

THE BUXTON CASE STUDY
D. R. DRING, SEVERN-TRENT WATER
DERWENT DIVISION, RAYNESWAY, DERBY - 0332 661481, Ext. 343

Buxton is well known Spa Town in Derbyshire that has a high annual average rainfall, a fluctuating tourist population and a sewerage system that has historically provided drainage engineers with a few headaches.

Autumn 1982 saw the completion of the Buxton Trunk Foul Sewer Scheme which was designed by traditional methods to alleviate flooding in various parts of the town.

The press and public were quick to voice their opinion when flooding occurred in other vulnerable areas downstream of the improvement - the drainage engineers had to act fast!

Temporary works offering immediate flood alleviation from the more frequent rainfall events seemed to be one answer but could these measures provide the necessary long term relief?

Because of the complexity of the system the case for a 'global' study was justified and in due course a vintage version 4 WASSP model was generated. The performance requirements of the model were quite detailed in view of the presence of the temporary measures and the importance of getting it right.

It has been said that WASSP verification is an order of magnitude science but a predicted level of 300mm at the critical location compared with a measured level of 1500mm was a discovery raising fundamental questions. Why were the levels so high? Where was all the flow coming from?

Two months later a combination of gallons of flouresceine, a few flumes, a CCTV survey and Victorian British Rail engineers providing some surprising answers.

The Category B* report based its recommendations on a verified version 5 WASSP model and indicated that downstream upgrading together with flow reduction measures would be the most effective solution, however detailed Category C* findings raised several difficult questions in the area of acceptable levels of performance.

The all important bottom line in engineers reports usually recommends a sound, buildable solution at a certain cost.

The WASSP analysis of the various options was certainly seen to provide a good lead in identifying the best economic solution with an acceptable overall performance.

*(STWA financial appraisal stages)