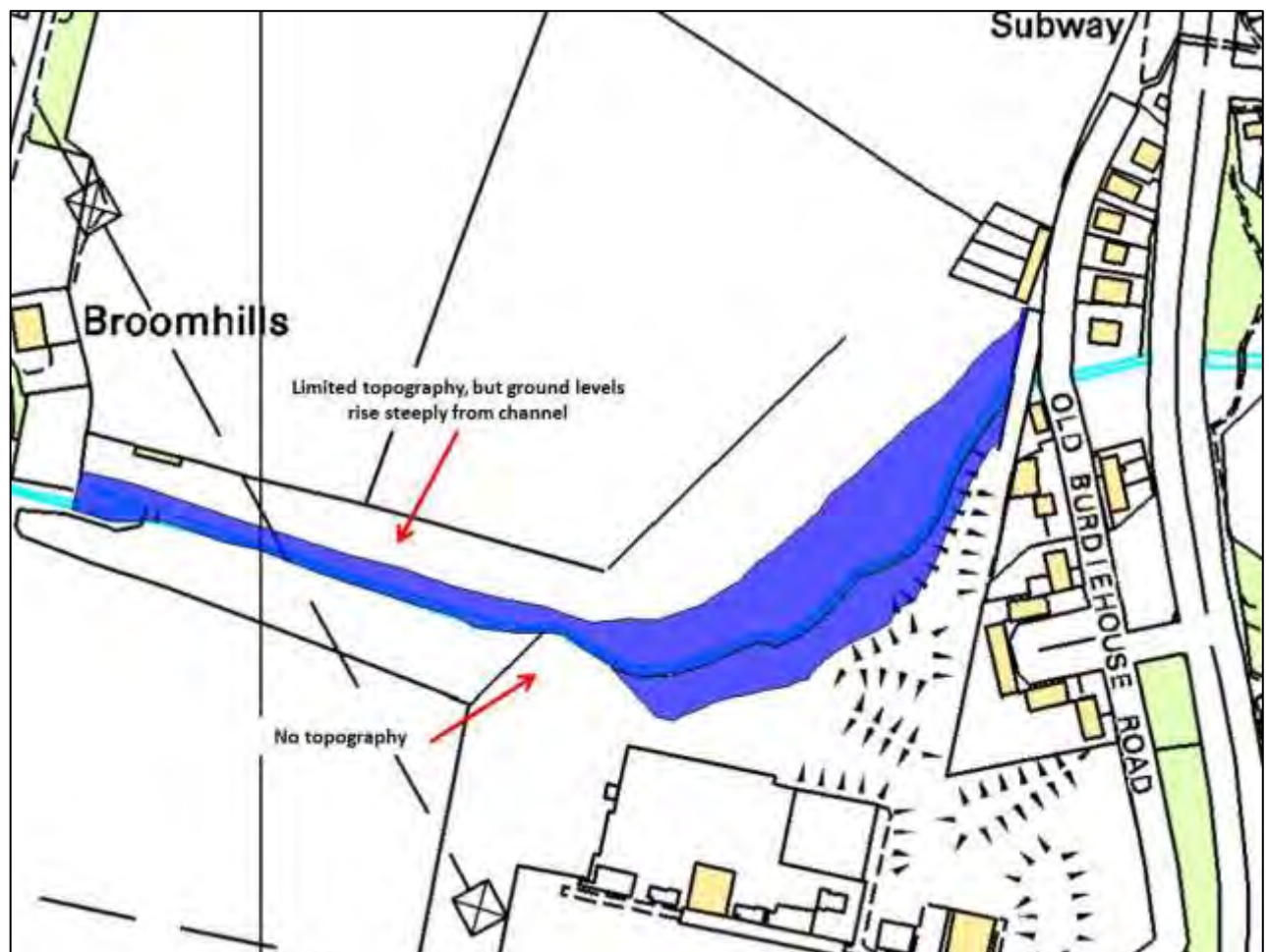


Figure 2: A701 bridge crossing details

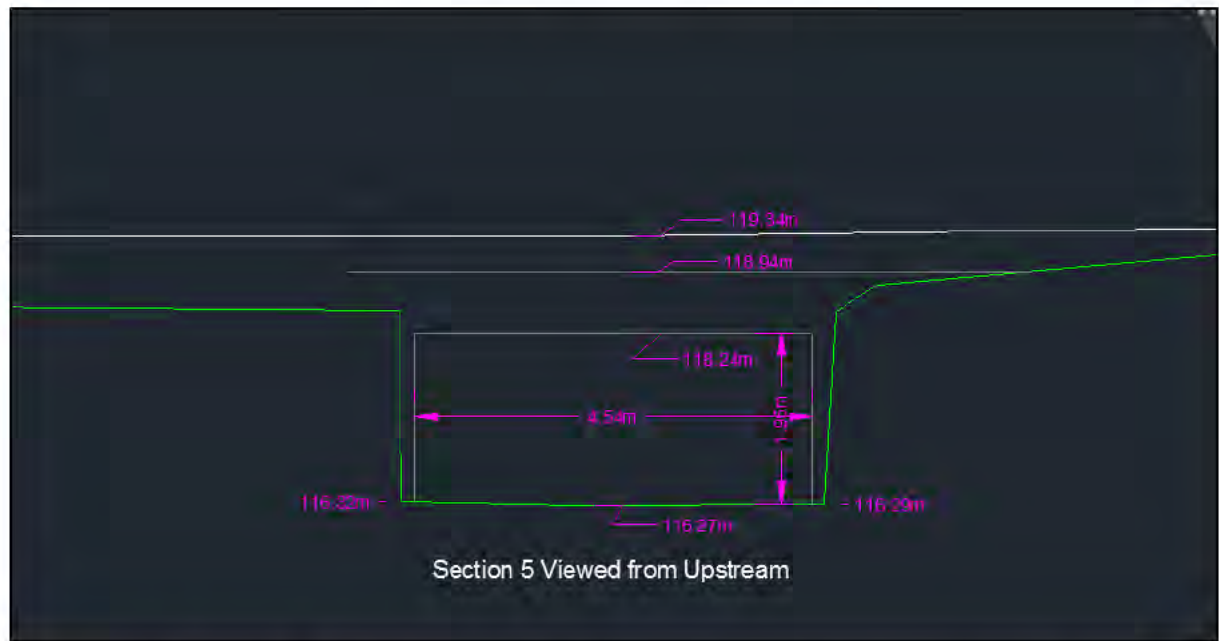


Figure 3: 200 year flood levels at upstream and downstream of A701

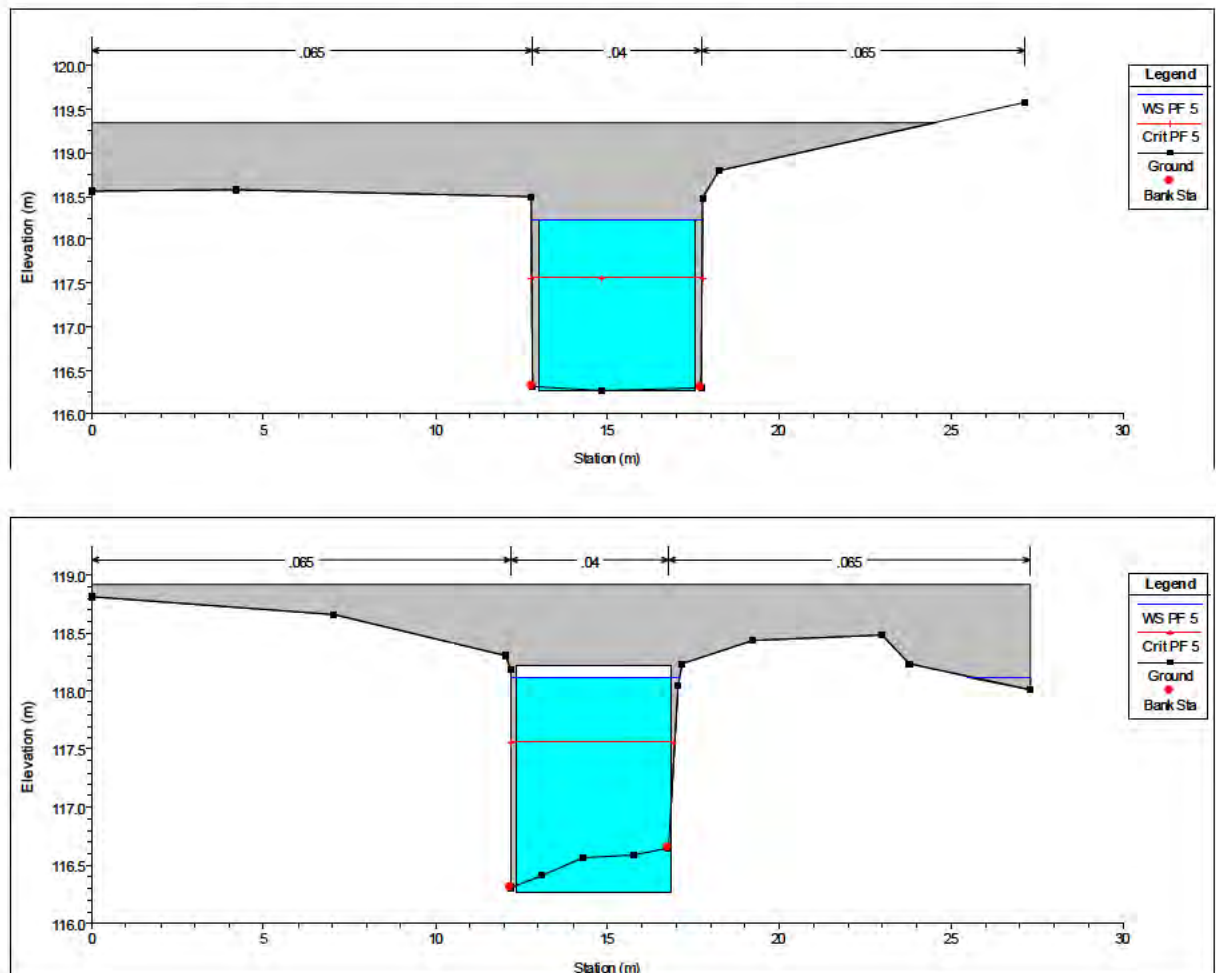


Figure 4: Long profile; 200 year flood level

