The Approach to Economic Impact Assessment

Technical Paper for the Regional Forum

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1 Introduction

In Phase 3 – *Limits and Methods*, the Regional Forum will be developing policy advice for Southland's lakes, rivers and streams, groundwater, wetlands and estuaries. Activities that use water, either as water takes or to discharge pollutants, are creating issues in some waterbodies. These issues are symptoms of a problem with our economy – that water is not well accounted for in many of our activities and some uses may be unsustainable in their current form.

By design, new policy changes the incentives that communities face when they use water, creating the potential for 'impacts' (or consequences). The nature of these impacts depends on how people respond to change, and they can drive the success of policy. A critical part of Phase 3 will be forecasting and communicating the impacts of different actions to achieve the region's freshwater objectives.

The purpose of this paper is to outline the approach that will be used in Phase 3 for the Regional Forum to assess potential economic impacts on local communities. This assessment will form an important part of Southland's National Objectives Framework (NOF) process under the National Policy Statement for Freshwater Management 2014 (as amended in 2017). It will sit alongside a science approach and a proposal for a cultural impact assessment, although they are yet to be determined at the time of writing.

Given the complexity of the topic, and the constraints around it, this economic approach needs to be precise and well structured. Its outputs will be used to build a better understanding of Southland's economy and its use of water. Ultimately, they will help form an economic impact assessment for a Freshwater Management Unit plan change (under section 32 of the Resource Management Act 1991).

This paper is shaped as follows. The first section briefly describes the scope of the topic. The following sections outline the mix of the evidence that will be produced, economic tools and resources available, and scenario testing. Finally, the paper explains scenario coding and reporting to be used with the Regional Forum and as the basis for the economic impact assessment.

2 The Economy and Economics

In general terms, any economic assessment done to inform resource management decisions in New Zealand must be consistent with the principles of the Treaty of Waitangi, and the purpose and principles of the Resource Management Act 1991 and the Local Government Act 2002. If an assessment fails in this respect then its outputs are likely to jeopardise the achievement of policy objectives.

Here the approach is based on systems thinking, where the economy sits within a society, which in turn sits within the environment – the economy is, in effect, a subset of the environment. The

approach will go beyond standard neoclassical economic thinking[1] to use concepts from disciplines, such as ecological economics, wellbeing economics and behavioural economics.

As well as needing to be consistent with its legislative framework, the starting point for assessment is the policy context. Where society has already decided on a certain course the effort will be on the impacts of the actions to achieve it (i.e. testing "how" rather than "why"). For example, the focus will be on the costs of alternative actions to meet national bottom-lines for water quality, rather than the benefits of doing so. The policy context is summarised in a separate paper.

An economy is the set of all activities relating to production, consumption and trade of goods and services in an area that helps allocate scarce resources. No two economies are identical – the economy of a country or region is shaped by a range of factors including its culture, laws, history, and geography. Economics is the study of how, through our activities, we make decisions about the allocation of scarce resources based on utility and the implications of these decisions for society.

- Goods and services are all of the flows from the stock of resources (or capital);
- Allocation is the sharing of resources between alternative goods and services – and it usually occurs without full information;
- Scarcity is when demand for a good or service is beyond a finite or limited supply;
- Resources are the different forms of capital: natural, human[2], built, or financial; and
- Utility (or usefulness) includes **'use' values, 'non-use' values**, and **'natural' values**[3].

In economics, value is estimated using a range of indicators that are often (but not always) monetised[4]. Neo-classical economics is human-centric, and in practice is often limited to impacts on **use values**[5] where marketplaces[6] exist to trade goods and services. In general terms, use values can be either consumptive use or non-consumptive use.

An approach based on systems thinking considers other **use values** (i.e. where a marketplace does not exist), **non-use values** (e.g. option, bequest, existence)[7] and **natural values** (e.g. intrinsic). Many of these values reflect matters in sections 6 and 7 of the RMA. Environment Southland is required to either "recognise and provide for" or "have particular regard to" these matters in resource management decisions.

All values change over time, in response to many influences, and can be specific to their location. The systems approach respects the essential value of water and aims to support Te Mana o te Wai.

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[1] Neo-classical economics introduced concepts such as supply and demand, price elasticity of demand, marginal utility, and costs of production. Critical assumptions are that people make decisions about resource allocation 'rationally' and with full and free information.

[2] Human resources are usually described as 'labour', and cover indicators such as skills, effort, and health.

[3] Things can have utility or value in their own right (i.e. they are useful to themselves).

[4] For example, an indicator of the value of a job is financial income and its total value also includes social cohesion and health benefits.

[5] Environmental economics (a more recent branch of neo-classical economics) includes non-use values, as does ecological economics, which uses concepts such as 'ecosystem services' but are still human-centric. Analysis using both environmental economics and ecological economics often attempts to monetise non-use values.

[6] A market place is a space where commercial transactions occur for goods and services (i.e. things are bought and sold usually for money).

[7] An example of analysis using option and existence values was done for the Waitaki Catchment in 2005: https://www.mfe.govt.nz/publications/fresh-water-rma/option-and-existence-values-waitaki-catchment

The approach will recognise that impacts:

1. occur on values in the market and non-market[8] components of the economy;
2. may be positive or negative and will flow through to community outcomes;
3. will be influenced by the spatial scale being considered; and
4. change over time and will fall on both present generation and future generations.

The approach will consider the effectiveness and efficiency of different actions in terms of the policy context. Effectiveness is basically how far an action goes towards achieving a policy objective. Efficiency is an economic term with three dimensions to it (productive, allocative, and dynamic)[9]. An action is efficient when it helps to maximise the wellbeing of present and future generations within the limited resources available. People and community's wellbeing is influenced, in part, by their living standards over time[10].

3 Quantitative and Qualitative Evidence

In this approach, the assessment method will be to develop a multi-criteria analysis relying on qualitative evidence (i.e. descriptive) and quantitative evidence (i.e. numerical). The starting point is to create a process for asking and responding to questions with the Regional Forum, which will be used to develop 'what if' scenarios (i.e. descriptions of "What if this happens?" versus "What if that happens?"). These scenarios will test how the economic impacts of different actions or sets of actions might play out.

This method selection follows the section 32 guidance produced by Ministry for the Environment[11] (specifically "Step 2: Select evaluation method"). The mixed evidence base will give a broader understanding of Southland's economy, and its use of water. It will inform the Regional Forum's policy advice, alongside many other inputs[12].

The multi-criteria analysis will use a range of indicators to show the results from different angles (or perspectives) to paint a more complete picture of economic impacts. Emphasis will be placed on indicators that are especially relevant at a local or regional scale (e.g. employment). It is likely that higher weight will be given to Southland evidence and placing evidence in context.

Where possible the impacts will be quantified, and in some cases, monetised. It was noted in the previous section that an economy has market and non-market components. Impacts on use values where there are markets will be assessed using prices, which are a partial estimate of value. Impacts

[8] Non-market activities are those relating to goods or services that are either supplied without a commercial transaction – either for payment (i.e. for free) or at prices that are not economically significant. This is not to suggest that these transactions are without cost.

[9] In broad terms, economic efficiency is a measure of how well (or optimally) limited resources have been allocated among the competing uses in a society.

[10] https://treasury.govt.nz/information-and-services/nz-economy/living-standards

[11] https://www.mfe.govt.nz/sites/default/files/media/RMA/guide-to-section-32-of-resource-manangemnt-amendment-act-1991.pdf

[12] Policy must take into account robust evidence derived from research as well as an understanding of social values. https://www.pmcsa.org.nz/wp-content/uploads/The-role-of-evidence-in-policy-formation-and-implementation-report.pdf

on use values where there are not markets will be quantified in some way, but not monetised. By definition, values that are non-market do not have accurate prices because they are market-less[13]. Efforts will be made to at least identify non-use values and natural values.

The extent that evidence on economic impacts is qualitative, quantitative, or even monetised is not a reflection on the importance of that evidence. Impacts will not be characterised as positive and negative, or alternatively, as costs and benefits. Such a characterisation is subjective, and becomes complex when impacts switch from one to the other, depending on the timeframe being considered. All results will be presented with commentary to give context and help make sure they are accurately interpreted.

4 Economic Tools

The assessment tools that will be used with the Regional Forum were developed within the Southland Economic Project for Fresh Water. These tools were developed within a collaborative process involving a wide range of organisations, all with interests in Southland, for this specific purpose. The tools are primarily:

1. The Agriculture and Forestry Report;
2. The Urban and Industry Report; and
3. The Southland Economic Model

The Southland Economic Model focuses on the direct and indirect costs of actions on use values to improve freshwater management. To some extent it also captures the effectiveness of actions in reducing excess nutrients and any changes in land use.

Other resources will be needed from multiple disciplines to complete the multi-criteria analysis. Central to this multi-disciplinary approach is continuing access to the high level of expertise within the Technical Advisory Group involved in The Southland Economic Project.

As well, science and mātauranga Maori will be used to indicate non-market impacts (e.g. the loss of highly productive soil from land or the decline of a mahinga kai species). Scientific and cultural information will also be vital for understanding rates of change and lag times in the environment. Policy and implementation lag times will also be highly relevant.

Further economic work is being carried out to build an evidence base for avoided costs. Other topics being considered are:

- Characterising the Maori economy in Southland/Murihiku;
- A history of winter grazing in Southland;
- Analysis of the Landcare Survey of Rural Decision-makers[14] to support a possible rewards scheme;

[13] It is possible that the process of assessing impacts will produce estimates of 'willingness to pay' for different outcomes.
[14] The Survey of Rural Decision Makers is a large, biannual internet-based survey that covers both commercial production and lifestyle farming in all 16 regions in New Zealand. It is a valuable resource for exploring questions related to topics such

- Identifying connections between the economy and social outcomes for local communities;
- Investigating the impacts of improving water quality for human health; and
- Understanding the implications of policy change the market prices of land.

4.1 The Southland Economic Model for Water

The main tool for developing 'what if' scenarios will be the Southland Economic Model[15]. This model is an innovative simulation model that shows how Southland's economy changes or 'transitions' following the introduction of new policy. It is designed to indicate the implications of different rates of change, connections through the economy, and distributional impacts – essential for testing various allocation methods. The Southland Economic Model is described in two technical reports (to be available on request) and its basic structure is summarised in Appendix 1.

The model uses a variety of indictors, including: employment, household income, value added. The results are produced by economic agents (e.g. households, local government, central government, enterprises, and industries). They can also be reported spatially by freshwater management unit, territorial authority and region.

An important aspect in developing 'what if' scenarios is identifying where the questions and responses actually fall. In general, there are five possible options:

1. Pre-model calculations using geographic information system (GIS);
2. A lever on the model's interface;
3. Hardwired into the back of the model;
4. Commentary on the model's results; and
5. Capture of the broader context, particularly of important non-market values.

It is possible that some scenarios may require separate modelling of changes in farm system.

Considerable effort has already been invested developing these tools, but ongoing support will be needed to complete the economic impact assessment from across Environment Southland and organisations externally. The resource implications will depend on competing priorities and timeframes for scenarios.

4.1.1 The 'Dashboard' for The Southland Economic Model

A critical part in making sure the approach is as precise as possible is the formation of the Regional Forum's questions for the multi-criteria analysis. In addition to the two technical reports, the package around The Southland Economic Model includes a dashboard (or community interface). This

as: farm ownership and structure, land-use change, management practices, water and irrigation, technology adoption, vertebrate and plant pests, networks, farming support, values, norms, preferences, farming objectives, education, community participation, and future planning.

[15] Technically, the Southland Economic Model is a 'computable general equilibrium' model based on 'system dynamics'. Systems Dynamics relies on numerical methods to approximate solutions along a path of successive 'time-steps'. Although this results in some loss of information and precision, it widens the scope of modelling exercises, making it possible to represent very complex systems within a computer simulation model.

dashboard was developed as a tool for communicating how the model works, and particularly understanding its settings or 'levers'. It will be invaluable to help shape how questions are asked, and so be in a better position to respond to them.

The dashboard was developed in Excel® and has several hundred scenarios pre-loaded into it for demonstration purposes. It is purely a communication tool and is not connected to The Southland Economic Model itself.

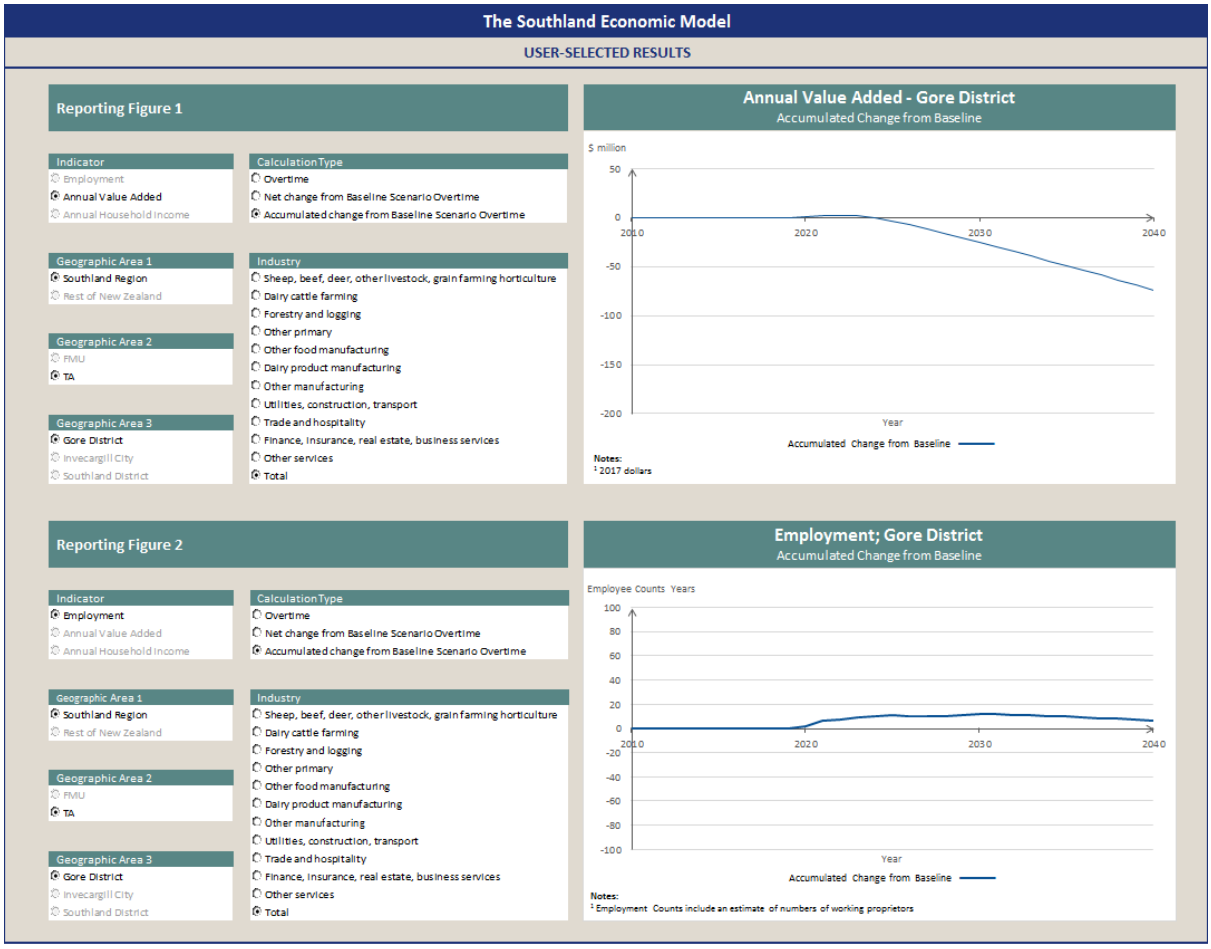

Figure 1: Example reporting output from The Southland Economic Model dashboard

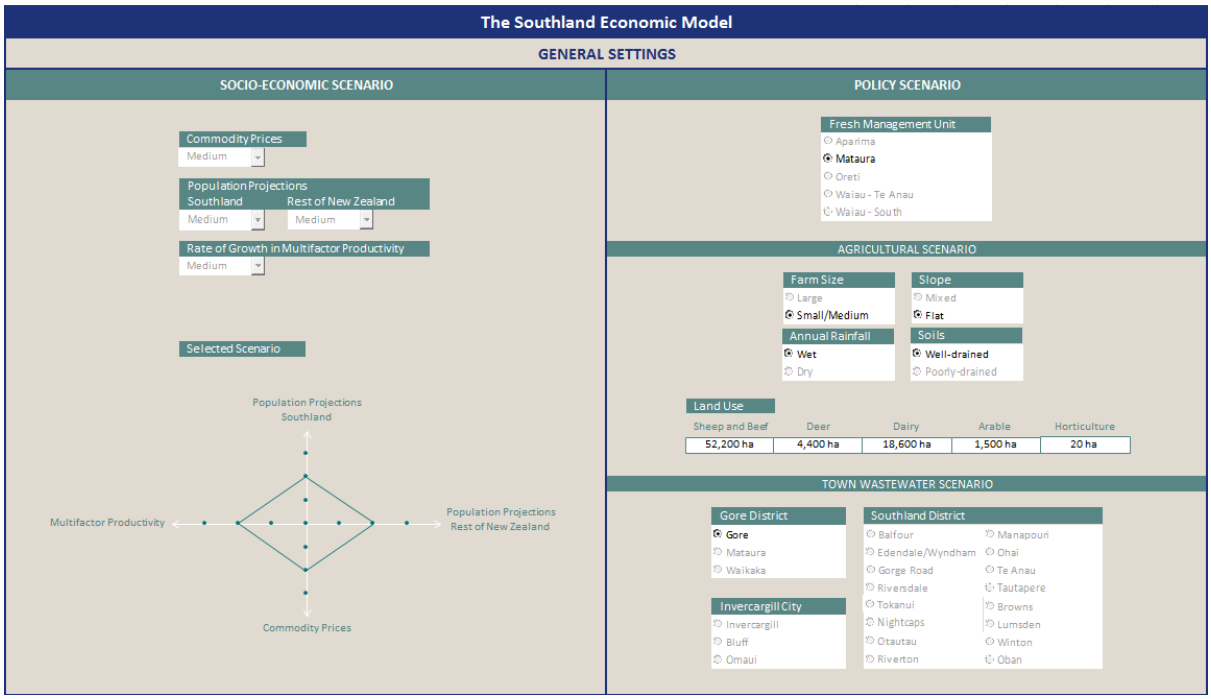

Figure 2: Example general settings from The Southland Economic Model dashboard

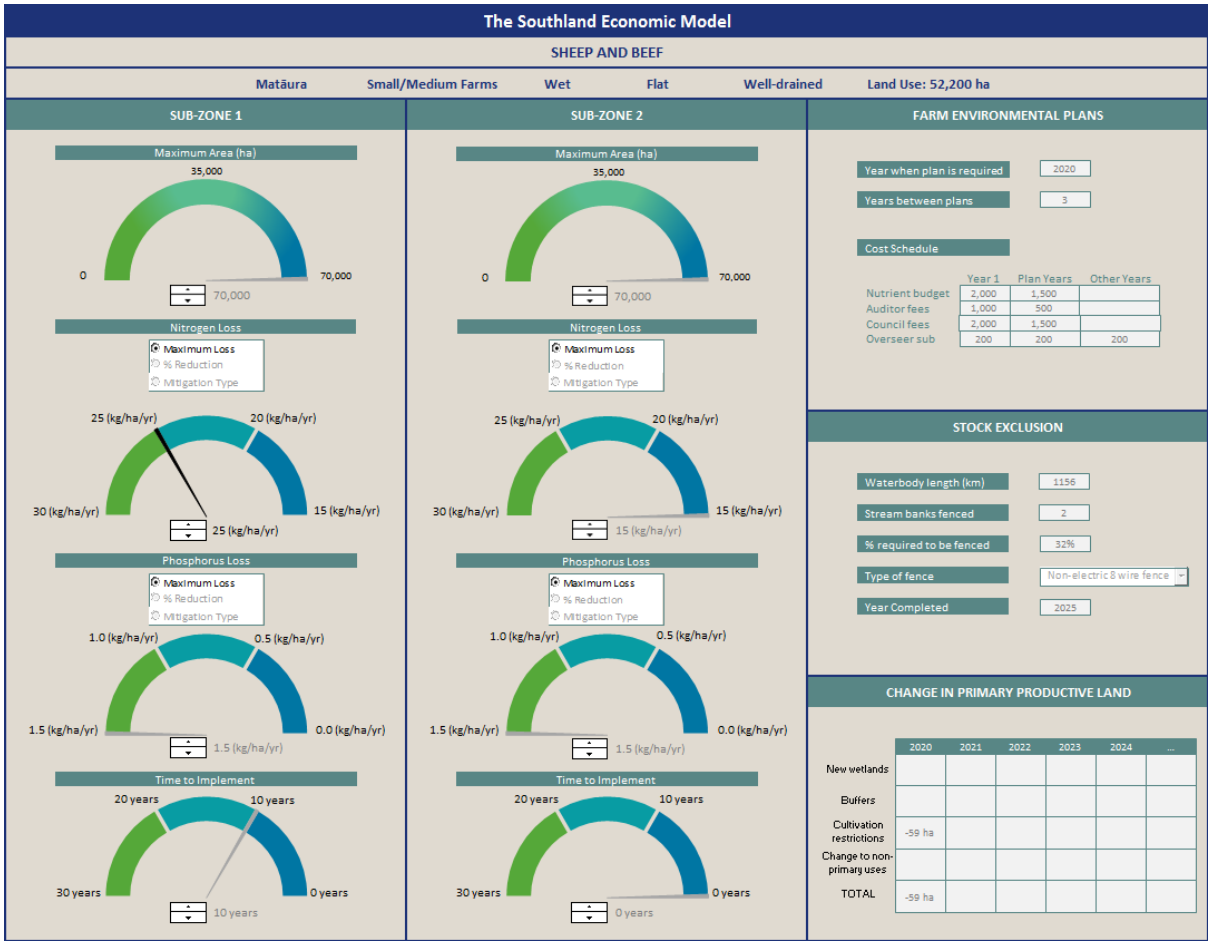

Figure 3: Example industry settings from The Southland Economic Model dashboard

5 Scenario Testing

5.1 The Baseline and Counterfactual Scenarios

In any economic assessment, the first step is to forecast what the future may look like where no further action is taken to manage an issue. The term 'no further action' reflects a requirement to "assess the risk of acting or not acting if there is uncertain or insufficient information" (section 32 of the RMA). This step is important because it establishes the start point for measuring against in forecasts where some further action is proposed in a 'what if' scenario, and so can influence the results.

These initial forecasts trace alternative economic pathways from a chosen point in time into the future based on different assumptions. There is likely to be as much uncertainty about these scenarios as any alternative course of action that may be tested in the multi-criteria analysis.

There are generally two types of initial forecasts: a baseline and a counterfactual. The definition used here for these two concepts roughly follows The Magenta Book: Guidance for evaluation (UK Treasury, 2011[16]):

- A baseline captures the situation before a policy – it is usually defined by a specific year and forecasts this into the future (without considering environmental outcomes).
- A counterfactual uses the baseline and forecasts the environmental outcomes that may occur in the absence of a policy.

The baseline should not be interpreted as the 'status quo' or 'business as usual' because these terms tend to imply that the existing situation continues on into the future unchanged.

The counterfactual reflects rates of change in the environment and estimates the risks of crossing ecological thresholds. It is not possible to create this forecast within The Southland Economic Model, and it is likely to be a qualitative assessment based on a characterisation of Southland and analysis of avoided costs (i.e. the benefit side of the equation).

In the baseline, the start year is 2016 and is traced out to 2046. The start year is when implementation of the NPSFM started in Southland with the notification of the proposed Southland Water and Land Plan and water quality must be maintained to this year (as a minimum). The end year was selected to balance a need to include at least one future generation but recognise the extreme uncertainty beyond this point. The 30 year timeframe (i.e. 2016 to 2046) also fits with territorial authorities' planning timeframes for infrastructure. All other scenarios will also use 2016 as their starting point and 2046 as their end point.

For this approach, two baseline scenarios (described below) are built into The Southland Economic Model. Together they capture the situation in the economy before and after the Southland Water and Land Plan (decisions version). The Regional Forum's task is not occurring in isolation; the wider

[16] https://www.gov.uk/government/publications/the-magenta-book

policy context is shifting, regionally and nationally. In particular, the Government's 'Action for Healthy Waterways' package means the baseline scenarios may evolve over time.

5.1.1 2016 Baseline Scenario

This baseline was determined through the Southland Economic Project and describes roughly how Southland looked in 2016. At the time, existing requirements included (but are not limited to) the National Policy Statement for Freshwater Management 2014, the Regional Water Plan for Southland 2010, Ngai Tahu Statutory Acknowledgements and Water Conservation Orders. It is within this setting that the agriculture and municipal datasets were created – these datasets are used in The Southland Economic Model.

5.1.2 Good Management Practice Baseline Scenario

This baseline scenario takes into account the main differences between the Regional Water Plan for Southland 2010 and the Southland Water and Land Plan (2018 decisions version). The later document is currently under appeal to the Environment Court. At present there is some uncertainty but it is likely that the baseline will need to be revised once this process is completed. As well, the Government is providing more national direction through its Essential Freshwater Programme, which may overlap with, and influence, the environment court process.

5.2 'What If' Scenarios

A series of 'what if' scenarios will be formed during Phase 3 – *Limits and Methods* from the Regional Forum questions. These scenarios will focus on testing how limits can be met to achieve the freshwater objectives (and targets in situations where water is over-allocated). In general terms, how limits and targets are met will be about the distribution of impacts within and between local communities. The scenario testing will rely on selecting the actions from the Regional Forum's policy toolbox and be guided by the existing policy context (i.e. questions that are inconsistent with this context will not be tested).

A two stage iterative process will be created to both ask questions and respond to questions. This process will use the structure and support outlined in Table 1 (next page). It assumes that the Values and Objectives Workstream and Phase 2 of the Regional Forum are fully completed and freshwater objectives are set. It also assumes that the Regional Forum's assessment criteria[17] are established, and any additional scenario testing for the Freshwater Management Unit plan change will be subsequent to Phase 3.

[17] The assessment criteria are the set of first principles that there is agreement on from the Regional Forum. Sections 8 and 32 of the RMA will be used for as the starting point and the Forum will consider additional regional principles at the start of Phase 3.

The first type of 'what if' scenarios to be developed will be for the 'foundation' methods[18]. The second type of 'what if' scenarios will be for the 'delivery' methods[19].

The scenario results will then be used to help shape the next round of questions. The aim of each round of questioning will be to build a better understanding of Southland's economy and its use of water. The process and the reporting template are likely to be refined during Phase 3, and the effort to produce each subsequent scenario will become more streamlined.

The 'what if' scenarios will include an analysis of how sensitive the results are to any changes in factors, such as implementation timeframes, adoption rates, exchange rates, commodity prices and interest rates. So, each scenario will, in fact, be a set of sub-scenarios that when put together will create initial bounds around some of the uncertainty. These bounds will mean that a range of results will be reported for a scenario rather than a single result. As well, reference scenarios will be relied upon to for three alternative economic futures[20].

The development of the reference economic futures commenced with a literature review of major national and international studies involving scenario analysis. From the review, four key uncertainties emerged as the most frequently cited, regardless of the context of the study: (1) economic growth; (2) global cooperation (economic and political co-operation); (3) technological change; and (4) prioritisation of environmental issues. A cluster analysis was then performed to identify groups of the reviewed scenarios with common assumptions. Three reference economic futures transpired from this process, which we named (1) Fragmented Future, (2) Techno-global Future, and (3) Green-oriented Future.

Table 1 outlines a three step process for developing, testing and reporting on 'what if' scenarios. This process highlights the importance of robust problem characterisation before turning to possible solutions. Opportunities for expert advice from the Technical Advisory Group from The Southland Economic Project will be woven through all three steps.

Table 1: 3 Step Process for the 'what if ' scenarios

Step and minimum timeframes	Tasks	Additional support	Effort required
Step 1 (1 month)	Draw on existing knowledge to define the issues to be considered (including whether targets are needed).	Science (all water related topics, including Values and Objectives workstream)	Up to 1 week

[18] The foundation methods will using the design principles and the first gap analysis to identify all of the relevant methods that the Forum will support and their general or specific use across the landscape. The first gap analysis is the science assessment of current (2016) environmental outcomes versus desired environmental outcomes and technical limits required, including over-allocated catchments and estimated timelags.

[19] The delivery methods are those that will build on the foundation methods to deliver on the freshwater objectives. They will use the design principles, foundation methods, and second gap analysis to build the full set of methods for each FMU that are likely to deliver on the limits and, where over-allocated, the targets. The second gap analysis is the science assessment of likely effectiveness of Foundation Methods in bridging the gap, including length of time to fully implement.

[20] Vergara, M.J., Harvey, E.P., McDonald, N.J., & Brown, C. (2019), Development of Reference Economic Futures (Revision 1.0). Market Economics Ltd, Takapuna, Auckland.

Step and minimum timeframes	Tasks	Additional support	Effort required
Regional or FMU characterisation (pre workshop)	Determine the context, relevant constraints, and a set of probable actions. Identify the set of values that are likely to be impacted by each action.	GIS analysis for model inputs and producing maps of values and land use.	Up to 1 week
		Land sustainability resources and advice	2 days
		Policy advice and resources (including coast and climate change)	Up to 1 week
		Biodiversity advice and resources	2 days
		Consents and compliance advice and resources	2 days
Step 2 (1 week) Forming questions (at workshop)	All questions will identify why, who, what, when, where, and how descriptors. The Southland Economic Model's 'dashboard' will be used as a starting point for shaping these descriptors. Other existing resources (e.g. a 'Known Values' GIS layer) will be used as the starting point for identifying non-use values and natural values.		
Step 3 (1 month) Developing responses (post workshop)	Include a description of the scenario's context and identify natural values, non-use values, and use values. Where possible quantify (and in some cases monetise) important impacts on values. Use the Southland Economic Model to test the impacts on use values. Collate information in a reporting template (discussed below). Review all scenarios before supplying them to the Regional Forum (this nature of review is yet to be determined).	Science (all water related topics including the Values and Objectives Workstream)	Up to 1 week
		GIS analysis for model inputs and producing maps of values and land use	Up to 1 week
		Land sustainability resources and advice	3 days
		Policy advice and resources on (including coast and climate change)	Up to 1 week
		Biodiversity advice and resources	3 days
		Consents and compliance advice and resources	3 days

6 Scenario Coding

The National Objectives Framework follows a series of steps from values to attributes, freshwater objectives, limits, methods and finally impacts. The focus of the scenario testing is on the methods. Each scenario will be able to look both to the freshwater objectives to be achieved and towards the impact assessment.

When shaping 'what if' scenarios we draw a distinction between control variables (i.e. the things that are within our control), state variables (i.e. things that influence the situation but are beyond our control), and constraints (i.e. the fixed conditions that we are operating within). In essence, scenarios

are created by adjusting the control variables. Adjusting the state variables on these scenarios generates the sensitivity analysis. This distinction between control variables, state variables and constraints will be used to develop a coding system for the scenarios.

A scenario is, in reality, likely to be a set of scenarios – with variations around a theme being tested – that produce a range of results. In early scenario testing with the Regional Forum we may illustrate how the sensitivity analysis works but we do not expect to undertake this to any great extent until we narrow in on the options, which will be nearer the end of their process. The reference "modes" (or settings), which describe alternative futures sit within the set of state variables.

For simplicity in the scenario coding, default settings state variables will be used, some of which will be assumed unless stated otherwise. For example, the relationships between dairy productivity and nutrient losses (nitrogen and phosphorus).

The control variables are shaped by question words (suggest this ordering):

1. Where (spatial scale): the Region (R), FMU[21], or area within an FMU(s) (e.g. economic zone or catchment);
2. Who: the resource user(s) based on either land use activity (suggest using land use map key, e.g. Agriculture = A) or discharge type / pathway;
3. When (temporal scale): annual start and end points (suggest just using suffix e.g. 25 not 2025), may involve the staging of methods based on targets;
4. Method:
    a. How: action (input based actions – the activity creating the resource use)? OR
    b. What: the contaminant(s) (output based actions – the resource use)?; and
    c. How much: varying levels of input or output.

An example of a simple code may read: RA2545N-10%. This code would represent a region wide scenario, for agricultural users, that starts in 2025 and ends in 2045, and tests a 10% reduction in nitrogen. Also considered will be the mechanism for implementing a method (i.e. regulatory or non-regulatory).

It is like that the range of codes for the actions and contaminants will become complex. A table will be attached as an appendix to any document that uses the codes, and list the abbreviations with explanations.

Secondary coding will be used to denote changes in the state variables (i.e. the sensitivity analysis). This secondary coding will include the reference scenarios for the three alternative futures.

[21] Suggest: Fiordland and Islands (FI), Waiau (W), Aparima (A), Oreti (O), Mataura (M), and Waituna (WT) with FMUs being listed west to east.

7 Indicative Reporting

The multi-criteria analysis will include development of a standard reporting template. This template report will be important for making sure the analysis around each 'what if' scenario is consistent and as comprehensive as possible. In general terms, the assessment will be about the distribution of impacts, both across the region between present and future generations. Important will be estimating achievement of limits for freshwater objectives (particularly in terms of over-allocation) and estimates of timelags – both in the environment and in policy (including implementation).

Table 2 illustrates topics that the template report is likely to cover.

Table 2: Example reporting template

Scenario Title (and code): Freshwater Management Unit Freshwater body Freshwater objective(s) **Context (environment and local communities – past and present)** **Connections with science assessments of effects and cultural impact assessments** **The health of the water** Identify natural values Rates of change and potential ecological thresholds **The health of the people** Identify and, where relevant to the scenario, estimate impacts (including their timing) on use values (including drinking water, food and recreation) and non-use values. **Consumptive uses of water** Identify and estimate impacts (including timing) of actions on use values (e.g. food production) by: • Economic indicator: employment, annual value added, and annual household income • Economic agent: households, local government, central government, industry • Geographic area: Freshwater Management Unit, district, region **Land use change** **Sensitivity analysis** **Timelags in system (policy, environmental)** **Uncertainty and risks**

Appendix 1 – The Southland Economic Model

An introductory video on The Southland Economic is available:

https://waterandland.es.govt.nz/setting-limits/research/southland-economic-project

The basic structure of the Southland Economic Model is as follows:

- The model's core is determined by a 'social accounting matrix' which represents the flows[22] of market transactions and is based on data primarily sourced from Statistics New Zealand;
- There are two regions: Southland (the area of interest) and the rest of New Zealand. For each region the model describes the behaviour of economic 'agents': industries (aggregated to 19 categories[23]), households, enterprises, local government, and central government.
- Each industry chooses the quantity and type of commodities to produce (aggregated to 27 categories[24]), based on the prices of those commodities relative to the costs of production.
- Household and government agents receive income from a variety of sources (e.g. wages and salaries, business profits, dividends, taxes and transfers from other agents), and then 'allocate' this income to different spending choices (purchases of goods and services, savings, taxes, transfers to other agents).
- The model uses 'price' variables for commodities and 'factors of production' (i.e. types of labour and capital). When the supply and demand for commodities and factors is out of balance the model responds through substitution[25].
- The model includes accounts to track financial flows between New Zealand and the rest of the world (i.e. the balance of payments). When demand for New Zealand currency starts to outstrip supply this causes the exchange rate to rise and vice versa, changing the relative prices of New Zealand goods.
- It also includes economic growth by keeping track of stocks of built and natural capital[26] held by each industry. Capital stocks accumulate via investments and diminish via depreciation.
- Overall, the model is divided into eleven modules (e.g. households, governments, industries, commodities, factors of production, and savings & investment). Each one has its own 'cause and effect' relationships to reflect how they behave.

[22] As opposed to stocks of capital (human, financial, natural, built)
[23] From a possible 106 industry categories.
[24] From a possible 205 commodity categories.
[25] For example, one type of function describes how demand for New Zealand-made goods can be substituted for demand for goods produced overseas if the price of domestic goods becomes too expensive relative to foreign goods. Another type of function describes the substitution between locally-made goods and goods produced in the rest of New Zealand. On the supply side, a function describes how the supply of goods made in New Zealand is split between the New Zealand and export markets depending on the relative prices in each market. A separate function also describes how the supply of goods is split between the local market and the rest of New Zealand.
[26] In the model there are three types of natural capital: agricultural land, coal, and oil/natural gas.