

# WAPUG SPRING MEETINGS 1991

## TOWARDS A CODE OF PRACTICE FOR HYDRAULIC MODELLING

Nick Orman - WRc Swindon<sup>†</sup>

### 1.0 INTRODUCTION

At the autumn meeting at Blackpool in 1990 I co-presented a paper outlining some of the issues which are likely to come to the fore during the 1990's. One of these issues was the use of quality assurance and the lack of a nationally agreed code of practice for hydraulic modelling. A number of delegates felt strongly that there should be a code of practice, and that WaPUG should attempt to address this.

### 2.0 THE NEED

A quality assurance scheme should ensure that work is done to an assured standard and a code of practice should ensure that this standard is adequate. Models are increasingly being used as a tool, not only by designers, but also by operations staff and regulators.

Sewerage undertakers need to be able to quickly assess the quality of work being carried out for them. The move towards issuing consents on the basis of catchment water quality planning puts a heavy burden of proof on models in developing consent requirements. The results from models might also be used as contributory evidence when demonstrating compliance with standards of service for risk of flooding. Models are also a key part of the process of producing drainage area plans which are an input to the 'k' investment programmes. The regulators concerned would need to be assured that models were adequate for their purpose. A code of practice should help this process by taking the issue of the adequacy of the models out of the debate.

### 3.0 HOW IS IT TO BE PRODUCED

The WaPUG Committee have set up a small task to draft a code of practice. I was asked, on behalf of WRc, to chair the group as WRc have experience in this area through developing our internal procedures. The code will cover the production of verified models. It will make as much use as possible of existing published material, and in particular the WaPUG usernotes. WRc and at least one other organisation represented on the group will also make available some unpublished material and the group would welcome views and information from other sources. The members of the group are as follows:

Nick Orman	- WRc Swindon
Richard Allit	- Trevor Crocker and Partners
Tom Chapman	- Southern Water Projects
Phillip Deakin	- Northumbrian Engineering Services

### 4.0 OUTLINE OF PROPOSED DOCUMENT

The list below gives an idea of the scope of the proposed document. It refers to a number of issues which are dealt with elsewhere. Duplication will be avoided by cross-referencing.

## **AUDIT**

## **TRAINING**

## **DEFINE APPROPRIATE STANDARD FOR PURPOSE OF MODEL**

## **PROGRAM SELECTION**

## **DATA COLLECTION**

- Sewer record surveys
- Impermeable area surveys

## **MODEL BUILDING**

- Use of existing models
- Validation of Input Data
- Simplification
- Modelling Ancillaries

## **MODEL TESTING**

## **FLOW SURVEYS**

- Planning
- Assessing Data.

## **VERIFICATION**

- Verification with historic data
- Verification with short term sewer flow data

## **UPDATING MODELS**

## **USE OF MODELS**

- Routine model tests

## **DOCUMENTATION**

- Model Documentation
- Verification report
- Archive

Different users have different requirements from a model and specifiers will not always want to spend additional money to produce a model of the highest standard when a cheaper version would be adequate for the purpose. The document will therefore have to encompass a number of standards applicable to different circumstances.

The cost of updating and republishing a document is high and so frequent updates to the full text are unlikely to be possible. In the first instance the document must be applicable to both WASSP and to WALLRUS, but WALLRUS is still changing and we will also need to consider SPIDA in the future. The applicability of modified rational methods will also need to be considered. The maximum use will therefore be made of the usernotes so that small sections can be updated without a complete update to document.

## **5.0 MEMBERS VIEWS**

Your views are sought on these proposals. I would welcome verbal comments during the discussion at the end of this paper. Otherwise please send me written to Nick Orman at WRC Swindon.

Paper 6 : Code of Practice for Model Building (Nick Orman - WRC)

M Osborne (HRL) : There is a fundamental requirement for adequate documentation for models.

Answer: The CP will state a minimum level of documentation.

D Beale (Howard Humphries) : I feel that documentation is the key factor - it must accurately define the purpose for which the model is intended.

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B Sharman (NWWL) : There is a lot of information to pull together, will the CP be a very large document?

Answer: No, I expect cross-referencing will reduce its size.

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D Balmforth (Sheffield City Polytechnic) [Addressing M Osborne (HRL)] - cannot the software be altered to incorporate a comment facility?

M Osborne : The Beta version of WALLRUS 1.4 does include such a facility.

C Jeffries (Dundee Institute of Technology) : The programs mentioned in the presentation were confined to Wallingford Software. Was this intended to be an inclusive list or will other programs be covered?

Answer: Wallingford Software programs are the most widely used urban drainage software in the UK. However it is recognised that the market in the number of programs available is expanding and the code will encompass these other programs.

M Osborne (H R Wallingford) : If the Rational method is included within the code will this not lead to a forced marriage of design and simulation methods. Do we need two documents or is design covered in Sewers for Adoption.

Answer: This point has not been considered and views will be sought.

A Taylor (Sir William Halcrow) : What is the next step? Will the industry fund the production of the code?

Answer: A lot of documentation has been collected together and it is my intention to begin editing these documents to arrive at a draft code for presentation to the group. Funding of documentation has yet to be discussed.

D Balmforth (Sheffield City Polytechnic) : Whereabouts in the code would there be advice on the strategy for model building?

Answer: This issue would be addressed in the code. Much depends on how the model is built and its purpose. Usually a core model would be built followed by a detailed model.