

## The Brighouse Study

### Synopsis

The Brighouse catchment area covers the Eastern part of the Metropolitan Borough of Calderdale in West Yorkshire. The sewerage system serves a population of approximately 50,000 comprising of mixed residential, industrial and rural developments covering an area of 20 square kilometres. From a level of approximately 50 m A.O.D. in the valley of the River Calder at Brighouse the land rises to 300 m at Shelf in the North and 200 m at Rastrick in the South.

This paper outlines some of the difficulties encountered in building and verifying the hydraulic model prior to the preparation of a drainage area strategy plan. In particular the problems associated with the sewer flow survey, data collection, modelling of low side weir overflows and excessive ground water infiltration.

The Brighthouse Study : I. Saxelby, Husband & Co.

F. Seabert : Stevens Borough : How did you model the land drainage ?

Answer : By comparing the predicted and measured hydrographs, we were able to build a model that produced the "missing" volume of water, the time lag being effected by using a very long pipe.

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N. Simmons : Did you use another event to check this model ?

Answer : No, all other events were short and sharp and the phenomenon did not occur. I would dispute that our approach was force-fitting, it was observed on site that land-drainage was connected.

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D. Beale : Howard Humphries : How significant was this land-drainage input ?

Answer : It was important to include the later peak attributable to the land-drainage as it coincided in the main outfall sewer with run-off from other areas in the catchment.

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D. Salih : Hertsmere : Is your verified model good for use with large design events ?

Answer : Yes, the land-drainage is less significant in large events and there are many other inherent errors in the software to mask it anyway.

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D. Walters : Bolton MBC : Were you not wary of using rainfall of peak intensity around 10mm ?

Answer : The actual peak was 15/16 mm, but the survey could not be extended beyond 13 weeks. We would have liked greater storms, but historical verification was also satisfactory.

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J. Mattinson : Mansfield : Can you indicate the time scale, resources used and costs ?

Answer : 14 months in all, 2 people full-time and 4 others plus surveyor and sewer crew during data-collection. In total, 170 man-weeks.  
No information regarding costs.