

# CIWEM UDG Integrated Urban Drainage Modelling Guide

## UDG Workshop

# Welcome

On Monday 4<sup>th</sup> November we will be holding a Workshop to gather your thoughts and input in relation to an update of the

## **Integrated Urban Drainage Modelling Guide**

for which we have been commissioned as the Lead Authors.

The Workshop will be held between 16:00hrs and 19:00hrs at the Nottingham Belfry Hotel.

All conference delegates are welcome.

We have already held 3 workshops aimed at LLFA's at Bristol, Leeds and London.

# Agenda

4.00 – 4.20pm: Introduction to the guide update and the RAA / AECOM team

4.20 – 5.00pm: Breakout 1 (4 Sections)

5.00 – 5.40pm: Breakout 2 (4 Sections)

5.40 – 6.20pm: Breakout 3 (4 Sections)

6.20 – 6.50pm: Breakout 4 (2 Appendices)

6.50 – 7.00pm: Wrap up & close

7pm: Dinner

# Agenda – Breakout groups

## Breakout 1: 4.20 – 5.00pm

- Section 2: Pre-feasibility / scoping (including checklist)
- Section 3: Project definition (including checklist)
- Section 4: Assessing confidence
- Section 5: Software selection

## Breakout 2: 5.00 – 5.40pm

- Section 6: Data collection
- Section 7: Data management
- Section 8: Hydrology
- Section 9: Modelling

## Breakout 3: 5.40 – 6.20pm

- Section 10: Verification & Calibration
- Section 11: Using Models
- Section 12: Outputs and Reporting
- Section 13: Model Maintenance

## Breakout 4: 6.20 – 6.50pm

- App F: 2D Runoff Modelling
- App K: Social Media

# Overview /1

1. Richard Allitt Associates have been commissioned by CIWEM / EA to be lead-author of the update of the IUDMG. RAA are employing AECOM as a sub-consultant to assist.
2. The project team will also include Bluesky, Onsite and Maltby Surveys who will each write specific appendices.
3. The IUDMG will be a guide to modelling of sewer, pluvial and fluvial flood risks. It will not include other matters such as SuDS or Natural Flood Management (NFM) which is dealt with in CIRIA guides. We will however signpost to publications which guide good practice in these areas.
4. The Guide will not consider in detail the modelling of groundwater flooding risks.

## Overview /2

5. The IUDMG will be one of a suite of guides published by CIWEM UDG. Other guides (which are all available on the CIWEM UDG website) are:-
- Code of Practice for the Hydraulic Modelling of Urban Drainage Systems
  - UDG Rainfall Guide
  - Event Duration Modelling Good Practice Guide
  - Guide to Quality Modelling of Sewer Systems
  - River Data Collection Guide
  - River Modelling Guide
  - Design of CSO Chambers to Incorporate Screens

*There was a previous version of the IUDMG published in 2009*



## Overview /3

5. The Guide will be a “Guide to Best Practice”.
6. It will not be prescriptive.
7. It will not be a Training Manual.
8. It will complement and cross-reference other documents (eg EA guidance documents).
9. The Guide will be written so that it can be used in contract documents.
10. The previous guide pre-dated the current format of many LLFA’s and we felt it was too biased towards sewer modelling. These workshops are the start of addressing that and involving the LLFA’s in the development of the Guide.

# Your Input

Over the next few slides we have set out our current thoughts on the structure and content of the Guide.

At the Workshop we want to hear your views.

For part of the workshop we will use four breakout sessions and split into four groups to consider the key sections of the guide.

Therefore please come prepared. It might be helpful if you read the old Guide beforehand if you get the chance.

For any additional comments or feedback after the event, please email:  
[IUDGUIDE@raaltd.co.uk](mailto:IUDGUIDE@raaltd.co.uk)

Alternatively, speak to any of the RAA and AECOM team present at the conference

# Draft Contents



- 1. Introduction**
- 2. Pre-Feasibility**
- 3. Project Definition**
- 4. Assessing Confidence**
- 5. Software Selection**
- 6. Data Collection**
- 7. Data Management**
- 8. Hydrology**
- 9. Modelling**
- 10. Verification and Calibration**
- 11. Using Models**
- 12. Outputs and Reporting**
- 13. Model Maintenance**
- 14. Glossary**

## Appendices

- A Proforma for Pre-Feasibility Scoping Study**
- B Checklist for defining project**
- C Commentary on Lidar Data (Bluesky)**
- D Commentary on Topographic Surveys (Maltby Surveys)**
- E Commentary on Culvert Inspections (Onsite)**
- F 2D Runoff Modelling**
- G Modelling of Culvert Inlets**
- H Modelling of Road Gulleys**
- I Case Studies**
- J Data Structure & Checklist**
- K Social Media**

# Discussion /1

## 1. Introduction

This section is aimed at providing an explanation of what “Integrated Urban Drainage” is and to provide an explanation of the structure of the guide.

## 2. Pre-Feasibility

It was considered at the Leeds workshop that there were important stages before one gets to Project Definition Stage. This section will therefore consider how projects can be initiated, what data is readily available to support this. This section will also consider how it might be possible to overcome different funding timelines by identifying potential projects a lot earlier.

## 3. Project Definition

We see this as an important section of the Guide and will follow closely the similar section in the Code of Practice. Some of what we have already written for this section may move into the Pre-Feasibility section.

We would particularly like to have your input into whether this section should also consider the ways in which multi-stakeholder projects can be set up. If so, we could do with some case studies.

This section will also need to deal with the logistics aspects such as data sharing protocols, who owns the data, who will be the custodian of the final model, what licensing arrangements etc there are for future users, confidentiality arrangements, GDPR etc.

# Discussion /2

## 4. Assessing Confidence

With integrated catchment models it is difficult to verify models and this section will consider how the confidence in a model can be achieved. This will follow closely the similar section in the Code of Practice. This section will also address how the confidence in existing models can be assessed.

It was concluded at the previous workshops that the assessment of confidence should be qualitative (Red-Amber-Green) rather than quantitative.

## 5. Software Selection

The Guide must be written in a way which is anonymous to particular software products. However, we feel that many users will need some guidance on the generic benefits and shortcomings of different modelling programs. Reference will be made to the Environment Agency's Benchmarking work.

## 6. Data Collection

This section will consider how the necessary data can be collected. It will follow a similar format to the Code of Practice. This section will also deal with the need to have data sharing protocols set up at the project definition stage and ultimately establish who 'owns' the data.

## 7. Data Management

The ways in which data is managed varies considerably between projects. This section will consider the merits of different ways and will be linked to the ways in which data confidence and model confidence can be achieved. It will consider the use of data flags. This section will also need to cross reference to data sharing protocols etc. Will also need to consider data security and confidentiality.

# Discussion /3

## 8. Hydrology

This section will consider the differences between fluvial and urban hydrology. Urban hydrology generally uses a single model and applies different hydrological parameters to each simulation run. Fluvial hydrology tends to be different with a separate model for each simulation run. The ways in which a common method can be established will be explored. This will link back to the Project Definition.

This section will potentially be the most difficult to write to cover all situations. Current ideas are to set out the recommended approaches etc in a matrix type layout.

This section will also consider the combined probability conundrum.

## 9. Modelling

This section will deal with the integration of modelling techniques and will not repeat what is included in the Code of Practice or the EA's Fluvial Design Guide.

This section will also include techniques etc for pluvial (direct runoff) runoff (2D) modelling and also techniques for 1D modelling of exceedance routes.

This section will also need to refer back to the Project Definition which is the stage at which the modelling techniques should be formalised.

## 10. Verification and Calibration

This section will reference to corresponding sections in the Code of Practice but will add to that in respect of verifying, calibrating or otherwise gaining confidence in the fluvial, pluvial and integrated aspects.

# Discussion /4

## 11. Using Models

This section will deal with how to prepare the model for usage after verification. This might be to assess flood risk or design a capital scheme. Other uses will also be explored including using the model to create a set of ready reference “Scenario” maps based on rainfall depth/intensity or more sophisticated flood forecasting.

## 12. Outputs and Reporting

This section will set out the reporting and other outputs which would normally be required. This will include model building documentation as well as the results of simulations.

At the Leeds workshop it was felt that some guidance was needed on data file structures etc and a checklist for handing models back from Consultants to Clients to ensure that everything which was needed was included and that it was in the correct location, - this is what lead to Appendix J

## 13. Model Maintenance

This section will explore how the model can be maintained for future use. It may be that different elements of the model are maintained by different stakeholders but with a process for re-integrating the updated elements back into the model. This section will again refer back to the Project Definition.

## 14. Glossary

This does not require any explanation.

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