# Outcomes from the Fourth Modelling Workshop

# 29<sup>th</sup> April 2015 – Southwell

*Aim*

The aims of the fourth workshop were to:

1. Familiarise participants with the software used to construct the model
2. View and discuss outputs from the model
3. Discuss plans for interpreting and presenting our results

*Opening presentations*

The opening presentation focussed on the different elements of the model, how it was constructed and how it works.  Each 'tier' of the model was explained in terms of the cause-effect flows, as follows:

1. The main data input is the water depth at each site.  This is imported from a table of depths at different times.  The model then creates a curve of water depth, similar in appearance to a hydrograph.
2. Each receptor is presented on the second tier, and contains an equation which relates the risk back to water depth.  These are based on the curves sketched in workshop three.  They further take into account the exposure and vulnerability during the 2013 event.
3. These exposure and vulnerability ratings (which each receptor has) are affected by a series of factors.  Some of these factors are physical processes (e.g. runoff), and others are interventions that can be put into place by the community (e.g. flood wardens)
4. Once the receptor curves have been computed, these are then combined and weighted according to the weights given in workshop three.  This combined curve is termed the 'risk curve' and shows the overall risk at a site as a function of flood water depth.

Note: I appreciate the above description may mean little to those that have been unable to attend the last two workshops.  If you have any questions, or want further clarification please get in touch.

The presentation went on to demonstrate how participants could make the following changes to the model:

1. Changing the value of a factor
2. Adding and removing factors
3. Connecting factors to the model structure (so that they take effect when the model is run)

*Belford Burn presentation*

A second presentation (in between modelling activities) introduced the work on upland flood risk management in the Belford Burn catchment, Northumberland that focussed on initial findings and similarities in the catchment to that of the Potwell Dyke.  This work is presented as an e-bulletin for those stakeholders that could not attend the workshop.

*Modelling activities*

The first modelling activity saw participants experimenting with the model software to familiarise themselves with how the model works, and what changes they can easily make to the model structure. With the support of a guidance sheet and the earlier presentation, they undertook the three tasks described above. Where time allowed, they made improvements to the factor values so that they better represented the current situation in Southwell. This was not uniformly achieved over all eight locations, so further input will be required before workshop five.

The second task also worked within the model software, this time to review the model outputs. A number of these were completed, and others were not (due to time constraints). The primary aim was for participants to see an example of the model output, and how to view it within the modelling software.

*Discussion*

At the close of the workshop, a discussion was held to see how we could get the most out of the model and the final workshop. The following points were discussed:

1. The model would benefit from more realistic water depth curves. Whilst we wait for the results of the URS model, these could take the form of estimates derived from photographs and from witnesses at each location. These should be prepared prior to the final workshop where possible.
2. In order to achieve point 1 and to complete the model validation work started in this workshop, several individual meetings will be scheduled in mid-May with stakeholders (especially those who could not attend workshop four). Potwell Close, Archers Field and Crafts Way need the most input.
3. The final workshop should visually demonstrate how different combinations of interventions might affect the risk curve at each site. These can be run as four future scenarios. The following scenarios were suggested:
    a. Baseline (i.e. what has already been done – where are we now, post 2013)
    b. Road closure programme (e.g. specific measures included in the programme)
    c. Community stewardship (e.g. regular maintenance, blockage clearance, etc…)
    d. Personal enterprise (e.g. property protection, flood-proofing, flood plans, etc…)
4. The above scenarios should provide further evaluation and testing of the model, and provide a visual output which can be shared with members of the public.

*Workshop outputs*

- E-Bulletin #7 – Belford Burn
- Series of receptor curves and overall risk curves as a function of depth (note than some are more developed than others) (see attached)
- Equations and weightings for the curves (incorporating changes from discussions prior to workshop four)

*Next steps*

Between now and the final workshop, I will endeavour to hold discussions with participants to develop the model in areas that are currently underdeveloped (Potwell Close, Archers Field and Crafts Way) such that the level of development across different parts of the model is balanced. The scenarios will be formalised such that they can be presented at workshop five as a framework for evaluating potential routes for future/continued community involvement in flood risk management in Southwell. A key aim is to visually demonstrate to the public the impact we expect these interventions to have on lowering risk.

Workshop five will take place from 7pm – 9pm on Thursday 28th May, venue to be confirmed.

If you have any questions before the final modelling workshop, please get in touch.



Shaun Maskrey
University of Nottingham

A34 School of Geography, University Park, NOTTINGHAM, NG7 2RD
0115 9515383
07887 398337
shaun.maskrey@nottingham.ac.uk


[Technical ouputs follow]

# Technical outputs

Date: 30/04/2015                Post Workshop Four

While we are still without flood depth data for each location, flood depth is shown as increasing linearly from 0 – 0.9m depth at each site.  This replaces the theoretical hydrograph used in workshop four.  All changes arising from workshop four have been adopted.
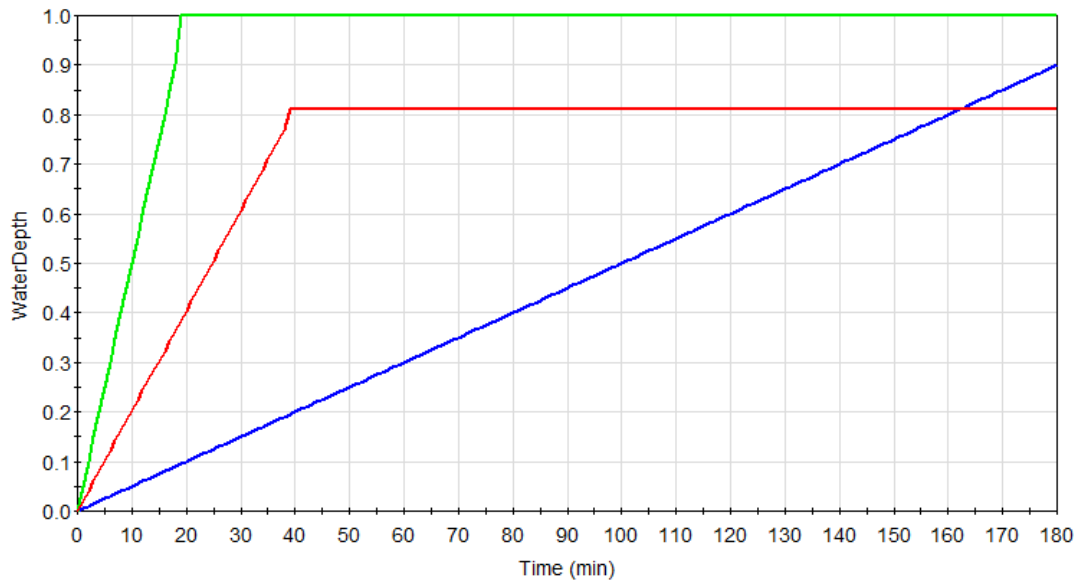
## Modelled receptor curves
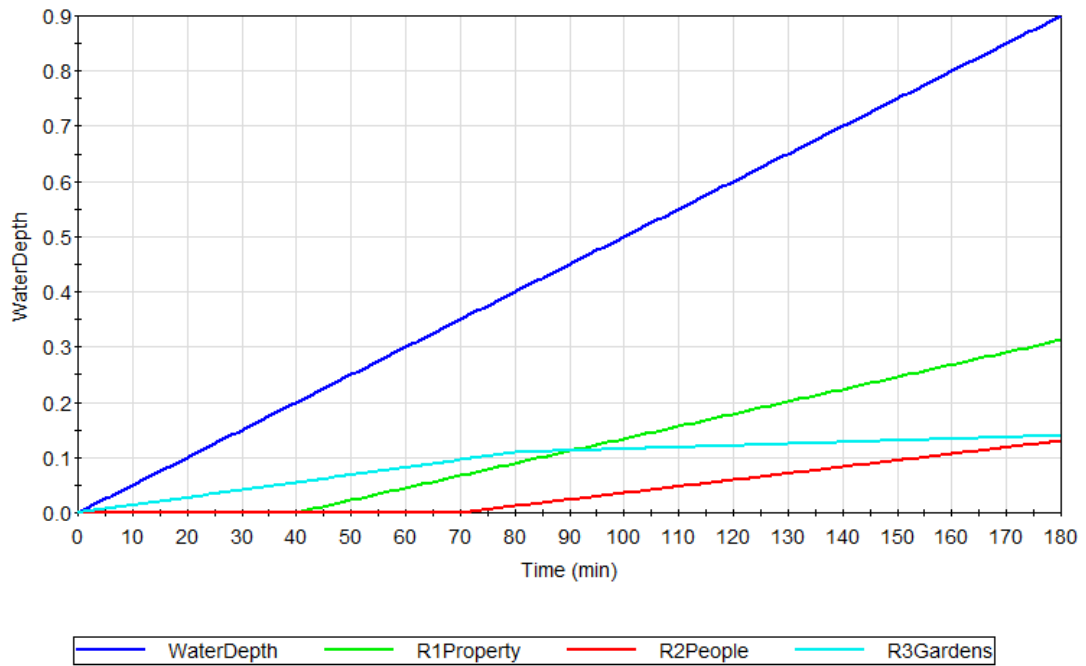
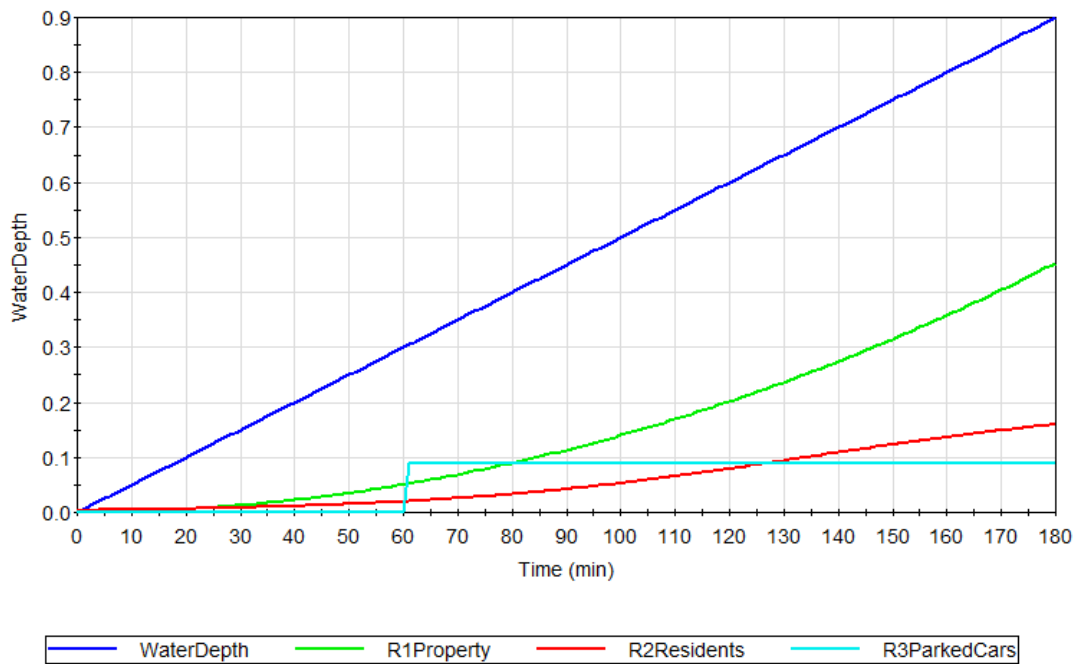### Receptors Halloughton Rd
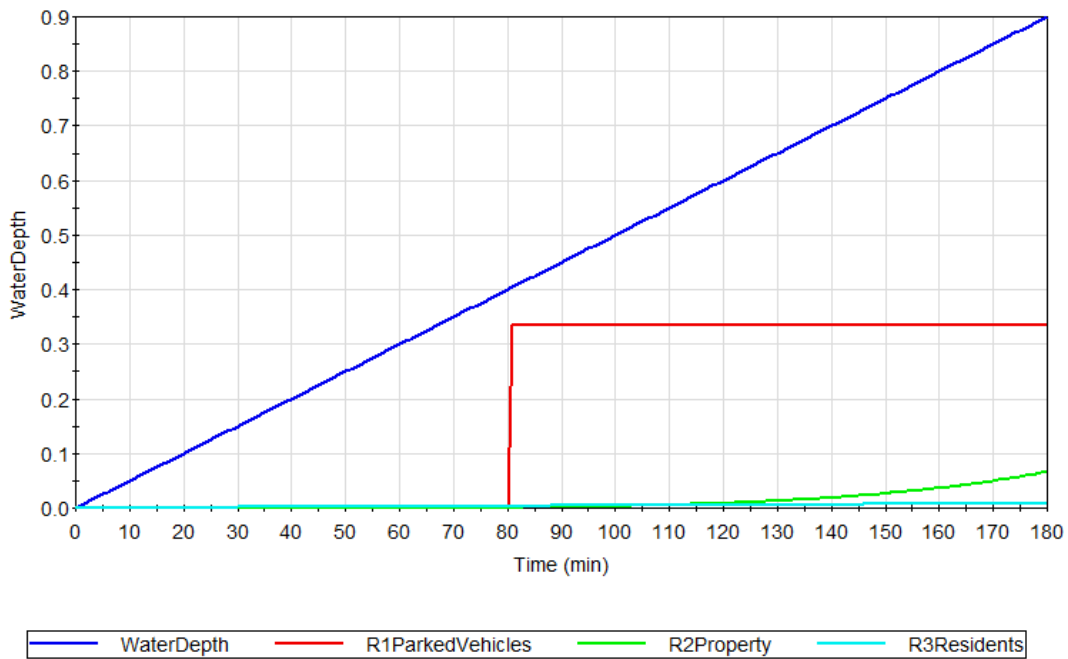


### Receptors Nottingham Rd
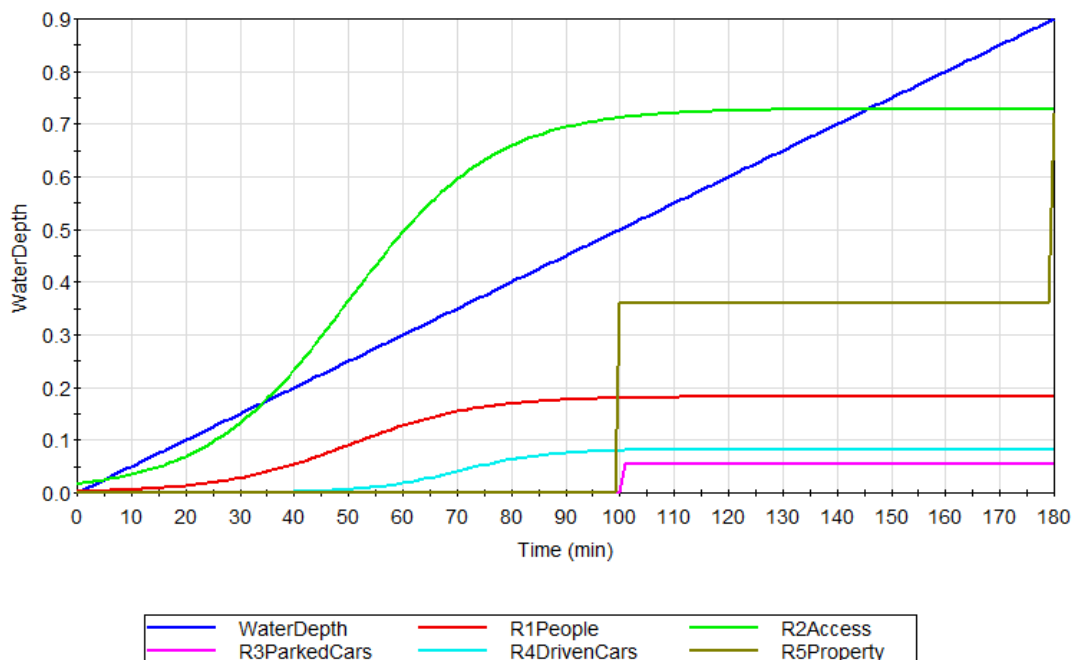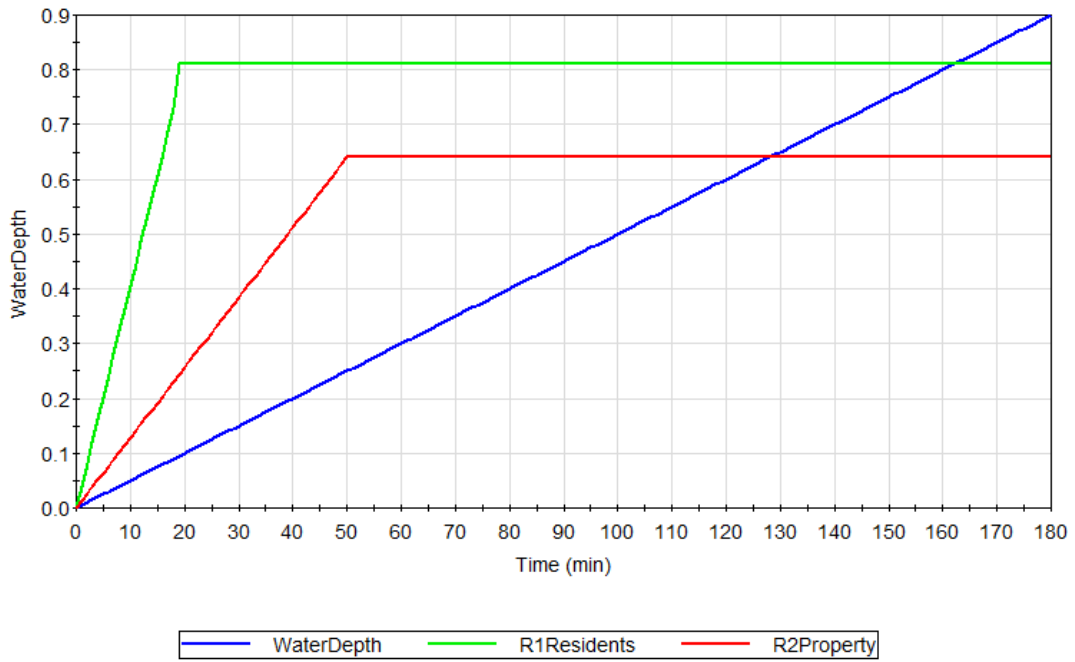
## Receptors Church St
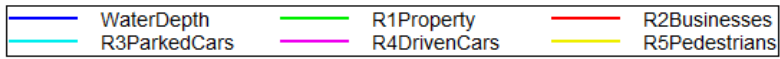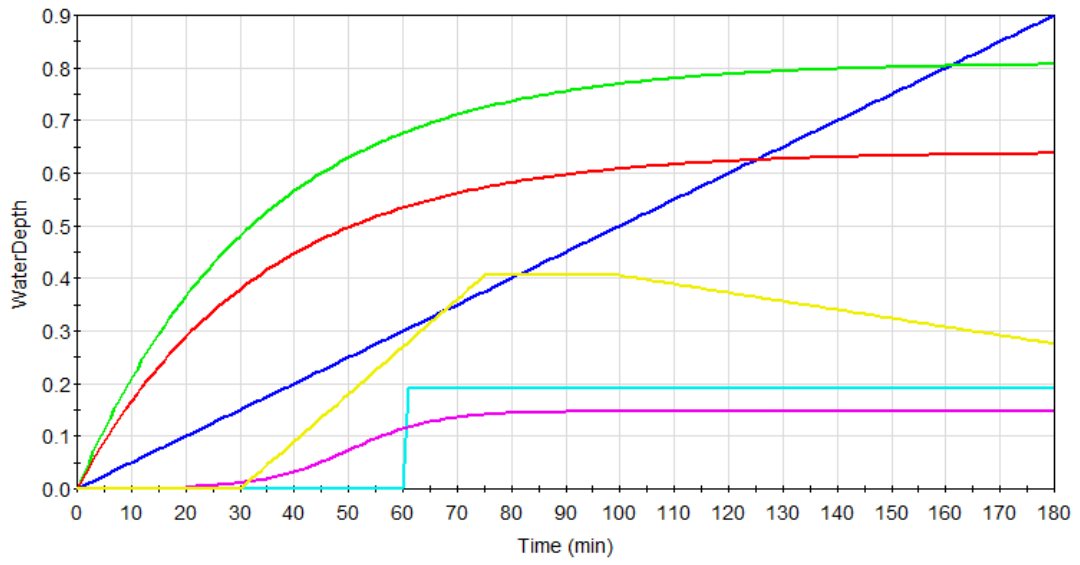


## Receptors Potwell Cl
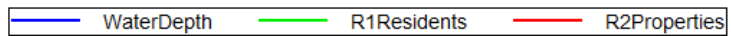
## Receptors Ropewalk



## Receptors Archers Field

## Receptors Merryweather Est



## Receptors Crafts Way
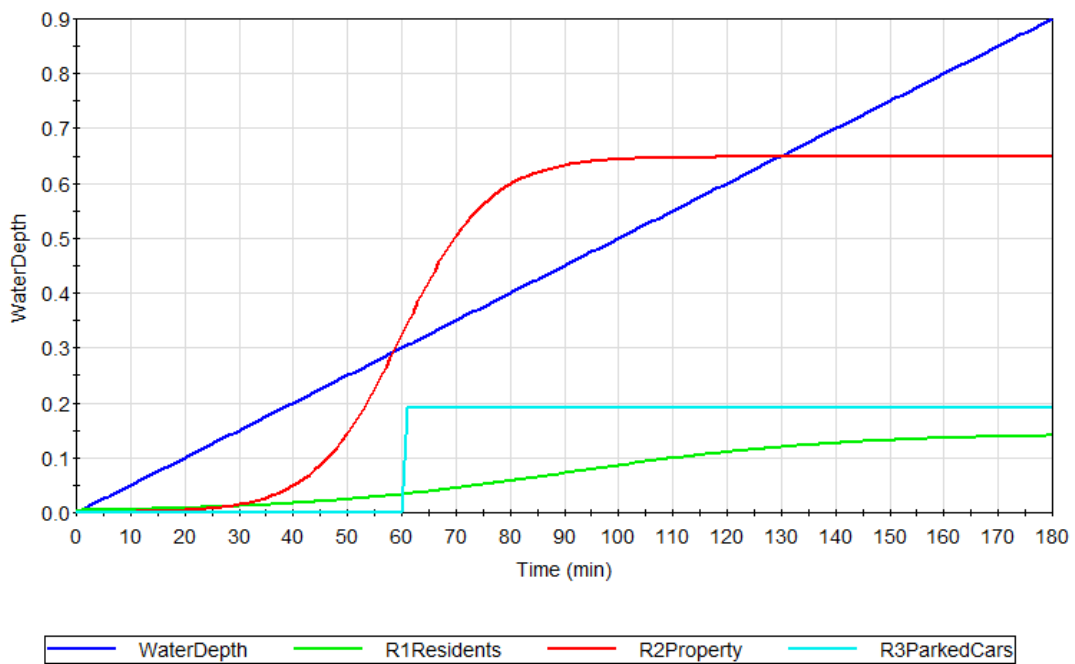
# Modelled Risk Curves

In these graphs the risk curve is presented as a combination of all of the receptor curves at each site, weighted according to how risk was distributed in workshop three.
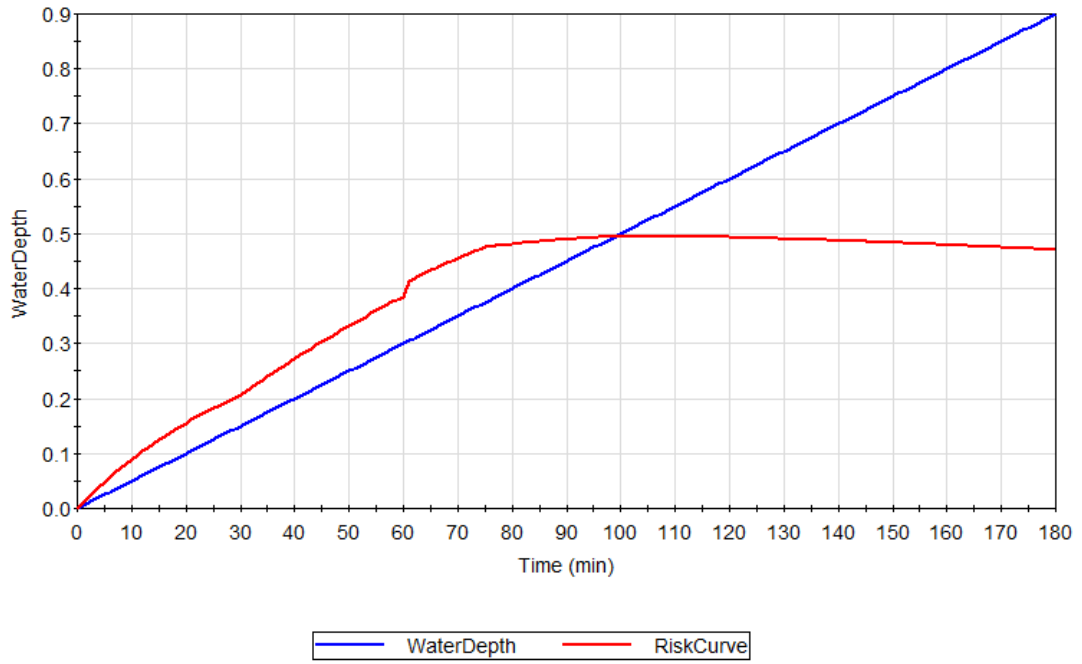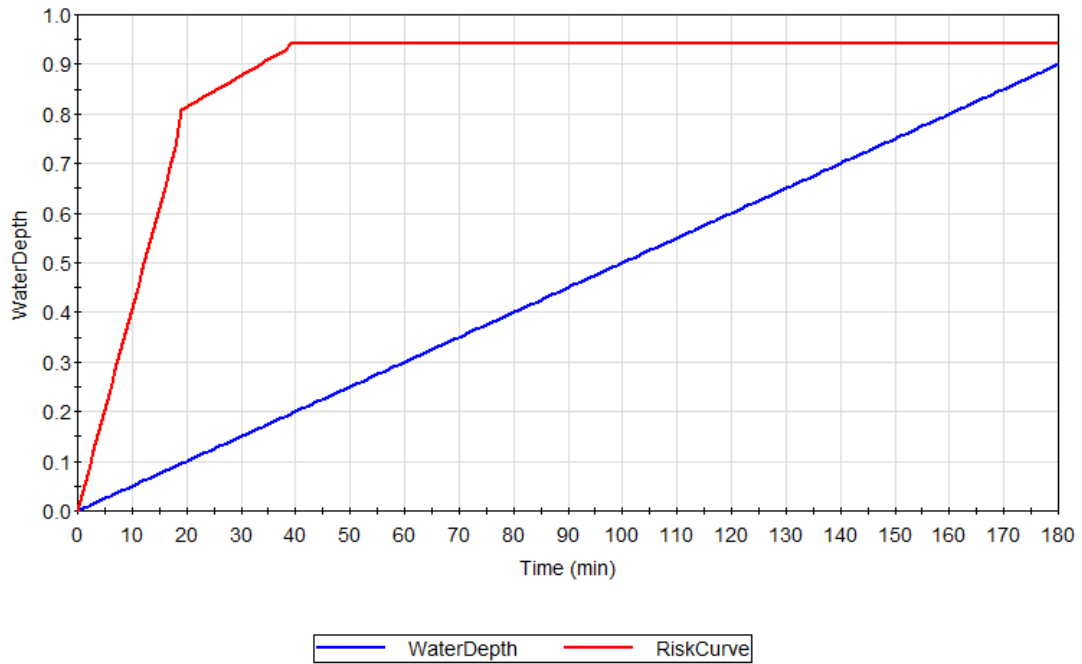
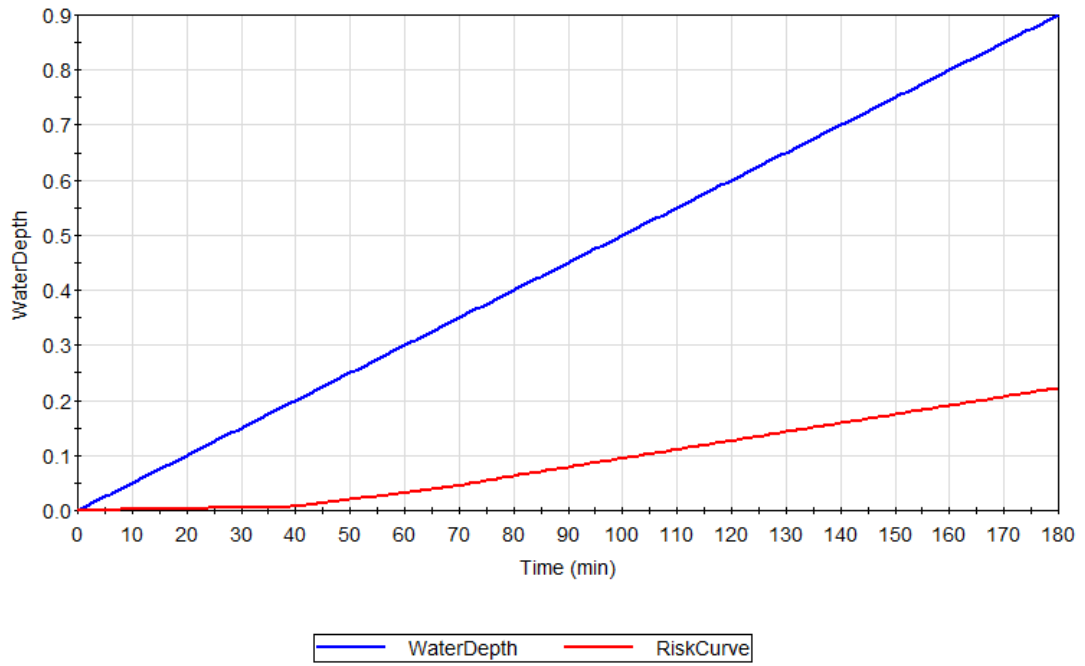**Risk Curve Halloughton Rd**
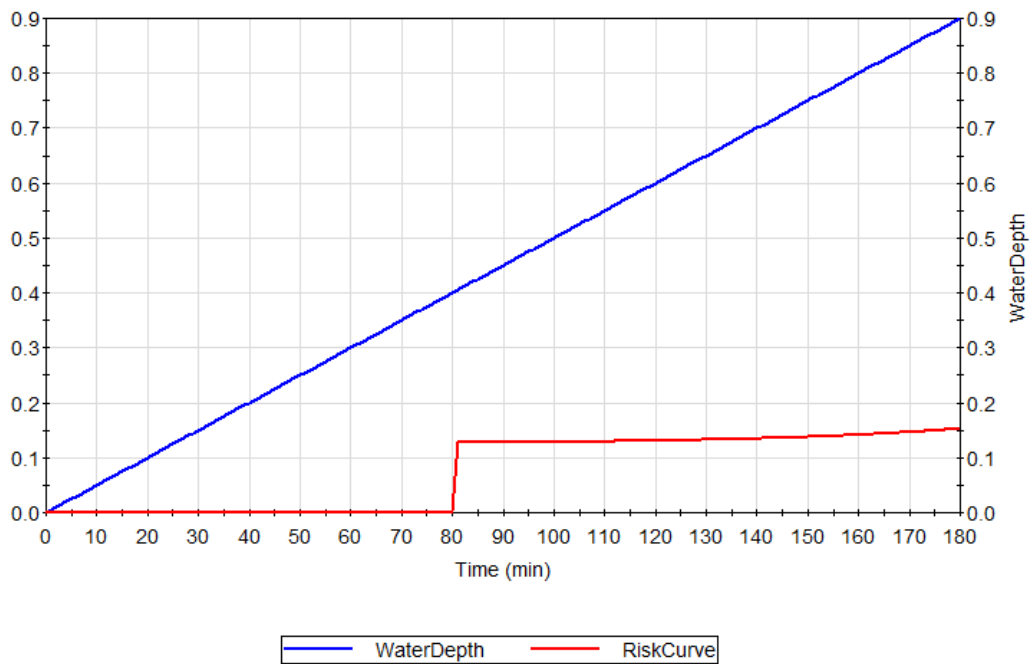


**Risk Curve Nottingham Rd**
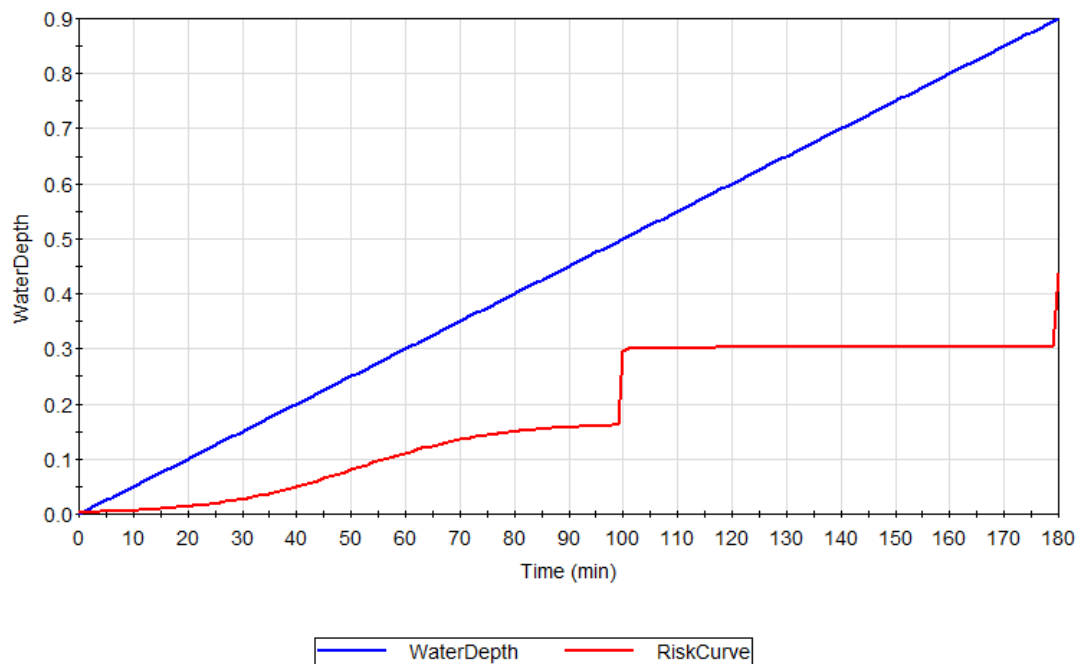
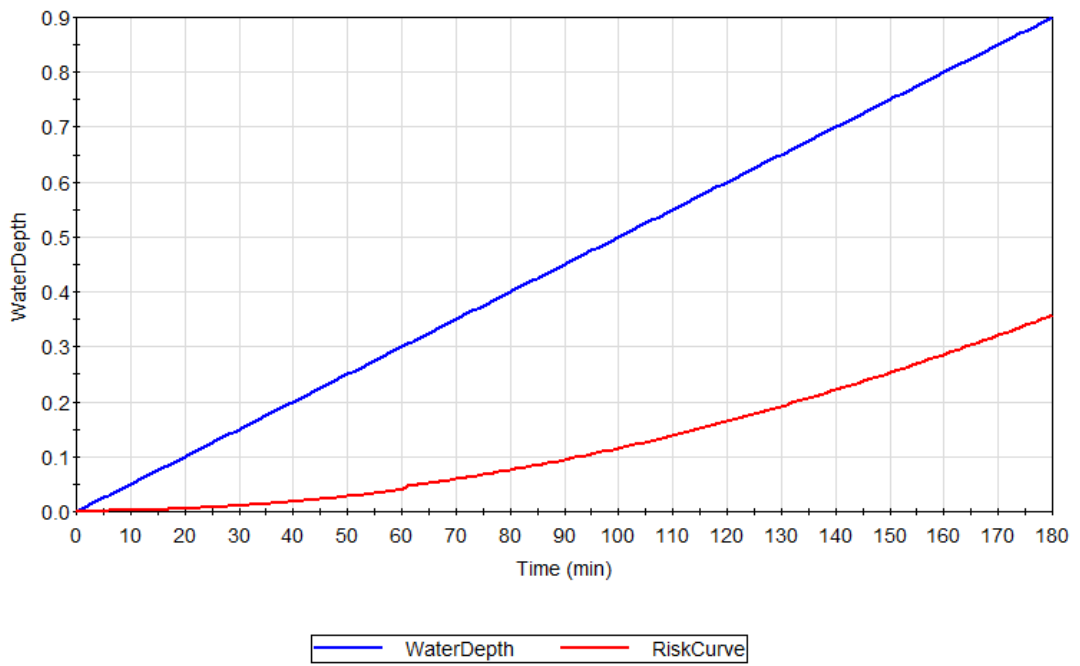## Risk Curve Church St



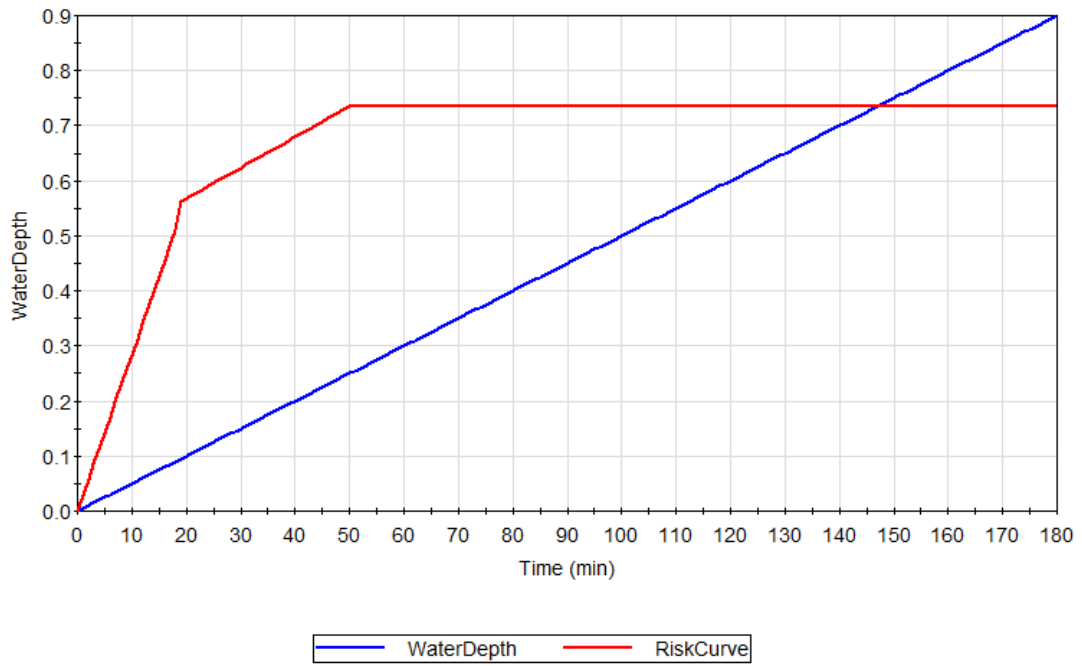## Risk Curve Potwell Cl

## Risk Curve Ropewalk



## Risk Curve Archers Field

## Risk Curve Merryweather Est



## Risk Curve Crafts Way