

Sharon Holman
Planning Control Department
Wrexham County Borough Council
16 Lord Street
Wrexham
LL11 1LG

Date: 18th February 2016

Dear Ms Holman,

**OUTLINE APPLICATION TO ERECT 34 DWELLINGS AND CONSTRUCT NEW VEHICULAR
AND PEDESTRIAN ACCESS
LAND SOUTH OF BERSE ROAD, CAEGO, WREXHAM, LL11 6TP**

Thank you for referring the above application, which we received on the 3rd February 2016.

We have significant concerns relating to the Hydraulic Modelling Report, which supports the Flood Consequences Assessment as detailed as follows:

Flood Risk

The submitted flood consequences assessment (FCA) and accompanying hydraulic modelling report (HMR) (both Waterco Consultants, 2015) indicate that the development layout will be such that all properties, garages and roads will be located outside the design flood event outline. While we welcome this intention, it is not clear that this will be the case in the design event including in the event of an appropriate blockage at the Higher Berse Bridge on Bersham Road, because only a 'medium' rather than 'high' degree of blockage has been considered.

The consultant has used an existing detailed hydraulic model produced by JBA for NRW (River Gwenfro at New Broughton Flood Risk Study, 2013), updated the terrain to take account of site-specific survey and simulated the 1% AEP plus climate change event with a medium degree of blockage at the Higher Berse Bridge on Bersham Road. The Higher Berse Bridge is considered to be a culvert, because it is 27m long but only 2.7m wide (paragraph 3.1.5 of the River Gwenfro at New Broughton Flood Risk Study, JBA, 2013). Based on the photograph of the structure in the original study (Figure 3-6), the culvert is also relatively low and therefore we consider that assessing flood risk to the proposed development using a high degree of blockage would be appropriate. This is 100% (or 95% to maintain a minimum opening and ensure the model remains stable) in line with our breach and blockage guidance Flood Risk Management: Modelling blockage and breach scenarios, December 2014 (which references the CIRIA Culvert design and operation guide 2010). Given that the flood extent shown in the FCA appears to touch or come very near to the footprint of at least four of the properties in the proposed layout (numbers 18, 19, 26 and 27), it is possible that with an increased degree of blockage, flooding could affect properties.

The rear gardens of several plots are shown to be at risk of flooding in the events modelled. Ideally, no part of the development, including gardens, should be at risk of depths of water greater than 300mm in the design event (with a high degree of blockage) and the hazard rating should be 'very low'. The HMR and FCA do not include modelling of the 0.1% AEP event with blockage, however, this is the event which must be considered as the extreme event for the purposes of determining whether or not the proposed development complies with the thresholds in A1.15 and that it does not cause any increased flood risk elsewhere; if the 0.1% AEP event with blockage has not been modelled because using the 1% AEP plus climate change with blockage event is more conservative, this should be made clear in the reports. The HMR indicates that, even with the degree of blockage modelled for the 1% AEP plus climate change event, velocities expected on site are up to 0.75m/s which is above the threshold in A1.15, and the flood hazard rating varies between 'Danger for Some' and 'Danger to Most' (paragraph 3.8 of the HMR). Your Authority may wish to take further advice on this from your Emergency Planners.

Given the above, once the modelling has been updated to include a high degree of blockage, we would strongly suggest that the development layout is redesigned, or that the site is reprofiled, so that flood flows do not encroach on property curtilages.

If the development is redesigned such that some areas of the gardens still experience flooding, we would be concerned that the erection of walls, garages, sheds and other garden structures could divert the flow of floodwaters, potentially lead to flooding of properties. The FCA recommends that 'in order to ensure no impact on the flow route and flood risk elsewhere, no close-board fences or other structures such as sheds should be located in the rear gardens of these properties' (para 6.2). Given that this may prove problematic to enforce, ideally, no curtilage of any property encroaches into the area flooded during the design event with blockage. If this is not possible, we would strongly recommend the imposition of a condition to remove the permitted development rights, in order to ensure that flood flow routes are maintained and that the development does not cause increased flooding elsewhere.

In addition to the above, we would recommend the following clarifications should be made to the HMR report underpinning the FCA:

- Comment on the quality of the site-specific survey and how it has been tied in to the DTM; the differences between the topographic survey and the LiDAR DTM it replaces, and the effect this has on the outputs.
- Comment on any effect replacement of the ISIS component of the NRW with Flood Modeller Pro may have had on the model outputs; and the reasons interpolates were needed to improve stability.

Protected Species

We have reviewed the ecological submission. We have no objection to the proposals from a protected species perspective.

Please note that we have not considered possible effects on all species and habitats (including nesting birds) listed in section 42 of the Natural Environment and Rural Communities (NERC) Act 2006, or on the Local Biodiversity Action Plan or other local natural heritage interests. To comply

with your Authority's duty under section 40 of the NERC Act, to have regard to conserving biodiversity, your decision should take account of possible adverse effects on such interests. We recommend that you seek further advice from your Authority's internal ecological adviser and/or nature conservation organisations such as the local Wildlife Trust, RSPB, etc. The Wales Biodiversity Partnership's web site has guidance for assessing proposals that have implications for section 42 habitats and species (www.biodiversitywales.org.uk).

Yn gywir / Yours' faithfully,



Mr. GARETH THOMAS

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cc: Strutt and Parker