

# Technical note

<b>Project:</b>	Albion Gateway	<b>To:</b>	Dave Hughes (East Staffordshire Borough Council)
<b>Subject:</b>	Response to LLFA comments regarding planning application reference P/2017/00141	<b>From:</b>	Atkins
<b>Date:</b>	21 Apr 2017	<b>cc:</b>	Ian Romano (St. Modwen Developments), Rob Barnes (Planning Prospects)

## Introduction

This technical note has been produced in response to Staffordshire County Council's Lead Local Flood Authority Planning Application response dated 11/04/17 within which East Staffs Borough Council have made comment.

## Technical Response

In response to East Staffordshire Borough Council's recommendation for refusal of planning consent (ref.P/2017/00141) we have provided additional information and clarification within this technical note which is intended to clarify and resolve any concerns raised by the planning objection. For ease of review, the original text from the objection note has been copied below in *italic font* and responses have been included in **blue bold text** where necessary.

*"The submitted documents do not provide a suitable basis for assessment to be made of the flood risks arising from the proposed development.*

*In particular, the submitted documents are not acceptable because:*

*There are two main flood risks to the site. The first is from the River Trent and I believe the floor levels suggested for the development would have been based on the Trent defence breach scenarios in this area.*

*However, there is a second threat to the site from the Horninglow Channel, (that the applicant is proposing to discharge to). Mapping was produced in 2013 by the EA, although Flood Zones 2 and 3 have not yet been updated with this information. Atkins have obtained predicted 100yr levels adjacent to the site for the 100yr event in the Horninglow Channel and this level is 45.24m AOD.*

*The included Flood Risk and Drainage Statement (Atkins) states that the development will not raise floor levels as originally agreed with the EA. The LPA will need evidence that the EA have agreed this approach. **Please see appended to this technical note, the original technical note requesting discharge of Planning Condition 25 along with email response from the EA confirming acceptance of Atkins' approach to revised floor levels dated (email dated 02/04/15).** However, suggested ground levels on the site would appear to be at risk from a level of 45.24m AOD. As far as I can see, this looks likely to cause flooding to the drive- through restaurant and the retail unit and gym.*

*This is a matter to be agreed and decided by the EA as they are the owners of the modelling. Flood outlines sent to me in 2013 do not suggest the flooding from the channel will flood the site. However, a level of 45.24m AOD does suggest this, so there may be a mistake in the level quoted.*

*As LLFA, we will only be commenting on the proposed surface water system for the site. At first glance, this seems to be OK. Discharge rate, discharge location and storage volume look fine. There is some above ground flooding at manhole S8 but this would be limited to parking areas.*

*But this first Microdrainage run is for a free outfall into the Horninglow Channel. The second run is for the system trying to outfall when a level of 45.24m is present in the channel. However, the results appear to be exactly the same as for the free outfall case. **The Microdrainage calculations for both the free and surcharged outfall for the site are not the same; both scenarios have been accounted for. Please refer to Atkins' Flood Risk and Drainage Statement for Phase 3 (doc ref. 5121643/TN/DS/001 Rev 4.0 dated 21/10/16) for reference. Page 34 of 64 identifies the surcharged conditions of the site which result in an outfall flow of zero as shown on page 39 of the report.***

# Technical note

*But if there was a water level of 45.24m present in the Horninglow Channel,. The system would not be able to discharge. And as no means of preventing backflow is shown, I would expect floodwater to flow back through the system resulting in flooding from nearly all the manholes in the system. This would cause extensive flooding of the site.*

*The current Surface Water system calculations do not therefore seem to make sense. A possible solution to this situation would be to build a defence between the site and the channel, fit non-return valves to prevent water flooding the site through the pipe work and build a pumping station to force water out during a flood event in the channel. **It is agreed that non-return valves should be incorporated in the surface water system drainage design should revised flood levels from the modelling on the Horninglow Channel dictate.***

*It may be that the predicted 100yr level is not realistic or is a mistake. This needs to be discussed with the EA. However, I feel we need a meeting between the developer, their consultants, myself and the EA to try and come to an overall solution for the site.”*

## **Conclusion**

Further to a Product 4 data pack being obtained from the EA on 24/03/15 for the area in question, Atkins engaged in discussions with the EA on the matter of flood modelling near the development site and consequently learned that a more recent model of the diverted Shobnall Brook (now the Horninglow Channel) had been carried out in January 2015 by the EA's hydrological consultant.

This latest flood modelling data gave a more reasonable and less conservative result than that presented in the Product 4 pack. Atkins were sent copies of the most recent mapping (see email appended) which demonstrates that the Pirelli site remains free from flooding for all scenarios.

The EA conclude in their email of correspondence, that the revised modelling incorporates a lot of culverted sections of the brook upstream which forces a substantial amount of water out of bank into the surrounding floodplain, leading to only a limited flow reaching the downstream sections adjacent the Pirelli site.

Whilst Atkins are in receipt of the plans showing this latest set of modelling, additional associated flood modelling data such as node locations and associated level information has not yet been obtained. Atkins have requested this additional information from the EA to further support the planning application.



# Technical note

<b>Project:</b>	Albion Gateway (Pirelli Redevelopment)	<b>To:</b>	Jason Tait (Planning Prospects)
<b>Subject:</b>	Finished Flood Levels	<b>From:</b>	Cathy Owens (Atkins)
<b>Date:</b>	11 Mar 2015	<b>cc:</b>	Mark Smith (Atkins); Keith Rainford (Atkins); Paul Birkenshaw (Atkins)

The Albion Gateway development proposed for the existing Pirelli site in Burton upon Trent has been granted planning permission subject to a number of conditions, including Planning Condition 25 which references Halcrow’s FRA which in turn refers to finished floor levels required to mitigate against flood risk:

*The development hereby approved shall only be carried out in accordance with the recommendations set out in Section 8.3 of the approved Flood Risk Assessment (prepared by Halcrow and dated 1<sup>st</sup> August 2011). Reason: As recommended by the Environment Agency to minimise the risk of flooding in accordance with the National Planning Policy Framework (in particular Section 10).*

As a response to the 2008 Level 2 SFRA commissioned by East Staffordshire Borough Council (ESBC), Halcrow’s site specific FRA stipulated that finished floor levels (FFLs) for the development should be set at 46.11m AOD to mitigate against flooding and protect the development from a breach occurrence of the existing flood defences.

Atkins has been commissioned by St Modwen Developments to demonstrate why a change should be made to the above condition such that the FFLs can be lower than 46.11m AOD. The proposal to provide lower FFLs (to what is stated in the approved FRA) has been put forward following a review of more recent flooding information made available from ESBC as detailed below.

Halcrow’s original (approved) Flood Risk Assessment (FRA) for the Pirelli site was based on information provided in ESBC’s Level 1 and Level 2 Strategic Flood Risk Assessments originally produced in 2008. Since then, East Staffordshire Borough Council have commissioned WSP to undertake an update to their Level 1 and Level 2 Strategic Flood Risk Assessments and have produced a report dated October 2013.

Table 13 of WSP’s report (dated 2013) includes a summary of the overall flood risk to the Pirelli site in Burton upon Trent. An extract of this table is included in Table 1.

Access and egress during 1 in 100 year + Climate Change storm events	General summary comments
Site and surrounding area is not at risk. Safe access/egress via Princess Way.	Defended area. Small surface water risk and high susceptibility to groundwater flooding. Suitable for all types of development.

**Table 1. Overall flood risk to the Pirelli site in Burton upon Trent**

Table 14 of the same (WSP) report details the potential impacts of the new development on the flood risk to Burton upon Trent and finished floor level requirements. An extract of this table is included in Table 2.

Post development surface water run-off	Floodplain compensation	Finished floor levels
There is flood risk to the surrounding area and therefore surface water runoff should be limited to at most the existing brownfield runoff rates. The potential for limiting the outflow further should be considered to try to reduce the flood risk to the downstream properties.	None of the site is shown to be at risk of fluvial flooding and therefore floodplain compensation will not be required.	Finished floor levels do not need to be raised above the current ground level, other than the inclusion of a freeboard in accordance with Building Regulations.

**Table 2. Potential impacts of the new development on the flood risk to Burton upon Trent and finished floor level requirements**

# Technical note

Another reason for us proposing FFLs less than 46.11m AOD (in addition to following advice from ESBC as detailed in the above tables), is because we are looking to minimise the volume of imported fill and maintain a sustainable approach to the overall development which would not require the importation of large quantities of fill (requiring large numbers of vehicular traffic). In addition significant raising of site levels would have a material impact on the existing retained Pirelli factory site and operations.

Atkins, in advance of submitting these proposals formally to the Environment Agency, has had initial discussions with them and the overall view was supportive of the approach that is being taken.

The detailed design of the development will consider assessment of safe access and egress, flood depths, rate of onset of flood waters, Building Regulations and the associated information provided within WSP's report dated 29/10/2013 (SFRA Update).

Flood resilient design and the inclusion of sustainable drainage techniques will be incorporated into the design development.

## Read, Ellen

**Subject:** FW: Pirelli, Burton - Planning Condition 25

**From:** Eden, Andrew J [<mailto:andrew.eden@environment-agency.gov.uk>]

**Sent:** 02 April 2015 17:11

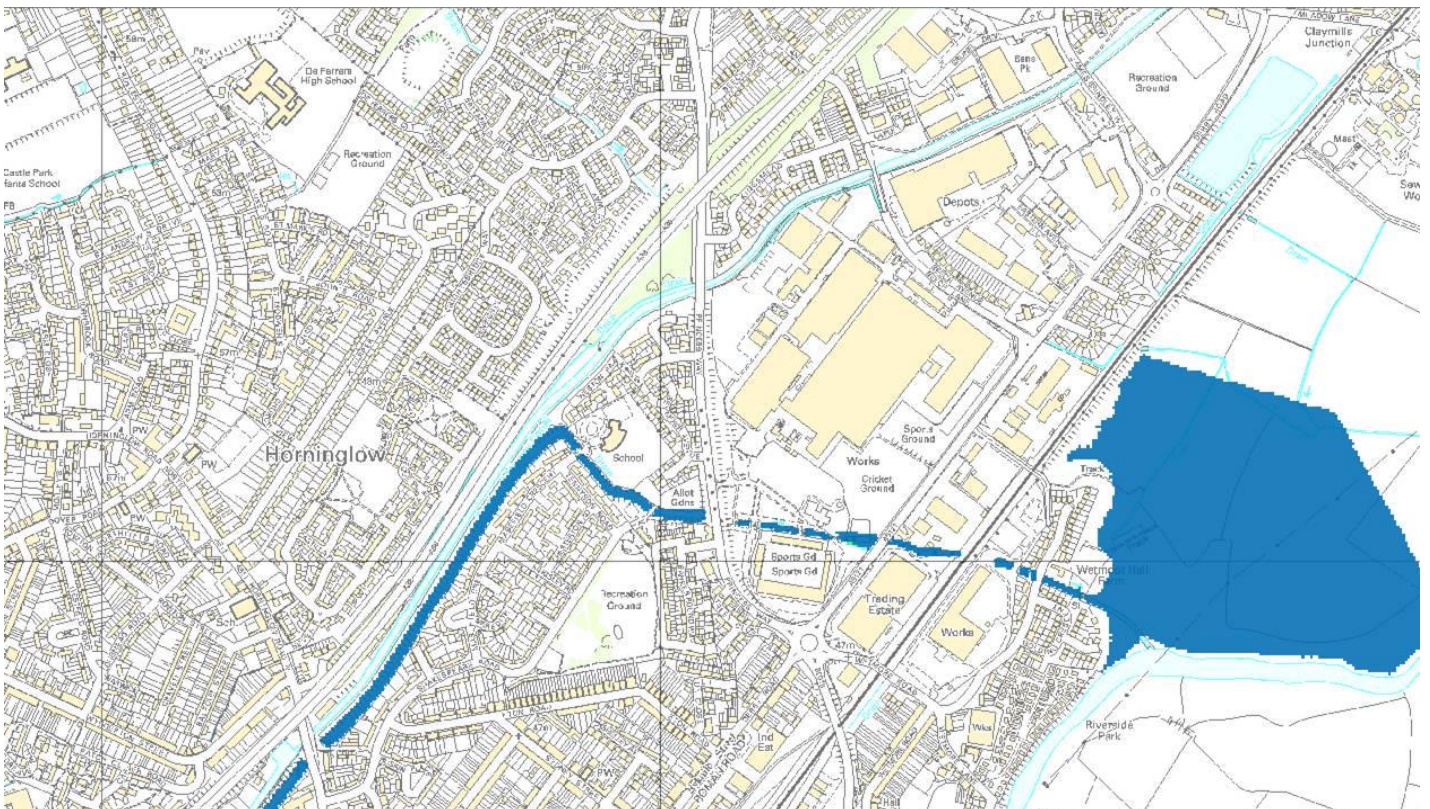
**To:** Owens, Cathy

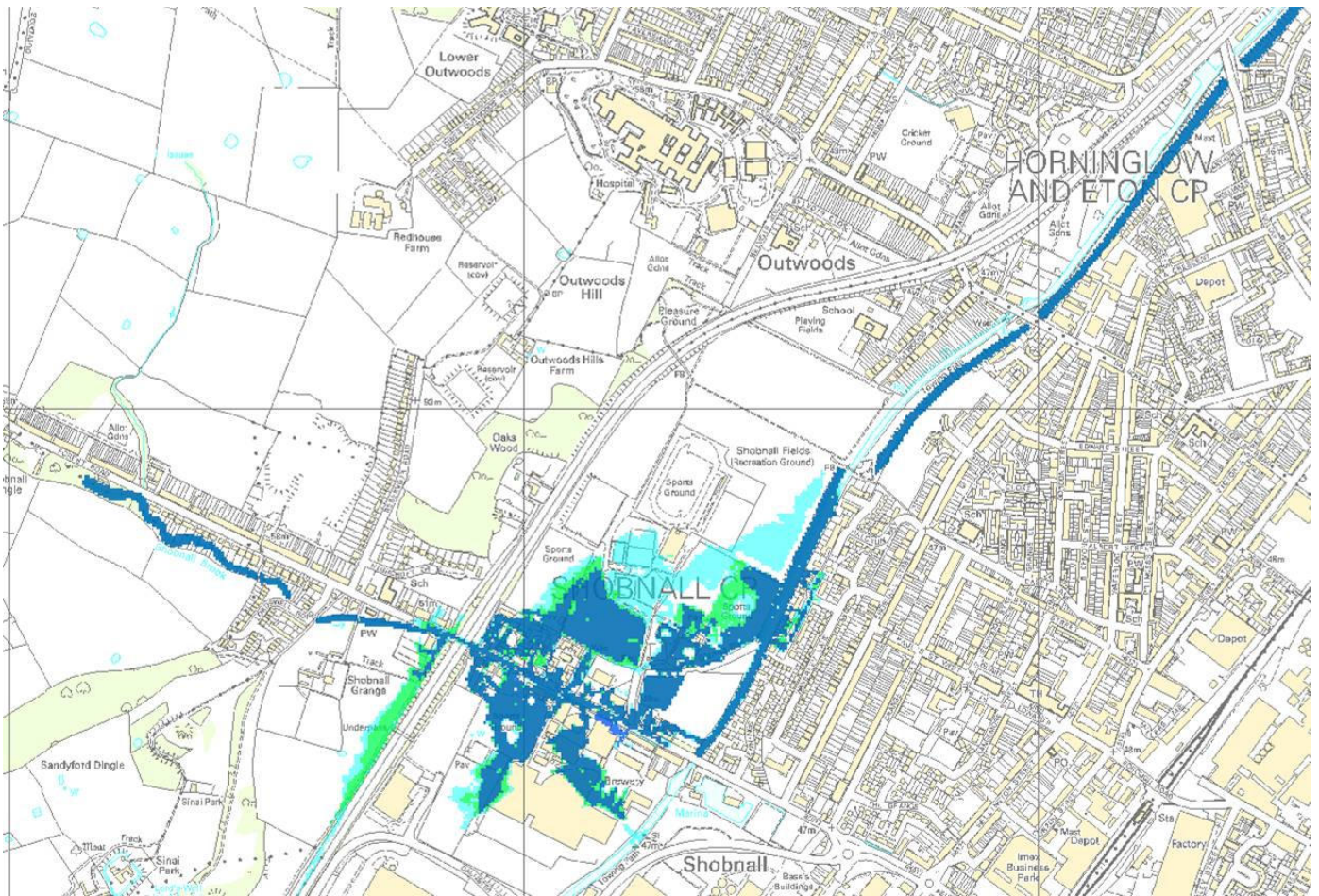
**Cc:** Bowers, Liz

**Subject:** RE: Pirelli, Burton - Planning Condition 25

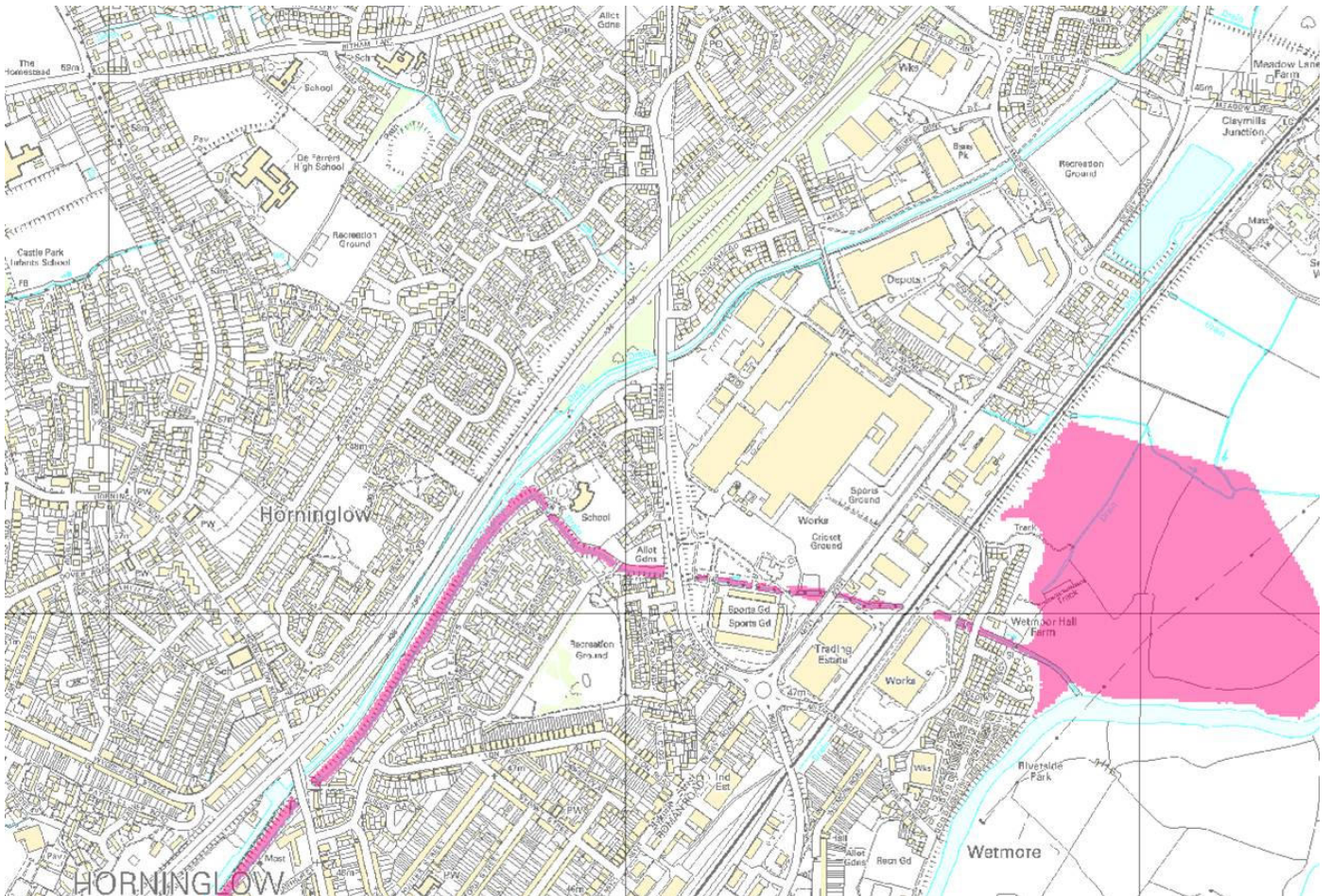
Cathy

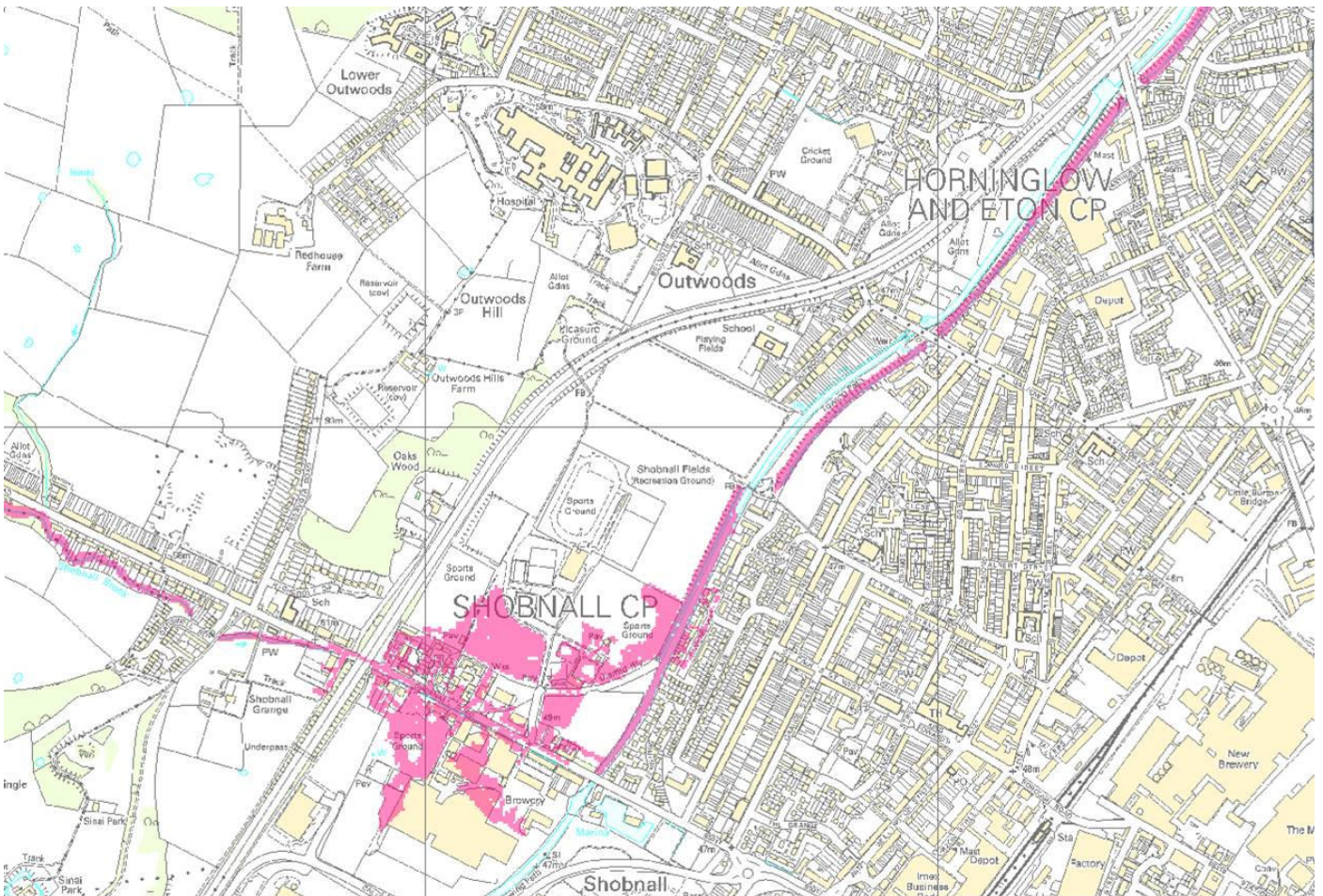
As discussed, the information I sent through last night related to a superseded model run where the boundary of the River Trent had been set to the 1 in 100 year event (which is very conservative). We had got this rectified with our hydrological consultant and the new Shobnall Brook modelling (Jan 15) uses a 20 year boundary on the Trent (much more reasonable). The most recent mapping is shown below (Dark Blue = 100yr, Light Green = 100yrCC, Light Blue = 1000yr). As you can see, the Pirelli site is flood free for all scenarios. This is attributable to the fact we have a lot of culverted sections of the brook upstream which forces a substantial amount of water out of bank into the surrounding floodplain, leading to only a limited flow reaching the downstream sections adjacent to the Pirelli site.





We have also considered a scenario where we applied the 20 yr event to the Shobnall Brook and adopted the 100 yr boundary on the Trent (i.e. a flood-locked scenario). This is shown below.





In respect of your Technical Note, I see no issue with the proposal to modify the minimum finished floor levels based on our interpretation of the updated modelling for the Shobnall Brook. The entire site is indicated to be flood free from the Shobnall Brook in the modelled scenarios. The most recent modelling is a linked 1D-2D Hydraulic model which has been assessed in details, whereas the previous mapping was (I believe) based on coarse resolution JFLOW mapping and did not properly reflect the culverted nature of the Shobnall Brook.

This email is not confirmation of our position in respect of the request to vary the condition. Confirmation will come in the form of our response to East Staffordshire Borough Council.

Kind regards

**Andrew Eden** BSc (Hons), MCIWEM  
**Flood Risk Management Advisor**  
**Partnerships & Strategic Overview Team**  
**Staffs, Warks & West Mids**

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**ARE YOU AT RISK?**

**FLOODS**  
**DESTROY**  
**BE PREPARED**

