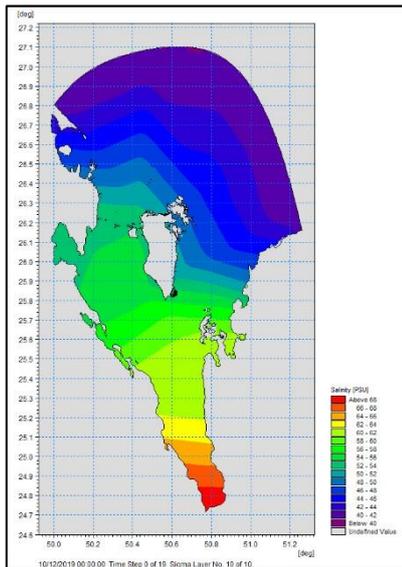


Auditing & Review of Modelling Work

Clients: Atkins – CHC – Scottish Water - Environment Agency – Confidential Project Funders

Modelling – Links in a Chain

Engineering projects such as power station outfalls, works associated with improving water quality, desalination plants or flood prevention schemes are costly and potentially complex. The accuracy of models used to support such work is often taken for granted. Modern modelling systems, coupled with more seamless data exchange and low-cost data resources are making modelling easier than ever. The cost of modelling is often trivial compared to the capital cost of works and even compared to the costs of detailed design. Freely available



An unusually steep salinity gradient

technical guidance and papers are readily found through the web. Yet, despite this, modelling work supporting quite large projects is sometimes found to be of a poor standard. In some cases, the financial and operational consequences of inaccurate modelling are severe. Very often these issues could have been

avoided if the work had been subject to appropriate review or auditing.

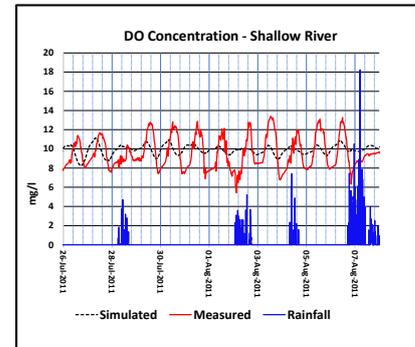
Some projects we have audited and reviewed

We have completed reviews and audits for harbour authorities, international funders of nuclear power stations, several regulators and other consultants among others. Models include 1D, 2D and 3D systems for hydrodynamics and water quality. Some of the projects supported by these models included:

- Water quality in rivers to support capital works for status improvement
- Combined 1D/3D modelling to understand a series of fish kill incidents in a long estuary
- 3D modelling of an estuary with a large water level control structure
- 2D tidal model supporting the positioning and design of a breakwater at the entrance to a busy estuary
- 2D regional model supporting sub models and capital works for improving coastal water quality
- 3D modelling of a very large hot water discharge from a proposed multi-unit nuclear power station

It might be surprising to learn that only two these were carried out to a high standard but that the remaining modelling projects had problems. In some cases, the review was intended as a routine measure but revealed problems that could be put right with some additional work. In other cases, TechnoEconomica was invited to troubleshoot as a result of serious issues coming to light. One particular project had proceeded to the point where a breakwater had been almost completed at considerable expense when it was found that model predictions and actual currents were not at all in agreement. Vessel navigation became difficult at certain states of the tide and the sediment regime in the estuary was

unintentionally altered. A good deal of remedial work was required which we specified and guided. In one case a



DO discrepancy

regional model had been incorrectly scaled and failed to calibrate. In another a power station outfall had been so poorly modelling that the work had to be redone from scratch by a different organisation. In all these cases we identified the problems and guided remedial work so that a satisfactory conclusion was reached.

What TechnoEconomica can do to help

TechnoEconomica staff have many years of experience developing models to support a large range of projects. We have completed models of every dimension in a wide variety of coastal fluvial and estuarine environments. We have experience setting up, calibrating and applying models in hot shallow sluggish seas to fast flowing deep estuaries.

Services Provided

- Detailed reviews for Project Quality Assurance
- Reviews to satisfy regulators of modelling work quality
- Detailed audits to check every aspect of modelling projects

Contact

George Mitchell
 +44 (0) 7740 091 449
george.mitchell@technoeconomica.com