

Assessment of Environmental Effects (AEE) Studies – Lead Agencies and Study Champions

Study Reference No.	Study Name	Lead Agency or Agencies	RWS Team Study Champion
NA	Project Description	Tonkin & Taylor	Graeme Hansen
1	Ground/Surface Water Flows - Scenario Modelling	Hawke's Bay Regional Council Science Team	Olivier Ausseil
2	Effects of Reservoir Water Quality on Receiving Waters	Aquanet and NIWA	Olivier Ausseil
3	Land Use Intensification Effects Modelling	NIWA, Plant & Food Research, AgResearch	Monique Benson
4	Land Use Intensification Effects – Management and Mitigation Opportunities	Plant & Food Research, AgResearch	Monique Benson
5	Aquatic Ecology Assessment	Cawthron Institute	Olivier Ausseil
6	Terrestrial Ecology Assessment	Kessels & Associates	Stephen Daysh
7	River Geomorphology Assessment	Tonkin & Taylor	Graeme Hansen
8	Social Impact Assessment	Taylor Baines & Associates	Stephen Daysh
9	Historic Heritage / Archaeology Assessment	Clough & Associates	Stephen Daysh
10	Recreation Assessment	OPUS	Larissa Coubrough
11	Traffic and Road Access Assessment	OPUS	Graeme Hansen
12	Noise Assessment	Marshall Day Acoustics	Stephen Daysh
13	Landscape Assessment	Isthmus Group	Larissa Coubrough
14	Cultural Impact Assessment	Dr Benita Wakefield	Stephen Daysh
15	Regional Economic Impact Assessment	Butcher Partners Ltd	Grant Pechey
16	National Economic Impact Assessment	Infometrics / Butcher Partners Ltd	Grant Pechey

Study No. 1
Model Groundwater/Surface Water Interactions and
Scenario Testing of Groundwater Model

Focus	To model the Ruataniwha groundwater and surface water interactions and response using a range of allocation scenarios (including a naturalised baseline and with and without Ruataniwha storage scenarios) to provide information for future catchment management and decision making.
Linkages	<ol style="list-style-type: none"> 1. This work is also required as an important input for the proposed Tukituki Regional Plan Change process, where updated minimum flow requirements and allocation mechanisms for catchment management will be set. 2. Relies on dam storage modelling by the Ruataniwha Project Engineers being provided as an input. 3. Relies on information from Plant and Food and AgResearch (Study No.3) with respect to additional irrigation areas and the rate of irrigation water return beyond the root zone.
Lead Authors	HBRC (Groundwater Science and Hydrology Teams)
Other Contributors	Liaison required with Tonkin & Taylor and HBRC Policy Team
Peer Review	Environmental Earth Science and David Leong (T&T)
Key Input Reports	Tonkin & Taylor's Initial Project Description (November 2011). Ruataniwha Transient Ground Water Model (HBRC).
Study Scope	<p>Utilising the most up-to-date Ruataniwha Transient Groundwater Model and Tukituki catchment surface flow information held by HBRC, the study will model a number of scenarios to determine how groundwater and Tukituki catchment surface water quantities and flows will be affected by storage. The study will comprise two stages:</p> <p><u>Stage 1:</u></p> <p>Four scenarios will be modelled, reported and peer reviewed. These will inform the final Project Description (due March 2012). Scenarios include:</p> <p><i>Scenario 1: Naturalised system (i.e. a system where all SW and GW takes are "turned off" for a long enough period of time to reach a "steady state";</i></p> <p><i>Scenario 2: 2011 current situation (i.e. the historical and current actual water uses in the Ruataniwha Basin and Tukituki catchment are combined to provide an estimate of the current state of the resource);</i></p> <p><i>Scenario 3: Assumes the Scheme is fully operational in 2017 and all SW and GW takes switch to Scheme water in 2017. Scenario 3 also assumes that existing SW and GW takes are maintained at their current level of use until 2017. River bed degradation of 0.5m will be applied.</i></p> <p><i>Scenario 4: Assumes the Scheme is fully operational in 2017 but none of the existing SW and GW takes switch to Scheme water.</i></p> <p>For both Scenarios 3 and 4 the model will run until "steady state" is reached. An initial period of 5 years after 2017 will be assessed.</p> <p><u>Stage 2:</u></p> <p>Provides for any further scenarios that may be required following the issue of Tonkin & Taylor's final Project Description (end-March 2012). Further scenarios may need to explore different land use/irrigation scenarios; climate patterns; or running scenarios 3 & 4 for 10 years if steady state is not achieved after 5 years. Stage 2 requirements will be confirmed in March 2012.</p>
Timetable	Final report of model scenarios (1-4) due end-February 2012. Stage 2 scenarios report (if required) due mid-May 2012.

Study No. 2

Assessment of Effects of Reservoir Water Quality on Receiving Environment

Focus	To define the likely characteristics of reservoir water quality and its potential effects on the downstream receiving water quality
Linkages	<ol style="list-style-type: none"> 1. Requires input from Ruataniwha Project Engineers regarding release flow and operational regime of the reservoir 2. Requires input from Ruataniwha Project Engineers regarding river flow characteristics
Lead Author	Aquanet
Other Contributors	NIWA (Max Gibbs), HBRC
Peer Review	To be internally peer reviewed by NIWA and by Aquanet
Key Input Reports	<p>Envirolink Tools Project on Guidelines for artificial lakes.</p> <p>Tonkin & Taylor's Initial Project Description.</p>
Study Scope	<p>Study scope to include the following sub-projects:</p> <ol style="list-style-type: none"> 1. Review of existing baseline water quality information to identify gaps; 2. Baseline information gathering if required; 3. Characterise predicted water quality in reservoirs, including : <ol style="list-style-type: none"> a) Expected physico-chemical characteristics of the water discharged from the reservoir; b) Effect of removing vs. retaining vegetation within reservoir extent; c) Suitability of reservoir water quality for aquatic life, recreation, and other uses. 4. Assessment of potential water quality effects associated with the discharge of reservoir water into receiving waters; 5. Recommend dam intake configuration for T&T to design during feasibility (e.g. multi-level intakes at RL xxx m, RL xxm etc)
Timetable	Point 5 above due end of September 2011. Balance of Reporting due End November 2011.

Study No. 3

Assessment of Effects of Land Use Change associated with Irrigation from Water Storage on Surface and Ground Water Quality

Focus	Development of a computer model to assess the effects of potential land use change scenarios from the increased availability of irrigation water associated with the Ruataniwha Plains Water Storage Project
Linkages	<ol style="list-style-type: none"> 1. Land use mix will require input from on-farm economic studies 2. Land Use and Nutrient Sub Models being prepared by AgResearch and Plant & Food Research. 3. Outputs will need to be assessed in Study No. 4 and in the Cawthron Aquatic Ecology Study.
Lead Author	NIWA
Other Contributors	AgResearch, Plant & Food Research, Aquanet
Peer Review	Model to be peer reviewed by Ian Webster
Key Input Reports	FRST project investigating the cumulative effects associated with diffuse source pollution. MacFarlane on-farm economic report (May 2011).
Study Scope	<p>Study scope to include the development of a computer model for the Ruataniwha Study Area that is capable of investigating the effects of:</p> <ul style="list-style-type: none"> ▪ Irrigation take-off, return flows and drainage of stream flows and aquifer levels; ▪ Land use intensification on nutrient losses to surface waters and groundwater; ▪ Surface and groundwater return of nutrients to the Tukituki and Waipawa Rivers; ▪ Nutrient loads and nutrient spiralling on periphyton dynamics; and, ▪ Point source discharges of nutrient. <p>Technical components of the study include:</p> <ol style="list-style-type: none"> 1. <u>Land Use Sub-Model Development</u> Involves developing and spatially mapping five Land Use Scenarios; Scenario One to be the 2011 Baseline (existing land use), and Scenario Five will be based on full implementation of all nine post-irrigation land uses outlined in the MacFarlane Report prepared for Council. The other three scenarios (2-4) will be a range of partial implementations of the nine land use classes specified in the MacFarlane Report, to provide an intensification gradient. These scenarios will be utilised in the nutrient export outputs (component no.2 below). 2. <u>Nutrient Export Sub-Model and Outputs</u> Involves development of daily-weekly-monthly time-series of N and P yield (kg/ha/yr) for different combinations of climate zone, soil type, land use and management practice by SPASMO; and, if required, complete an OVERSEER nutrient budget for each of the nine base and post-irrigation land use classes outlined in the MacFarlane Report. 3. <u>Groundwater and Stream Sub-model</u> Involves developing a new simplified groundwater-stream model, which captures the main features of the more detailed MODFLOW model developed by HBRC. Information about the aquifers (e.g. surface area, depth, travel times etc) from the MODFLOW model will be

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	<p>inputted into the groundwater-stream model.</p> <p>4. <u>Stream Nutrient and Periphyton Sub-model</u></p> <p>Involves developing and calibrating a model for predicting nutrient concentrations and periphyton biomass.</p> <p>The models will be a key tool in determining the likely environmental effects of land use intensification under different farming regimes. They will also help to inform Water Quantity/Quality Study No.4, associated with identifying the benefits of undertaking catchment restoration (e.g. riparian protection, wetlands, encouraging “good farming practice” etc.) to mitigate potential effects associated with land use intensification.</p>
Timetable	Due February 2012

Study No. 4

Development of Mitigation Options to Offset Potential Adverse Effects on Water Quality associated with (Storage Related) Land Use Change

Focus	To develop workable mitigation opportunities to offset any defined potential adverse effects associated with realistic land use change scenarios modelled using the Land Use / Water Quality model.
Linkages	Inputs required from Modelling report developed under Study No. 3.
Lead Authors	AgResearch and Plant & Food Research
Other Contributors	Stakeholder Group Steering Committee, Massey University
Peer Review	Not proposed at this stage.
Key Input Reports	Output from Study No.3
Study Scope	<p>The scope of work required for this phase is dependent on the outcomes of the overall NIWA Land use / Water Quality Model and will be finalized once these results are known. It is anticipated that this study will include the following components:</p> <ol style="list-style-type: none"> A literature review and summary report of the suitability and effectiveness of the range of potential avoidance and mitigation options in order to add context to the potential options. This will assist stakeholders with their understanding of the issues and options; The identification, development and testing (utilising OVERSEER, SPASMO, and other appropriate analytical tools) of the ability of a range of mitigation and avoidance options to offset any defined adverse water quality effects from diffuse farm discharges identified in the NIWA land use / water quality modelling. Options may include riparian protection, wetland development, on-farm best management practices, opportunities for off-site mitigation, and low flow enhancement and augmentation of the full implementation of the scenario outlined in the May 2011 MacFarlane Report prepared for Council. The baseline (2011) scenario and four other scenarios developed as part of the land use sub-model will also be explored, as will additional land use options (e.g. irrigation lamb finishing), in consultation with HBRC. <p><i>Notes:</i></p> <ul style="list-style-type: none"> It is anticipated that discharge standards or targets for diffuse agricultural discharges will be developed by the HBRC Policy team as part of a Tukituki Plan Change, due for notification in July 2012. The nature and level of such standards or targets is not currently known, however the NIWA land use / water quality modelling will be utilised by the HBRC Policy team to assist with the development of these. Mechanisms utilising Resource Consent Conditions (which may apply to the body owning the irrigation scheme and/or individual farms) to ensure delivery of any required avoidance and/or mitigation to meet the proposed downstream water quality targets or standards will need to be developed by the HBRC Project consenting team based on the outcomes of this work.
Timetable	Due end of April 2012.

Study No. 5
Assessment of Aquatic Ecology Effects

Focus	To identify the full range of aquatic ecology values that will potentially be affected by the Ruataniwha Plains Water Augmentation Scheme, to assess the effects of the proposed scheme in terms of those values and recommend any appropriate measures to avoid, remedy, mitigate or offset those effects
Linkages	1. This work needs to be programmed for Spring and Summer 2011/2012 and will have linkages to all of the water quality and water quantity studies being prepared for the project, and those being prepared in-house by the HBRC Science Team to support the proposed Tukituki Catchment Policy and Plan changes. Accordingly the programming of this work will need to be carefully undertaken so information from those studies and the Project Description being compiled by the Ruataniwha Project Engineers can be utilised in the assessment.
Lead Author	Cawthron
Other Contributors	HBRC (Science Team), Fish & Game Hawke's Bay, Department of Conservation
Peer Review	Dr Philip Mitchell (Mitchell Partnerships)
Key Input Reports	<p>Maxwell, I. 2010. Ruataniwha Plains Water Augmentation Scheme: Aquatic Ecological Review. Cawthron Institute Report. 46pp. SOE Monitoring report for the Tukituki Catchment.</p> <p>Tukituki Target Investigation report.</p> <p>FRST project investigating the cumulative effects associated with diffuse source pollution.</p> <p>Ausseil, O. (2008) Water Quality in the Tukituki Catchment – State, trends and contaminant loads. Aquanet Consulting Report 51pp.</p> <p>Haidekker, S. 2010. Studies emerging from the 2004 – 2008 SOE reports for Hawke's Bay Catchments (Draft)</p> <p>Technically Trout "Assessment of Rainbow Trout Spawning in the Upper Makaroro River 2011", (September 2011)</p> <p>Tonkin & Taylor Draft Project Description (November 2011)</p>
Study Scope	<p>The study shall cover the following matters:</p> <ol style="list-style-type: none"> a) Review of existing aquatic biology to identify gaps and further investigation needs, and to refine a list of species of significance; b) Baseline information gathering and GIS mapping on catchments affected, including the broader Tukituki Catchment; c) Construction of a computer model (RHYHABSIM – River Hydraulics and HABitat SIMulation) to predict how instream habitat availability for selected species varies over a range of flows d) Historical flow analysis to assist in determining an appropriate flow regime for the Scheme; e) Assessment of effects on instream biota and ecosystem function, associated with reservoir water quality, flushing flows and flow variability, land use intensification effects, civil works associated with construction, changes in geomorphology etc.;

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	<ul style="list-style-type: none">f) Assessment of fish passage and fish screening options;g) Assessment of overall effects on aquatic ecology, including site-specific fish investigations in affected reaches; synoptic macroinvertebrate surveying and assessment of values in the Tukituki catchment; and,h) Recommendations regarding appropriate measures to avoid, remedy, mitigate, or offset any adverse effects identified through assessments above.
Timetable	Information regarding any Fish Pass recommendations required by mid-November 2011. Balance of reporting due end of March 2012

Study No. 6
Assessment of Terrestrial Vegetation and Fauna Effects

Focus	To identify the full range of terrestrial vegetation and fauna values that will potentially be affected by the Ruataniwha Plains Water Augmentation Scheme, to assess the effects of the proposed scheme in terms of those values and recommend any appropriate measures to avoid, remedy, mitigate or offset those effects
Linkages	Requires details of Tonkin & Taylor's Initial project description
Lead Author	Kessels & Associates
Other Contributors	Forest and Bird Society, Department of Conservation
Peer Review	Boffa Miskell
Key Input Reports	MWH Makaroro and Makaretu Scoping Report and Tukituki Wide Terrestrial Ecology Report.
Study Scope	<p>The study shall cover the following matters:</p> <ul style="list-style-type: none"> a) Field Investigations to assess whether any rare and/or threatened plants are in the affected areas; b) Avifauna surveys to assess whether any rare and/or threatened birds utilise the affected areas; c) Field investigations, incorporating use of Automated Bat Monitoring (ABM) detectors, to confirm the level of importance (or otherwise) of affected habitat for long-tailed bats; d) Field investigations (including day and night habitat searches and use of artificial cover objects and tracking tunnels) to confirm the importance (or otherwise) of affected habitat for lizards, in particular to identify the presence or absence of threatened species; e) Field investigations (including trapping and active searches of suitable habitats) to confirm the importance (or otherwise) of affected habitat for invertebrates, in particular to identify the presence or absence of threatened species; f) Ground truth and refine preliminary vegetation maps and habitat community maps using 20m x 20m RECCE (Reconnaissance) plots and general surveying of all plant species in all tiers within the proposed dam/lake footprint; g) Examine the impact of habitat loss on functional landscape ecology values; h) Report on the overall terrestrial ecology findings including quantification of key habitats that will be lost or affected for rare or threatened species; i) Effect of river morphology on terrestrial linked ecosystem values; and, j) Recommend any appropriate measures to avoid, remedy, mitigate, or offset any adverse effects identified under h) above.
Timetable	Due end of March 2012.

Study No. 7

Assessment of Effects on Downstream River Geomorphology

Focus	To define the potential effects of the proposed dam on downstream river channel geomorphology
Linkages	<ol style="list-style-type: none"> 1. Requires input from Ruataniwha Project Engineers regarding the planned configuration of the dam and outlet structures, and operational regime. 2. Requires input from Ruataniwha Project Engineers regarding river flow characteristics. 3. This study will provide input into the terrestrial and aquatic ecology Studies (Studies 5 and 6).
Proposed Lead Author	Tonkin & Taylor
Other Contributors	HBRC
Peer Review	Murray Hicks NIWA
Key Input Reports	TBD
Study Scope	<p>Study scope to include the assessment of the potential effects of the proposed dam and dam operation on the Makaroro river channel geomorphologic characteristics downstream of the dam from:</p> <ol style="list-style-type: none"> 1. Sediment retention within the dam area, considering the dams proposed sluicing capabilities 2. Effects of sediment interruption on downstream sediments and coasts. 3. Review of sediment management options 4. Sediment management plan. <p>The study will include, but may not be limited to, the following aspects:</p> <ol style="list-style-type: none"> a) Description of sediment delta development within the reservoir b) Describe quantitatively where (which river reaches) changes are expected to the sediment budget leading to channel aggradation/degradation c) Qualitative description of changes to bed substrate size, channel stability and geomorphologic features.
Timetable	Due end of December 2011

Study No. 8
Social Impact Assessment

Focus	To work with the Central Hawke's Bay community¹ to identify the social impacts (both potential positive and adverse effects) associated with the scheme.
Linkages	Land Use Intensification Scenarios Report (MacFarlane Rural Business) Regional Economic and Employment Assessment (Geoff Butcher) The consultant will need to work closely with the Stakeholder Group
Lead Author	Nick Taylor – Taylor Baines
Key Input Reports	Various Social Impact Assessments (pre and post development) undertaken for Canterbury Irrigation Schemes
Study Scope	<ol style="list-style-type: none"> 1. Assess and report on the potential social change effects with the Ruataniwha Water Storage scheme associated with: <ul style="list-style-type: none"> ▪ Changes in farming practices ▪ Changes in land ownership ▪ Demographic changes ▪ Strengthening rural communities (education, health, commerce, clubs etc) ▪ Value conflicts associated with new / intensified land uses versus traditional dryland farming practices 2. Assess any potential wider Regional socio-economic effects associated with the scheme, with particular reference to the Regional Economic and Employment Assessment being prepared by Butcher & Associates. 3. Make recommendations on available and appropriate means to avoid, remedy or mitigate adverse social effects.
Timetable	Due end of February 2012

¹ Note that the socio-economic effects relating to the broader Hawke's Bay community will also need to be looked at, with reference to the Butcher & Associates Regional Economic and Employment Assessment.

Study No. 9
Historic Heritage / Archaeology Assessment

Focus	To undertake a Historic Heritage and Archaeology Assessment for the footprint of the proposed scheme.
Linkages	Liaison required with Cultural Heritage Advisors
Lead Author	Clough & Associates
Key Input Reports	Base project information contained in Tonkin & Taylor Initial Project Description Cultural Heritage Report
Study Scope	<ol style="list-style-type: none"> Based on the project footprint outlined in Tonkin & Taylor's Initial Project Description (November 2011) assess and report on Historic Heritage / Archaeology matters as follows: <ul style="list-style-type: none"> Research the New Zealand Archaeological Record, District Plans and other source documents. Liaise with Dr Benita Wakefield and relevant hapu representatives recommended by Dr Wakefield. Undertake an archaeological field survey of the project area (including dam site, Lake Impoundment area, and main irrigation headrace corridor). Report on any effects on identified Historic Heritage Areas or Archaeology sites. Identify and report on any available and appropriate means to avoid, remedy or mitigate adverse effects. Provide advice on any processes required under the Historic Places Act.
Timetable	Due mid-February 2012

Study No. 10
Recreation Assessment

Focus	To assess the effects of the scheme on existing recreation activities and to identify any opportunities for new recreational activities.
Lead Author	OPUS
Key Input Reports	Base project information contained in Tonkin & Taylor Initial Project Description Tukituki Catchment values assessment reports (e.g. RIVAS angling values and white water kayaking values reports) prepared by HBRC to support the Tukituki RPS and Regional Plan Change.
Study Scope	Based on the Initial Project Description, the study shall cover the following matters: <ul style="list-style-type: none"> Identify and characterise the range of recreational activities undertaken in the project area, and the context of these opportunities on the basis of the range and availability of existing outdoor recreational opportunities within Hawke's Bay and surrounding regions, and their proximity to people living in Hawke's Bay. Assess the effects of the project on the identified recreational activities being undertaken in the project area. Identify and characterise any new recreational opportunities that may be created by the project, and their potential benefits (in the context of the availability of existing outdoor recreational opportunities available to Hawke's Bay residents).
Timetable	Due mid-February 2012

Study No. 11
Road Infrastructure and Traffic Assessment

Focus	To assess the impact that the project will have on existing roading infrastructure and to identify any road and/or bridge improvements or realignments that may be required to meet the needs of the project.
Lead Author	OPUS
Key Input Reports	Base project information contained in Tonkin & Taylor Initial Project Description.
Study Scope	<p>Based on the Initial Project Description, the study shall cover the following matters:</p> <ul style="list-style-type: none"> ▪ An overview and discussion of the key traffic policies and requirements of Roading Authorities (i.e. Transit NZ and relevant District Council) relevant to the construction, commissioning, operating and maintaining of the scheme. This is to provide a regulatory context for the Traffic Assessment Report. ▪ An assessment of construction traffic requirements, traffic movements and traffic issues (with reference to the capacity of the roading network) during the construction period, including large and heavy load movements. ▪ An assessment of any operations and maintenance traffic requirements, traffic movements and traffic issues. ▪ The identification of any road and/or bridge improvements or realignments that may be required to meet the needs of the project and/or to address any current access provisions (both on public and private access roads affected by the Project). ▪ Identify and report on any available and appropriate means to avoid, remedy or mitigate adverse construction related traffic effects and effects on the roading network.
Timetable	Due mid-February 2012

Study No. 12
Landscape Assessment

Focus	To assess the effects of the scheme on landscape and visual amenity values
Lead Author	Isthmus Group
Key Input Reports	Base project information contained in Tonkin & Taylor Initial Project Description
Study Scope	<p>1. Based on the Initial Project Description, the study shall cover the following matters:</p> <ul style="list-style-type: none"> ▪ Work as a key member of a multidisciplinary team assessing options and recommending a preferred method and route for the main water transmission infrastructure across the top of the Plains. ▪ Describe the existing landscape character and context of the visual catchment area surrounding the dam site, impoundment area, irrigation distribution system, transmission lines, quarries and other structures associated with the project. ▪ Discuss the Regional and District Plan landscape policies and objectives relevant to the project area. ▪ Assess the visual impact of the project on existing landscape character from key viewpoints. Appropriate graphical visualisation techniques recognised by the Environment Court shall be used. ▪ Recommend any required mitigation measures, where appropriate.
Timetable	Due mid-February 2012

Study No. 13
Noise Assessment

Focus	To assess the potential noise effects associated with construction and operation of the water storage scheme on the surrounding environment.
Lead Author	Marshall Day Acoustics
Key Input Reports	Base project information contained in Tonkin & Taylor Initial Project Description
Study Scope	<p>Based on the Initial Project Description, the study shall cover the following matters:</p> <ul style="list-style-type: none"> ▪ Describe the ambient noise environment at the project dam site and any identified quarry areas at key noise receptor areas (nearest houses). ▪ Outline the key noise policies and standards administered by the relevant local authorities (Central Hawke’s Bay District Council and Hastings District Council) to provide the regulatory context and noise limits to meet. ▪ Predict the noise emissions associated with the construction and operation of the storage scheme and associated infrastructure (e.g. quarry areas). ▪ Report on modelled noise levels associated with the construction, commissioning and operational phases of the project at the key receptor areas. ▪ Identify whether the noise emissions associated with the project will comply with the standards set out in the District Plan, and/or other generally accepted standards and will not be unreasonable. ▪ Report on any necessary and appropriate design standards and features to ensure compliance with appropriate noise standards. ▪ Recommend any required mitigation measures, where appropriate.
Timetable	Due mid-February 2012

Study No. 14
Cultural Impact Assessment

Focus	To ensure a suitably inclusive and comprehensive Cultural Values Assessment is completed for the project
Lead Author	EIT – Dr Benita Wakefield
Key Input Reports	<p>Base project information contained in Tonkin & Taylor Initial Project Description</p> <p>Project Cultural Values Reports</p> <p>Cultural Values Assessment report completed as part of the Tukituki Plan Change process</p>
Study Scope	This study scope will be refined once the Cultural Values Assessment, supporting the Tukituki Plan Change process, has been completed. The scope will be developed in consultation with Dr Benita Wakefield, Mr Roger Maaka, and Tamatea and Heretaunga Taiwhenua representatives.
Timetable	Scope to be refined by end-January 2012

Study No. 15
National Economic Impact Assessment

Focus	To estimate the National economic impacts attributable to the Ruataniwha Storage/Irrigation Scheme
Lead Author	Infometrics / Butcher Partners Limited
Key Input Reports	Regional Economic Impact Assessment / On farm Economic Feasibility
Study Scope	<p>Study scope to include:</p> <ul style="list-style-type: none"> • Measuring the national impact attributable to the implementation of the scheme, including: <ul style="list-style-type: none"> – Changes in GDP; – Changes in Tax Revenue; and – Employment.
Timetable	Due March 2012

Study No. 16
Regional Economic Impact Assessment

Focus	To understand and estimate the total regional impacts attributable to the Ruataniwha storage/irrigation scheme
Lead Author	Butcher Partners Limited
Other Contributors	Grant Pechey / MacFarlane Rural Business Limited
Peer Review	NA
Key Input Reports	Feasibility Study of On-farm Economics for the Proposed Ruataniwha Irrigation Scheme (MRB, 2011)
Study Scope	<p>Study scope to include:</p> <ul style="list-style-type: none"> • Measuring economic impacts (employment, GDP, output, income) – both direct and indirect; • Expenditure / sales on-farmer survey; • Cost/benefit analysis of Scheme
Timetable	Due end of February 2012