

Model Audits

Client: Scottish Water



Caley Water have been commissioned by Scottish Water to undertake model audits to support the SR15 early start Drainage Area Study (DAS) programme.

These are part of the hydraulic modelling procedures to ensure best practice procedures have been followed in compliance with the client specification and relevant industry standards.

The audit reports also form part of the technical governance process in obtaining approval for any subsequent capital investment from the industry regulator, Water Industry Commission for Scotland (WICS) and also Scottish Environment Protection Agency (SEPA).



Services provided

- Stage 1 MBV audits and Stage 2 Solution Modelling audits to client specification
- Data management, including communications with Modelling Consultant and client
- Project management
- Interim reports to highlight identified issues
- Final audit reports for each catchment

The model audit process has two key stages; a model build & verification audit and a solutions audit. The Stage 1 audit is undertaken on the base model to determine if the model development has been completed in accordance with specification and appropriate standards.

The SW specification divides the Stage 1 audit into four phases to allow sign-off as the model build progresses. These are,

1. Review & approve data collection scope
2. Review & approve rainfall and flow survey events for verification
3. Review Model Build steps (pre-verification)
4. Review Verification and final model

Following the MBV, the Stage 2 audit covers the process of the Needs Assessment and Solution Development. This ensures that the model has been suitably progressed from Stage 1 to conduct analysis on system interventions to address catchment drivers. This part of the audit is split into two phases as follows,

1. Review Needs Assessment and Reporting
2. Review modelling of proposed options

The review of options also considers how the solutions have been represented in the model and that appropriate testing has been undertaken to ensure level of service targets are achieved.

Solutions and added value

Caley Water have been involved in the SR15 early start programme both as a modelling consultant and providing model audit services. This has brought a wider vision of the programme and allowed insight to the challenges facing the wider SW delivery team. These lessons have been applied to bring more efficiency to the programme.

Scottish Water require model audits to be completed by consultants who are approved and registered. Caley Water have two SW approved auditors for wastewater modelling – Paul Nash and Ross McKinney.

The audit team were responsible for completing audits for two catchments – Bonnybridge and Killearn. The timescales were dictated by the performance of the model build consultants and our auditors had to be flexible with programme and react quickly to new submissions of data for audit. Invariably the data submissions required clarification. Caley Water liaised with the modelling consultant to ensure that these issues were resolved in a timely manner to minimise programme impacts.

The overall aim was to ensure that models passed audit; therefore if any issues were raised in the audit these were communicated back to the modelling consultant in an interim statement to allow the issues to be addressed and re-submitted to the auditor prior to finalising the audit report. This required significant data and document control along with project management to coordinate the data subject to final audit.

Caley Water adopt a proactive approach to this type of work and have engaged in a partnership model with Scottish Water and their modelling consultant to ensure that any issues are addressed at the earliest opportunity and that the programme objectives can be met.