

# Modelling Reports & Supporting Information (including Model Files) for Review

## Summary

This floodplain risk management (FRM) guideline outlines the requirements for modelling reports and supporting information including model files to facilitate effective peer review as part of flood studies and FRM studies.

## Introduction

Flood study and FRM study briefs outline key points where modelling reports and associated model files are to be provided to DECC and council for review. A review generally aligns with a hold point in the project so work is not to progress beyond this point unless the approval requirements in the brief are met.

Hold points provide an ideal opportunity to discuss the model setup and associated parameters and check the reasonableness of the model assumptions/output before launching into additional detailed modelling which may include model design runs, sensitivity analyses and assessment of management options.

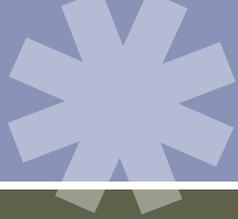
Agreement at this stage will enable the modelling to progress to the next hold point or conclusion on the understanding that all parties agree to the way the modelling is being undertaken and the assumptions and parameters being used.

To facilitate peer review sufficient data is to be provided to enable a full and effective review of the all hydrologic and hydraulic modelling assumptions, modelling approach, model setup, layout/schematisation, key flood controls parameters and results.

Reports and data provided for review have generally been limited to a summary report. However, this information alone does not provide the detail necessary for effective and efficient peer review. Therefore to enable more holistic peer reviews modelling reports are to provide additional supporting information and electronic files.

## Recommendations

DECC's requirements for provision of data and associated reporting for modelling review and calibration reports to facilitate effective and efficient peer review of modelling results are outlined in Sections 1 to 3. These requirements are to be met on projects where DECC provides technical and/or financial assistance for the project through it's FRM staff or the State Floodplain Management Program.



### Section 1 Overall Supporting Data

Reporting is to include all the necessary data to develop a detailed understanding of the catchment, channel and floodplain and the corresponding behaviour of flooding and performance of key flood controls.

Supporting information to be provided includes, but is not limited to, details of and performance of key flood controls, figures to support understanding of

the model schematisation/layout and assumptions, lists of all model assumptions and parameters and where these apply, and full details of historic floods including calibration and validation data and relevant differences with modelling results.

In addition, the basis for and subsequent modelling results for any sensitivity analyses are to be presented.

### Section 2 Hydrologic Data to be Provided for Review

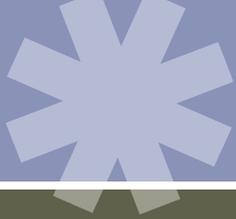
Sufficient data is to be provided to facilitate a peer review of the hydrological modelling. This data would be expected to include, but is not be limited to:

- Details of the approach to hydrologic modelling including all assumptions.
- Figures showing the locations and tables showing the details of recorded/historic rainfall and streamflow stations and any flood controls.
- Review and assessment of all available data (rainfall, streamflow, flood photography, observations, etc).
- Figures showing the sub-catchment layout including a table summarising the key sub-catchment characteristics for calibration, validation and design conditions.
- Data used and results from any at site or regional flood and/or rainfall frequency analysis undertaken.
- Figures showing the spatial and temporal distribution of rainfall and streamflow data for those events used in calibration and validation of the model.
- Results of calibration and validation of the model (relative magnitude of events, rainfall losses, rainfall excess hyetographs, surface runoff depths and volumes, recorded vs simulated hydrographs etc).
- Adopted parameters for design flood estimation.
- Design model schematisation, assumptions and results.
- Results from all sensitivity analyses undertaken.
- Electronic results of all design model runs and scenarios in an appropriate format to enable interrogation using Microsoft Word and/or Microsoft Excel.

### Section 3 Specification of Hydraulic Model Files to be Provided for Review

Sufficient data is to be provided to facilitate a peer review of the hydraulic modelling. This data may include, but not be limited to:

- Details of the approach to hydraulic modelling to be provided along with all associated assumptions/parameters.
- Figures and tables are to be provided that include a full range of the model features and outline the application of different modelling assumptions/parameters and the location and details of available recorded and historic data and controls ie hydrographs, flood levels, photography etc.
- Electronic results of all design model runs and scenarios to be provided for interrogation using waterRIDE™ as part of model review documentation.
- A file fully defining and explaining the relevant files provided and their inter relationship and purpose is also to be provided.
- Results can be provided either as waterRIDE™ files, or as raw results suitable for translation into waterRIDE™. The spatial reference for the model should be in MGA94 coordinates.



Where waterRIDE™ results files are available the following files are to be provided:

\*.wrb format (binary TIN)

\*.wrr format (binary grid)

Where waterRIDE™ has not been used by the consultant the following raw model result files are to be provided depending upon the model used:

MIKE11- \*.res11 files

MIKE21- \*.dt2; \*.ct2 plus grid rotation information;

NOTE – Terrain and time varying results must be saved to the \*.dt2/\*.ct2 files.

TUFLOW- terrain: \*.2dm; water level: \*.h.dat; velocity: \*.V.dat

SOBEK (2D)- terrain: \*.asc (ASCII Grid); results: \*.asc (ASCII Grid) exported for water level, X-velocity and Y-velocity at regular timesteps; model results export timestep (in hours)

SOBEK (1D)- entire SOBEK project folder

RMA- results: \*.rma; terrain: \*.rm1, \*.geo or \*.bnw

HEC-RAS- Exported results as ASCII text (View => Profile Summary Table => File => Write text file); Location of cross sections along stream centreline(s) in Comma Separated Value (\*.csv) format as follows:

RiverID,ReachID,Crosssection,Easting,Northing

1,3,4007.88,496603.9,5388992.54

1,3,3947.44,496663.09,5389005.05

For further information on file formats and model compatibility, please refer to [www.waterRIDE.net](http://www.waterRIDE.net).