

Scenario modelling

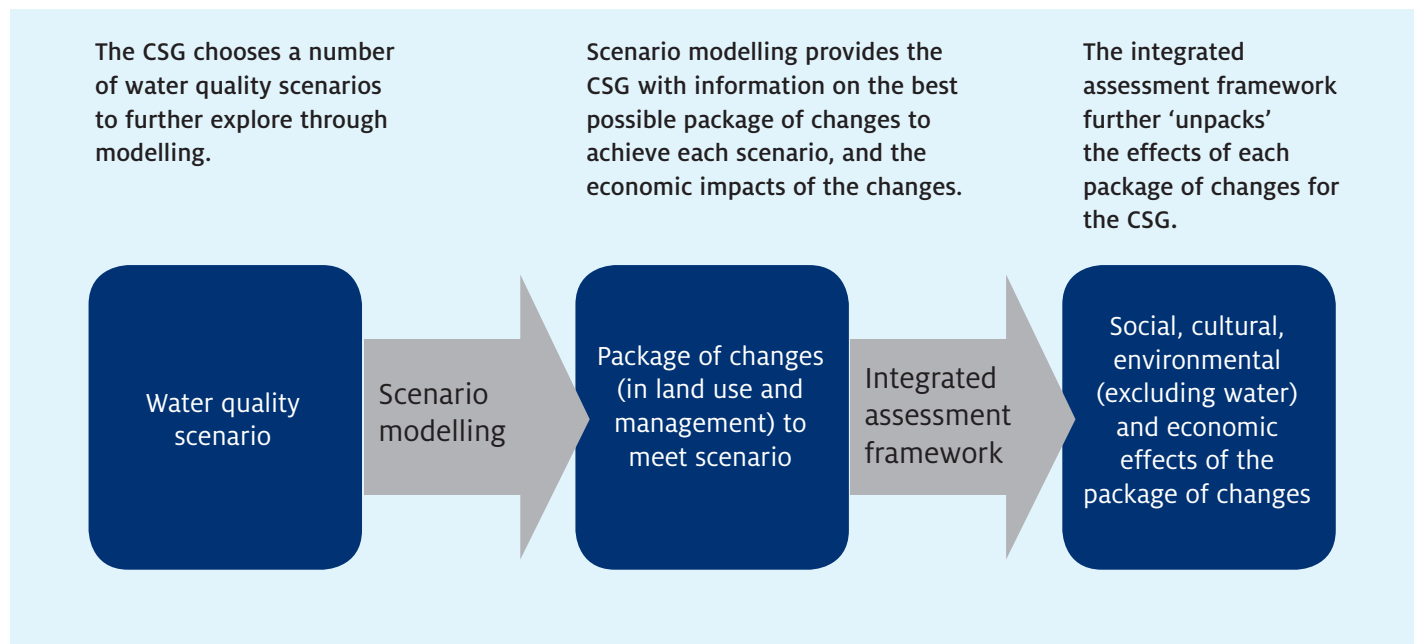
What it is

Scenario modelling provides information on the changes on land required to meet various water quality scenarios the Collaborative Stakeholder Group (CSG) is exploring. It also provides information on the economic impacts of the changes.

Scenario modelling is one source of knowledge and information the CSG is using to develop the plan change. It informs the CSG's thinking and allows them to evaluate the relative economic impacts of a range of scenarios.

How it all fits together

The CSG is using scenario modelling of water quality scenarios to help them develop the plan change. The integrated assessment framework provides the CSG with more information on the effects of each scenario, as shown below.



What it provides

The modelling provides the following information for each water quality scenario:

- best possible (i.e. least cost) package of changes to achieve the scenario (comprising changes to land use and management practices)
- economic impacts of changes across catchments, sectors, and regional and national economies.

How it's used

The CSG will use the models to better understand the magnitude of changes associated with different water quality scenarios and their relative impacts. Models imperfectly represent what happens in the world, and the CSG won't use the modelling beyond the purpose for which it's been designed.

The CSG chose four water quality scenarios for a first run of modelling:




- 1. Achieving water quality for swimming, taking food and healthy biodiversity** - equates to restoring and protecting the water quality of the Waikato and Waipa rivers, as required by the *Vision and Strategy* (swimmable and fishable), with improvement everywhere, even if already meeting minimum acceptable states
- 2. No further degradation and improving to at least minimum acceptable states for all attributes** - equates to meeting the *National Policy Statement for Freshwater Management 2014* requirements and a minimum amount of restoring and protecting the Waikato and Waipa rivers, as required by the *Vision and Strategy* (swimmable and fishable)
- 3. Some general improvement in water quality for swimming, taking food and healthy biodiversity** - but may not reach minimum acceptable states everywhere
- 4. No further degradation** - in spite of projected extra nitrogen loads from historical land use that is still stored in groundwater and has yet to reach the river

The CSG received the modelling results of the above scenarios at their workshop in late August. They used the results to help them decide on the following scenarios for a second run of modelling.

- **'Stepping stones' to scenario 1** - different levels (e.g. 10%, 25%, 50%, 75% of total change required) on pathway to achieving scenario 1 (to get an idea of what change over time would look like).
- **'Smart' and efficient attribute achievement** - intermediate scenario(s) to progress towards achieving first run scenario 1, but considering whether more progress can be made faster for some contaminants.
- **Effect of good practices** - current land use, without voluntary mitigations to date (to gauge effects of the good work of sectors and landowners to date).
- **Business as usual in future** - with no plan change, but including projected trends in land use intensification and change, and good management practice adoption rates.

The CSG could do a third run of modelling in October/November 2015. The modelling so far has focused on mitigations needed on land to meet certain water quality limits. Inversely, it can also provide information on the water quality limits that can be realised by uptake of particular mitigations on land.

More information

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