

Horncastle Flood Storage Reservoir – how it works and what happened in Storm Babet

Horncastle Town Council Public Meeting
25 April 2024

Leigh Edlin, Area Director
Lincolnshire and Northamptonshire Area

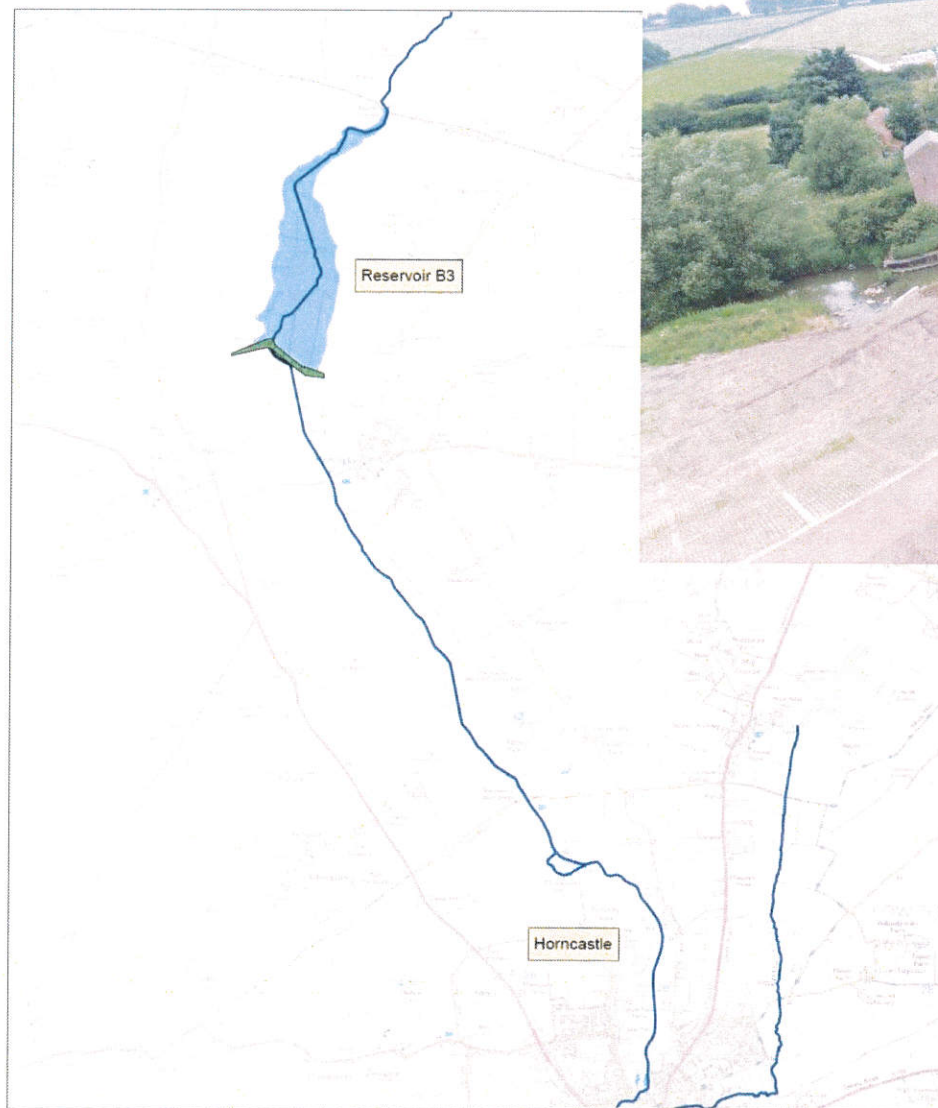
Pete Reilly
Operations Manager

Paul Arnold
Catchment Engineer

John Ray
Flood Risk Senior Advisor

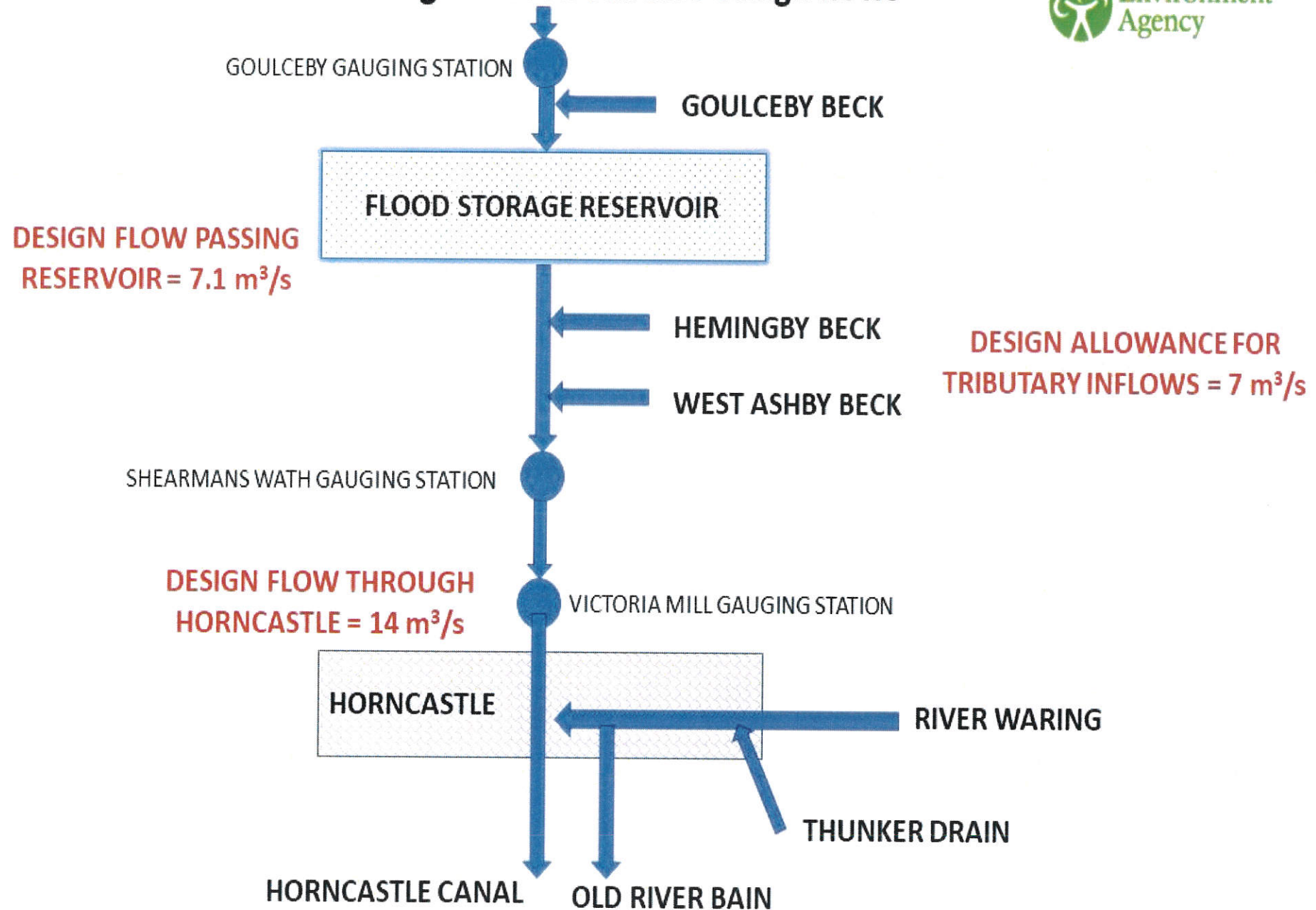
Eddy Poll
Chair of Regional Flood and Coastal Committee

Reservoir Location

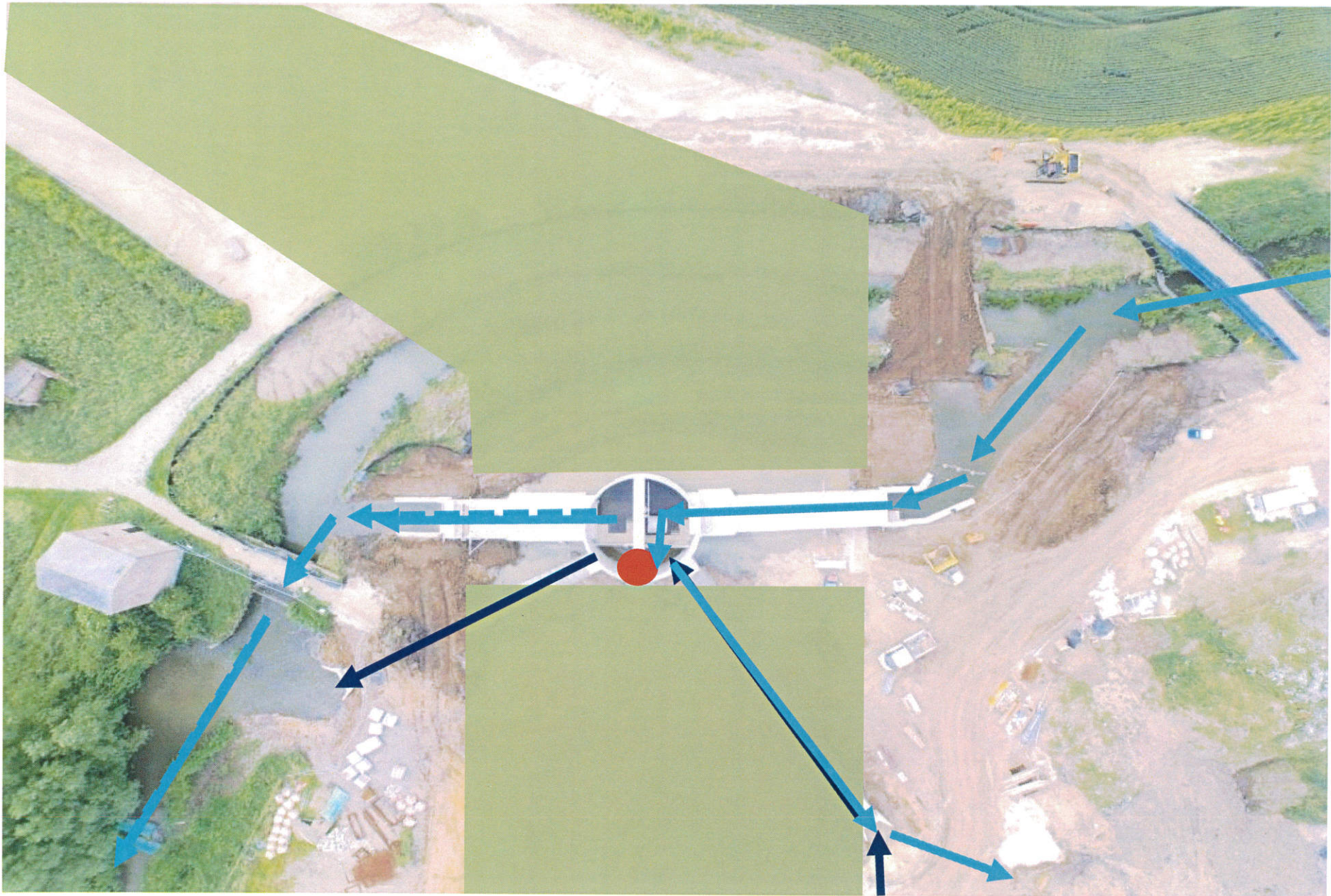


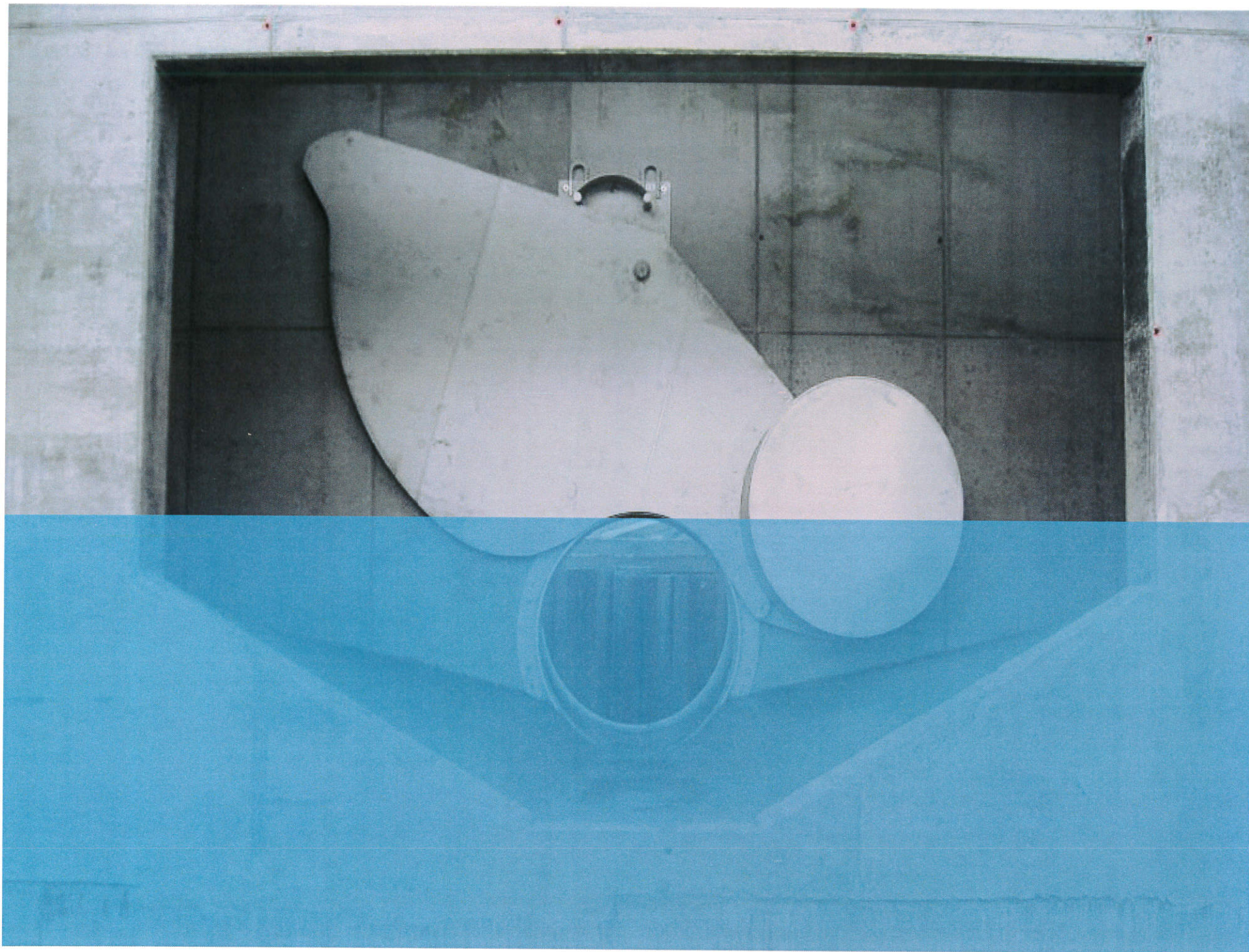
- Upstream of Hemingby
- Built to 1 in 100 design standard
- Funding from many partners including Town, District and County Councils

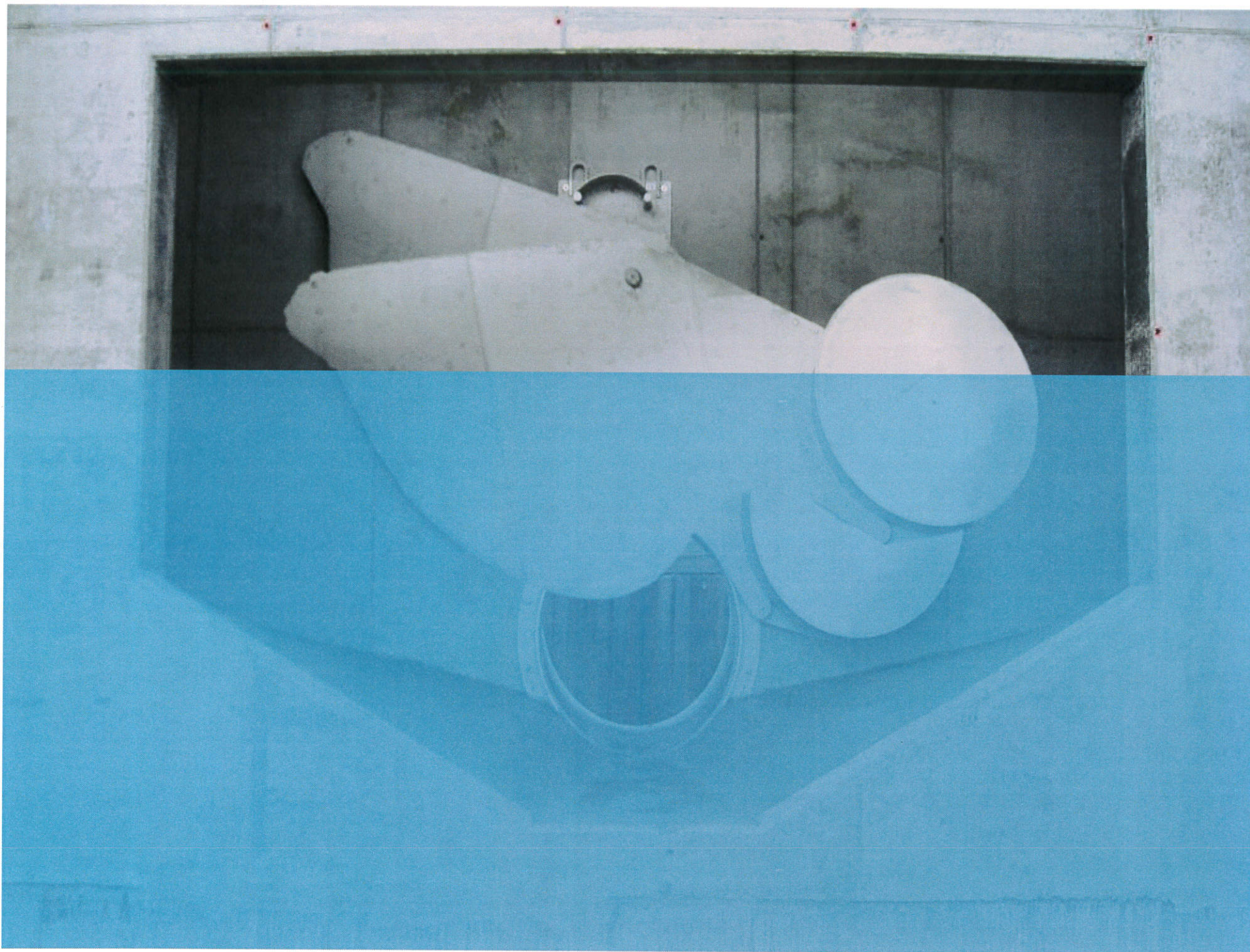
Upper Bain catchment schematic showing reservoir scheme design flows



How does it hold back water







Sluice gate

- Needed to drain agricultural land in the reservoir
- Checked monthly to make sure it can move up and down without issue
- Minor Mechanical Service takes place 6 monthly – similar to car service
- Minor Electrical Service happens yearly
- Trigger level is set to close automatically 8.5 hours before needed to allow time for manual closure if needed



Sluice gate control



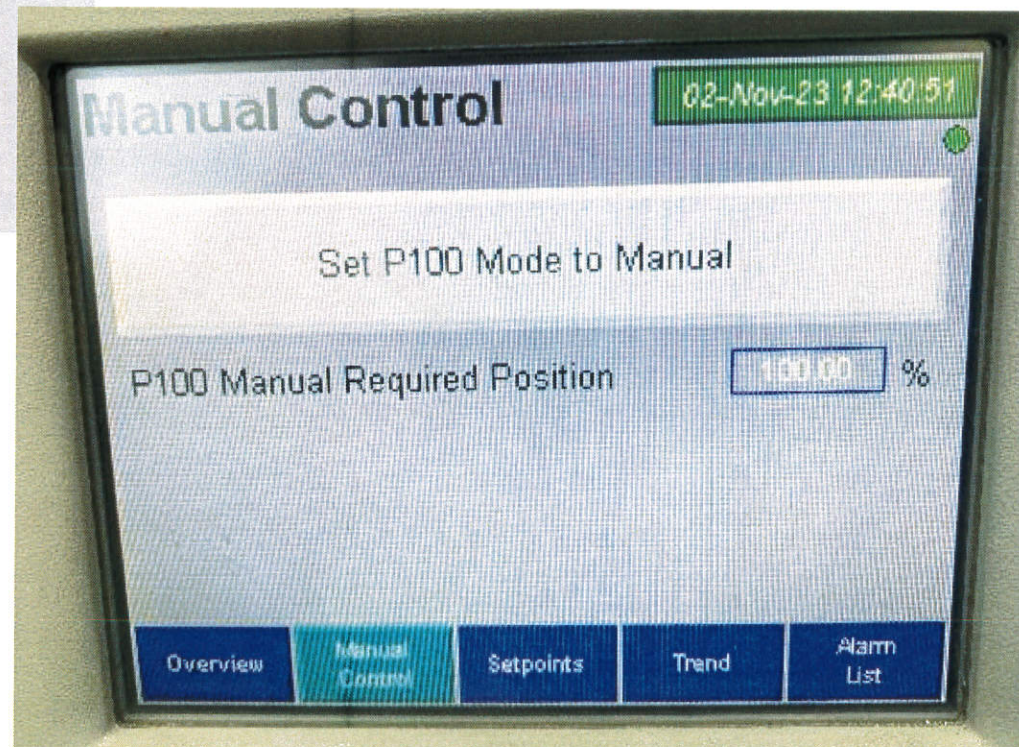
Switching from Manual to Automatic

Two switches

- physical one
- electronic one

Investigation discovered issue with sluice gate control

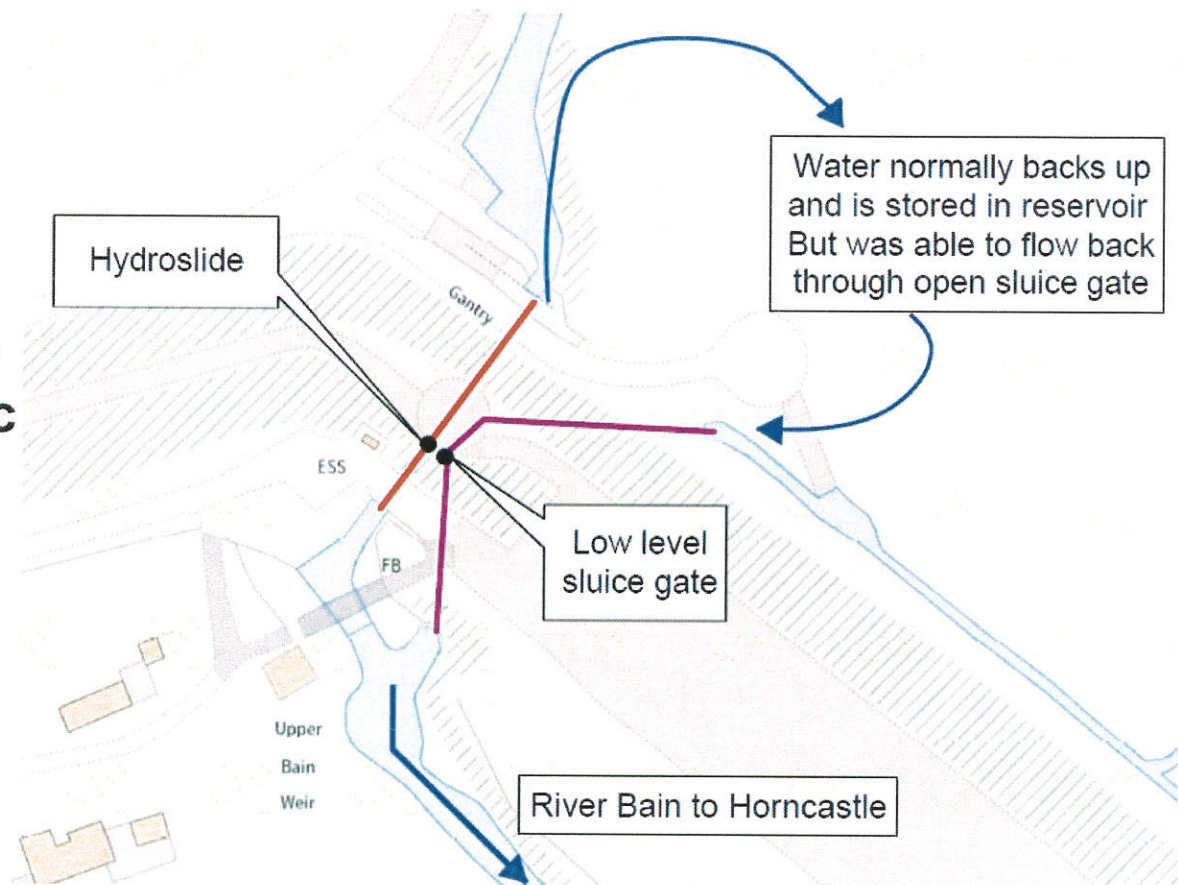
Gate could be on manual mode, despite physical switch being on automatic



What happened in October ?

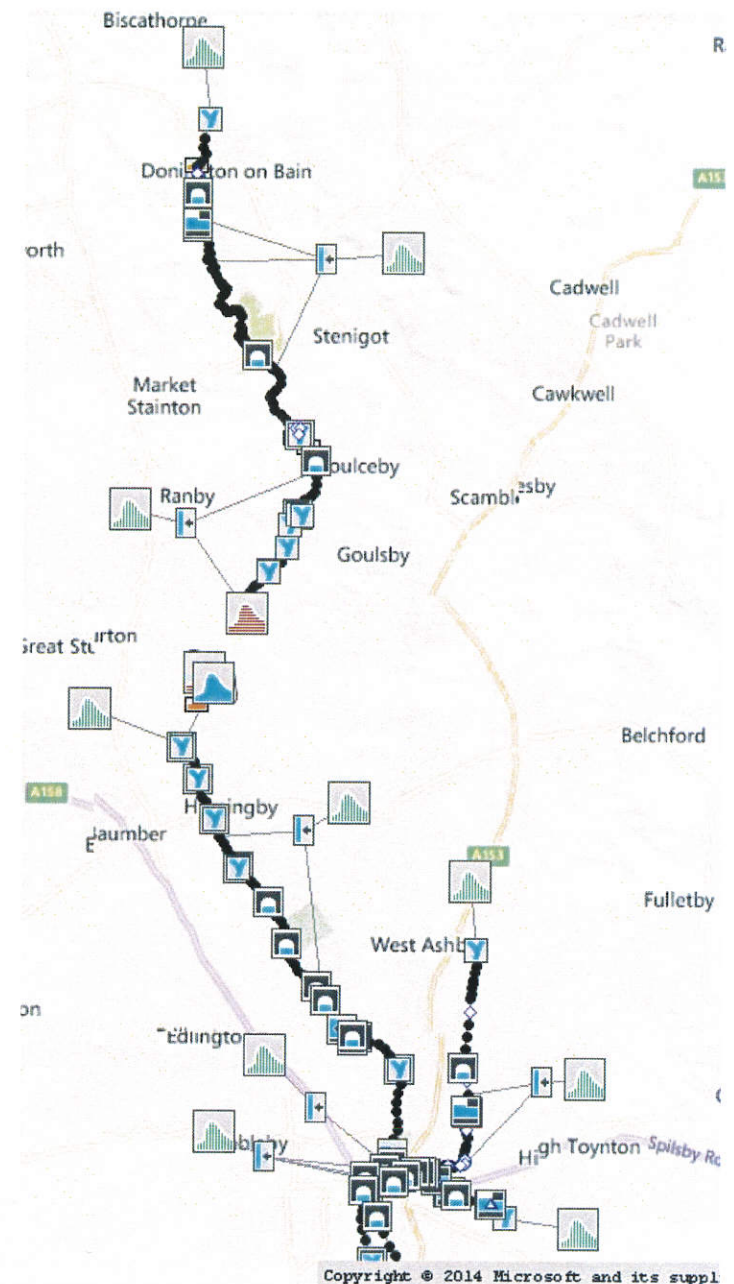
- Sluice gate understood to be in automatic mode but it did not close at the trigger level
- Needed to be fully closed at 11.45am
- Sluice gate was not fully closed until 2.15pm
- Delay saw some additional water pass downstream

The control system has now been simplified so there is only one switch to select manual or automatic closure of the gate



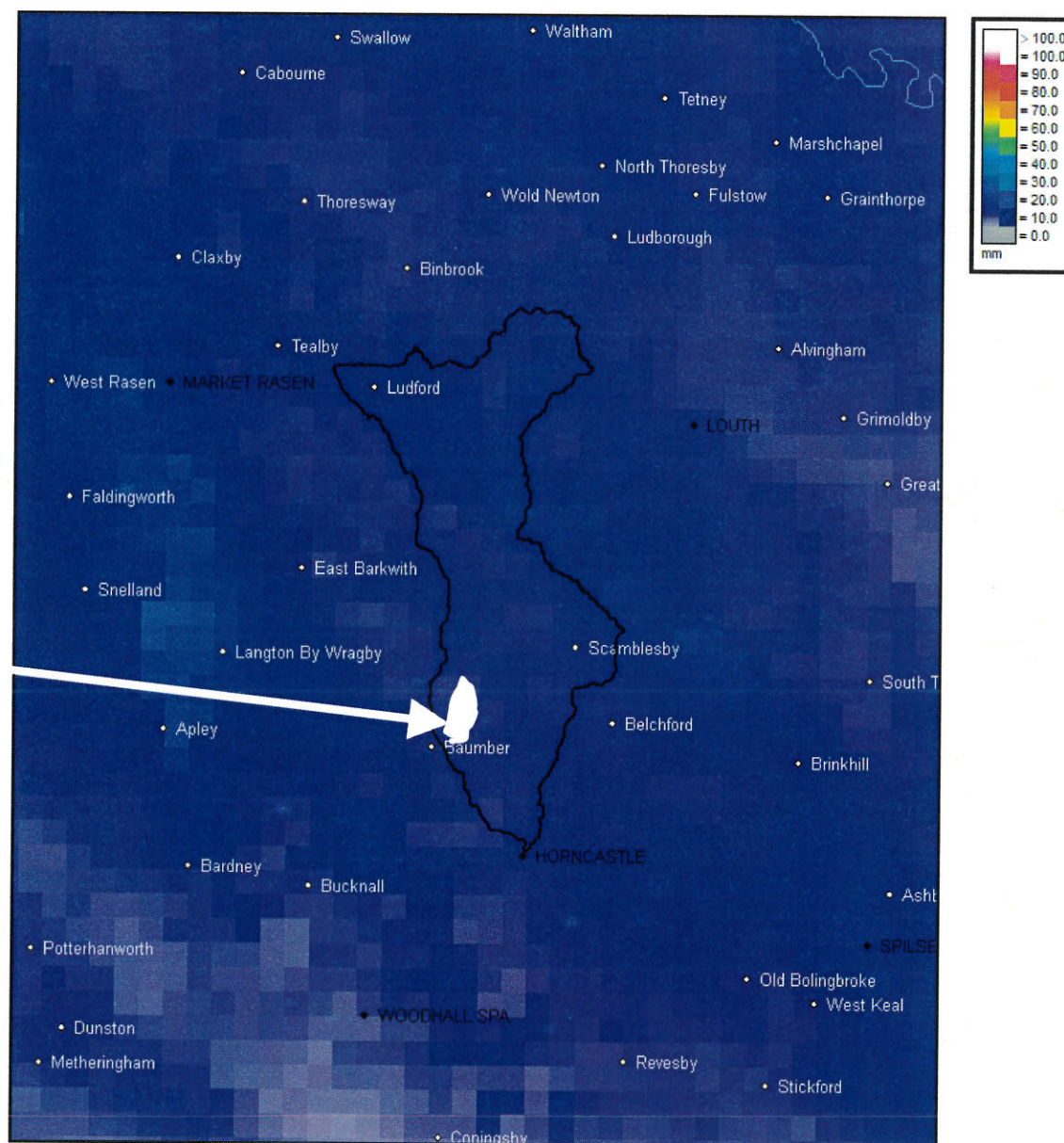
Understanding the Impact

- International consultants using industry standard techniques.
- Model of the river system to simulate observed flooding.
- Model based on latest survey of channel and calibrated to previous floods.
- Observed rainfall taken from radar and local gauges.
- Observed river levels and flows from gauging stations.
- **Simple comparison of two scenarios – gate closed automatically and then delayed gate closure.**

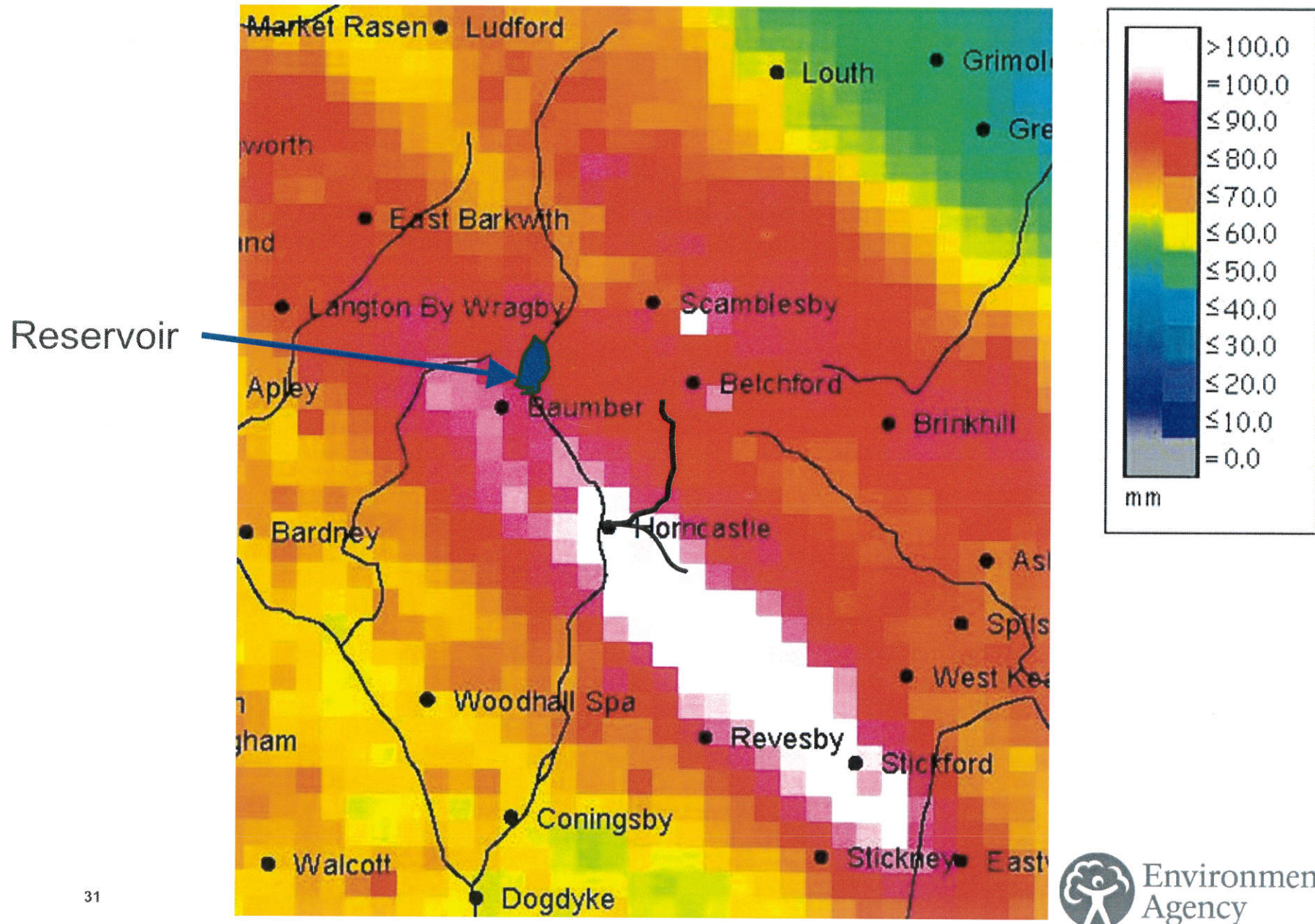


Observation - best rain-accum - 24hr delay (H24)

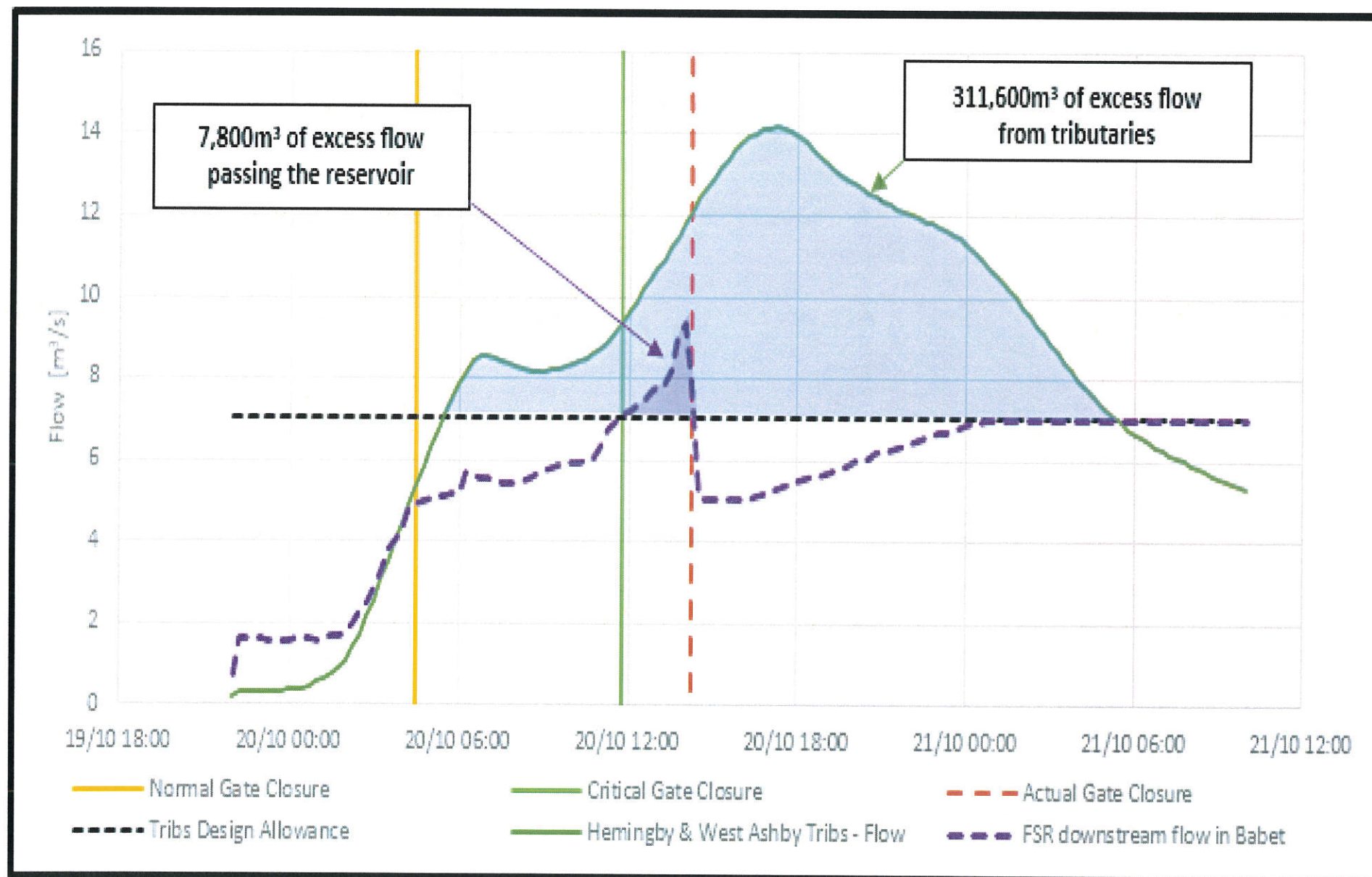
Reservoir



Storm Babet Rainfall



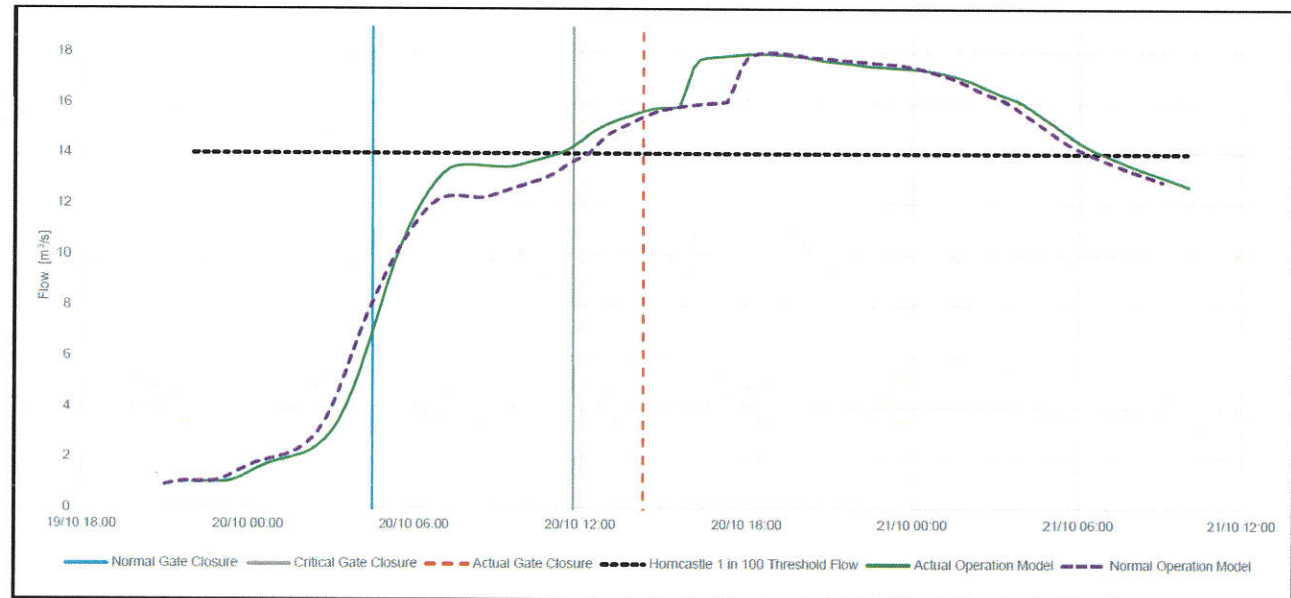
Calculated flows passing downstream from the reservoir and that from the Hemingby Beck and West Ashby tributaries



Modelling Conclusions

- Storm Babet was bigger than the design standard of the reservoir scheme.
- Up to two months rain in a day with flows from Becks between the reservoir and the town significantly more than the design allowance.
- Significant runoff from the catchments of the Waring, Thunker Drain and North Ings Drain. These are not regulated by the reservoir.
- Rivers would have reached the same peak levels and flows, just a little later.

- **Observed flooding would still have occurred if the sluice gate had closed automatically.**



What happens next?

- Flood Investigation [Section 19] by Lincolnshire County Council in their role as Lead Local Flood Authority.
- Revisit and reassess viability of previous plans to create a reservoir on the River Waring. This is likely to require significant funding contributions similar to River Bain reservoir.
- Investigate possible options to reduce risk along Thunker Drain.
- Investigate whether minor bank works might be needed in the town to fill in localised low spots.
- Attend local events to promote Flood Warning Service and how people can be prepared for flooding – welcome ideas from the community for this – when requested.



Thank you for your time