covec

Proposal | 12 September 2012

Metropolitan Rail – External Benefits and Optimal Public Funding

Prepared for

NZ Transport Agency

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Minimum Compliance Checklist

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Proposer Name: Covec Limited

Contact Person Signature:

Acknowledgments and Confirmations

We acknowledge and accept the Proposal Process Rules set out in paragraphs 2 to 61 of the RFP and note the following particularities.

- Pursuant to paragraph 28 we confirm that Covec's current employees' agreements, and sub contractor and consultant contracts stipulate that the information gained by individuals working on customer projects is not to be commercially exploited, nor disclosed to any party after such agreements or contracts have been terminated.

- Pursuant to paragraph 33 we confirm that Covec has a significant commitment to, and investment in, New Zealand. Covec is owned and operated by New Zealanders in New Zealand. Please do not confuse us with the other Covec, a Chinese multiservice company.

- Pursuant to paragraph 50 we acknowledge and confirm our agreement to the Formation of Contract provisions in paragraphs 48 and 49.

Pursuant to paragraph 44 of Appendix 3 we acknowledge and accept NZTA's standard terms and conditions as set out in Appendix 2 of the RFP.

Pursuant to paragraph 46 of Appendix 3 we confirm that Covec has no existing or potential conflicts of interest in relation to this work. Covec is currently working for NZTA to develop a best practice indicator set for land transport (project TAR 11/09), and advising NZTA on a benchmarking approach to public transport contracting.

Pursuant to paragraph 33 of Annex C to RFP 130/12, we confirm that Covec acknowledges and confirms our agreement to the administrative processes set out in paragraphs 34 to 42 inclusive of Annex C to RFP 130/12.

Proposal Summary Form

Proposal Summary Form 2012/13	NZ TRANSPORT AGENCY WAKA KOTAHI
Proposal number:	*(allocated by NZ Transport Agency)*
Specification ref(s): – see Annex B	**ART 17**
PROPOSAL TITLE AND KEY RESEARCH AREA	
Proposal title:	Metropolitan public transport rail – the external benefits and the optimal level of public funding for rail
Research organisation:	Covec
EXPLANATION OF THE RESEARCH	
What is the purpose of research? Provide a succinct statement describing the purpose of the research.	The overarching purpose is to develop robust information and advice of practical benefit to NZTA and other stakeholders when engaged in evaluating and recovering the costs of metropolitan rail investments. Within this, there are four specific purposes: 1. To estimate the way metropolitan rail transport usage benefits different groups within the community, including both users and non-users of rail. 2. To derive principles for guiding decisions over the allocation of metropolitan rail costs between groups. 3. To explain and illustrate the implications of the above work for the economic instruments currently used to assess projects, recover costs and set optimal fare levels. 4. To derive optimal cost allocations between relevant groups and translate the allocation for rail patrons into optimal average fare levels.

What are the objectives of the research?	In support of purpose 1, the objectives are to: • identify all groups in New Zealand society that are affected by metropolitan rail usage whether directly or indirectly; • using relevant data and information, quantify these impacts including the way they are expected to vary with rail usage; • report on the reliability/precision of the resulting estimates. In support of purpose 2, the objectives are to: • identify and clearly articulate the policy principles that are relevant to cost allocation for metropolitan rail; and • explain how these principles can be applied bearing in mind o the level of (dis)aggregation in the impact estimates derived above; o the distinction between capital and operating costs and the desirability of full capital cost recovery over time; o the industry structures for different stakeholder groups (e.g. monopoly, concentrated, competitive); and o the need for practical advice based on a solid conceptual framework and firmly grounded on facts. In support of purpose 3, the objectives are to: • review the relevant existing processes for evaluating projects (EEM) and raising/allocating revenue (farebox recovery policy, FAR and rail fare setting in Wellington and Auckland); • evaluate these processes in light of the empirical and conceptual work reported under purposes 1 and 2; and • explain and evaluate the materiality of any implications for changes to the existing processes. In support of purpose 4, the objectives are to: • undertake financial analysis to explore different scenarios for fully allocating capital and operating costs between groups, subject to all scenarios being consistent with the principles; • to recommend specific allocations for capital and operating costs between groups; and • to translate the allocation for rail passengers into optimal average fare levels for Auckland and Wellington.

What are the linkages with other relevant research nationally and internationally?	There is recent Australian research on the externalities associated with Sydney's metropolitan rail, commissioned by IPART, the state-level utility regulator for NSW. We have reviewed that work and consider that it is reasonably strong from an empirical standpoint but the empirical methods used are not directly applicable to this project. Moreover, whereas the Australian work was focused primarily on estimating a preferred mix of public funding and fares, the scope of this project is rather broader. Compared to the IPART work, we envisage a report that has a stronger emphasis on detailed principles and application and somewhat less emphasis on empirical estimation. Other recent applied research includes a comparative analysis of 24 metropolitan rail systems in the USA (both light and heavy rail) reported by Guerra (2010). This work seeks to estimate overall net economic benefit or detriment and is based on relatively high-level comparative data. Guerra's work is conceptually sound but by comparison we envisage more empirical detail and considerably more work on applications and implications. There is also an extensive economic literature that analyses cost recovery in transport industries including rail. A good example and introduction to this literature is the special issue Journal of Transport Economics and Policy (2005, Vol39). We are familiar with this literature and will draw on it and cite it as appropriate. More generally, economists have analysed cost allocation in considerable detail through the lens of co-operative game theory, focusing in particular on understanding boundaries/limits for cost shares that can sustain co-operation among stakeholder groups. Most of the practically useful implications of this literature have been known for some decades and a useful summary is available in H. Peyton Young (ed) Cost Allocation, North Holland, 1985. Again, we are very familiar with the key findings of this literature.
What, if any, are the proposed additions to scope?	The scope appears limited to studying the benefits of metropolitan rail. There may also be external costs. For example, the literature analyses congestion costs in metropolitan rail arising from a mismatch between demand and supply. We will consider this possibility during the project and incorporate such effects if they appear relevant.
What are the opportunities for collaboration?	We will interact with staff from the NZTA, Ministry of Transport and local and regional transport agencies. In assessing the research questions, interaction with other stakeholders is also likely to be necessary, including rail service providers and representatives of ratepayers, rail users, landowners, developers and others.

What are the synergies with other proposed research and/or opportunities for innovation?	The outputs from this research project should be useful to those undertaking the scheduled review of the NZTA's economic evaluation manual in 2012/13 as well as the NZTA's review of the farebox recovery policies in Auckland and Wellington. The implications for innovation will depend on the extent to which this work points towards beneficial changes in the economic policies and instruments currently in use. In principle, any changes that move towards better decision making can be thought of as beneficial innovation, even if (for example) they result in less investment in metropolitan rail.
What is the intended methodology? Briefly outline the method/s you will use.	**Initiation** Discussion with NZTA to either confirm or adjust our proposed work plan. **Literature review** Briefly describe the extent of metropolitan rail in New Zealand, the technologies used, key operational and funding organisations Review and summarise the way capital and operating costs of metropolitan rail have been funded in New Zealand over the last 15-20 years. Review the scale, motivation and financing history of investment in metropolitan rail over the last 15-20 years. Review the international literature on cost sharing for metropolitan rail and compare with current structures in New Zealand. **Economic principles for costing and cost allocation (operating and capital costs)** Drawing on documented sources and relying on fundamental economic concepts of efficiency and equity, outline the economic principles relevant to cost allocation in this context. Using well established principles of regulatory economics, describe an appropriate structure for estimating the revenues required by the monopoly network provider. Applying these principles, compare their implications with the status quo, highlighting any differences (under- or over-payment) by stakeholder group. **Economic modelling and estimation** Describe how externalities and other relevant parameters (notably capital and operating costs and patronage) fit within an economic model of cost sharing for metropolitan rail. Collate relevant data, drawing on fully documented third party sources where necessary. Estimate the direct and externality benefits currently accruing to different stakeholder groups in NZ's metropolitan rail sector. **Financial analysis** Develop and describe/illustrate a financial model that explores different methods for achieving full cost recovery over time. Scenarios will vary according to depreciation profile (which affects the allocation of capital costs) and different cost allocations between groups. **Policy implications** Pulling all of the above together, describe and justify the cost allocation options that would be consistent with the principles *and* the empirical realties in NZ. Derive from this the optimal rail fares (average revenue per passenger) for metropolitan rail in Wellington and Auckland (recognising that this may be a range of values).

What will the research outputs be?	The primary output will be a comprehensive research report to be published on the NZTA's website. This will include a description of our methodology and findings. The report will also include clear recommendations for the allocation of metropolitan rail costs (both capital and operating costs) between relevant groups. The recommended allocation to patrons of metropolitan rail will be further translated into summary recommendations on fare levels, from which point more detailed tariff design can be undertaken (e.g. price discrimination, zonal fares etc).
How will end-users be able to use, implement or apply the research?	The report will contain clear recommendations for cost allocation between groups and for average fare per passenger. End-users should therefore be able to implement the findings of the research quite readily. Depending on the findings however, there may be political roadblocks to implementation.
What are the actions that you plan to implement, use or apply the research?	We will primarily rely on dissemination of the report to influence implemented. However in the event that there are political barriers to such implementation, Covec is willing and able (subject to further contract discussions) to interact and/or negotiate directly with other groups to promote implementation.
Briefly, what skills, capability and experience will the research team bring to the research (including project management)?	Covec is New Zealand's foremost economics and research consultancy. We are regularly tasked to analyse and advise government agencies on the most difficult and contentious of issues. Our analytical approach is firmly grounded in economic theory, uses data and other information judiciously, and is reported through clear, concise and complete documents. While we have used and are familiar with all of the tools and modelling techniques available to modern economists, we are also acutely aware that tool/model selection is a rare skill. For example, if a general equilibrium model is necessary and appropriate, we will use it. However in many cases (including this one), there are much better methods available.
What is the team's track record for delivery of research?	Our track record includes the following recent projects (many other relevant projects are discussed in the body of this proposal below): • Rail Infrastructure Investment Appraisal: Covec was engaged (in 2005-06) by the Ministry of Transport to develop a framework for evaluating public investment in rail infrastructure. • Bus Contract Benchmarking: Covec is assisting NZTA to develop a benchmarking approach to public transport contracting. This would enable regional councils to use information from competitive bids to inform price setting for negotiated contracts. • Transport Indicators and Benchmarking: Covec is currently working for NZTA to develop a framework for measuring the contribution of land transport to the wellbeing (welfare) of New Zealanders. This project involves developing indicator definitions, reviewing international practice, and making recommendations for specific indicators and how these could be presented in a coherent wellbeing framework. [transport economics] • Economic Framework for Land Transport Funding Decisions: Covec was commissioned to develop a framework that the Ministry of Transport could use to compare alternative solutions to funding shortfalls arising in the context of the "pay-as-you-go" approach to land transport funding in New Zealand. The alternative options included deferral of some projects, increasing fuel taxes and RUCs, and borrowing. Starting from first principles, we used the concepts and methods of economics to develop and illustrate a robust and useable framework.
What are the risks of this particular research and how will they be mitigated?	The primary risks of this project are related to the methods used in the empirical estimation of key parameters. As noted above, Covec is willing and able to formulate and estimate robust econometric models for this purpose, but doing so within the available timeframes will require early access to suitable data. We will pursue this matter vigorously at the outset of the project, but there is a risk that we will need to rely instead on third party estimates for some of the key parameters. There are no material risks regarding Covec personnel. We have put forward a strong and well-balanced team that is not unduly reliant on any single person, and are therefore confident that the project could be delivered on-time and to a high standard even if one of our team became unavailable for any reason.

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KEY PERSONNEL AND ANY SUBCONSULTANTS/SUBCONTRACTORS, AND THE PERCENTAGE OF PROJECT TIME APPORTIONED TO THEM:			
Name	**Position**	**Organisation**	**%Time**
Reuben Irvine	Consultant	Covec	30%
Dr Aaron Schiff	Director	Covec	30%
Dr John Small	Director	Covec	30%
Dr Tim Denne	Director	Covec	10%

PROPOSED PEER REVIEWERS		
Name	**Position**	**Organisation**
Dr Adolf Stroombergen	Chief Economist and Director	Infometrics
TBA as explained below		

CONFIDENTIALITY *Please outline any commercially sensitive information or confidentiality issues the NZTA should be aware of regarding your proposal. (Researchers are invited to discuss confidentiality issues with the NZTA.)*
No issues.

1 Research Purpose and Objectives

The overarching **purpose** of the research is to investigate the supply and demand sides of metropolitan rail markets in New Zealand to develop robust information and advice of practical benefit to NZTA and other stakeholders when engaged in evaluating and recovering the costs of metropolitan rail investments.

Within this, there are four specific purposes:

1. To estimate the way metropolitan rail transport usage benefits different groups within the community, including both users and non-users of rail.

2. To derive principles for guiding decisions over the allocation of metropolitan rail costs between groups.

3. To explain the implications of the above work for the economic instruments currently used to assess projects, recover costs and set optimal average fare levels.

4. To derive optimal cost allocations between relevant groups and translate the allocation for rail patrons into optimal average fare levels

The key **objectives** of the research are linked closely to the research purpose. In support of purpose 1, the objectives are to:

- identify all groups in New Zealand society that are affected by metropolitan rail usage whether directly or indirectly;

- using relevant data and information, quantify these impacts including the way they are expected to vary with rail usage; and

- report on the reliability/precision of the resulting estimates.

In support of purpose 2, the objectives are to:

- identify and clearly articulate the policy principles that are relevant to cost allocation for metropolitan rail; and

- explain how these principles can be applied to cost allocation and the estimation of average fares per passenger, bearing in mind

    - the level of (dis)aggregation in the impact estimates derived above;

    - the distinction between capital and operating costs and the desirability of full capital cost recovery over time;

    - the industry structures for different stakeholder groups (e.g. monopoly, concentrated, competitive); and

  - the need for practical advice based on a solid conceptual framework and firmly grounded on facts.

In support of purpose 3, the objectives are to:

- review the relevant existing processes for evaluating projects (EEM) and raising/allocating revenue (farebox recovery policy, FAR and rail fare setting in Wellington and Auckland);

- evaluate these processes in light of the empirical and conceptual work reported under purposes 1 and 2; and

- explain and evaluate the materiality of any implications for changes to the existing processes.

In support of purpose 4, the objectives are to:

- undertake financial analysis to explore different scenarios for fully allocating capital and operating costs between groups, subject to all scenarios being consistent with the principles;

- recommend specific allocations for capital and operating costs between groups; and

- translate the allocation for rail passengers into optimal average fare levels for Auckland and Wellington.

2 Explanation of the Research

2.1 Similar Research

We propose that the first stage of this project involve a comprehensive domestic and international literature review. At this stage we have identified the following groups of literature that are likely to have a bearing on this work.

- Practical applications of economics to issues closely related to this project in other countries. This includes work recently commissioned for IPART in Australia (as cited in the RFP), and comparative work on metropolitan rail systems in the USA.

- Economic research on optimal cost recovery of transportation capital and operating costs.

- Fundamental research in the field of co-operative game theory as it applies to cost allocation.

2.2 Scope Additions

We propose just one minor scope addition, which is to remain alive to the potential for metropolitan rail transport to generate negative (as well as positive) externalities. At this point it is not clear how important this issue will be.

Upon completion of this project, it is possible that additional work may be necessary to refine the empirical work somewhat. There are two areas where this may apply.

First, as discussed below, given the breadth of this project it may be necessary to draw on previous literature to estimate some of the key parameters. Depending on how sensitive the results are to these estimates, there could be merit in undertaking more specialised empirical work.

Second, the translation of optimal cost allocations for passengers into optimal fares is a large and complex project once the finer points of tariff optimisation are considered. For example, some level of price discrimination may well be efficient (eg peak and off-peak rates). There may also be a trade-off between simplicity and accuracy (eg related to zonal fares). Cross-over into other modes (eg bus and ferry) would also be considered in a full tariff optimisation project. We propose to concentrate on estimating an average fare per passenger, but are interested and willing to work on any subsequent tariff optimisation project.

2.3 Opportunities for Collaboration

During this project we will interact with staff from the NZTA, and with rail operators and other local and regional transport agencies where possible. This will ensure we have a good understanding of the relevant issues and available data.

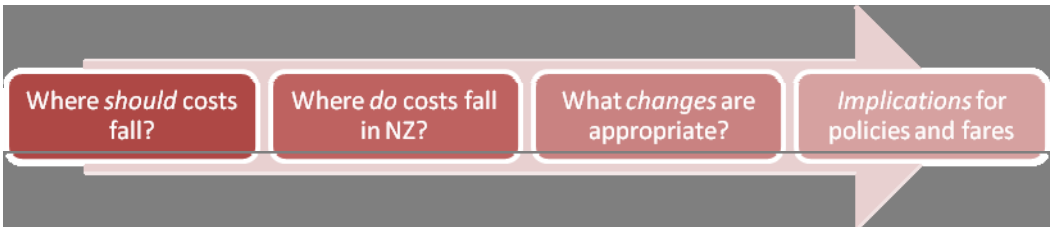
2.4 Synergies with Other Research

There are two forthcoming projects that are likely to be informed by this work. One is a review of the farebox recovery policy. This policy is currently aiming for fares to recover 50% of operating costs. We expect our work to provide useful information to the policy review.

Secondly, there is a review of the Economic Evaluation Manual (EEM) scheduled for 2012-13 which could be informed by this work. To the extent that rail projects compete for funds with roading, TDM and other projects, it should be helpful to have better information on the external benefits of metropolitan rail.

3 Methodology

Our general approach to this project can be summarised in the following graphic.



Clearly therefore, the project traverses a lot of ground, from the estimation of externalities through the institutional arrangements for metropolitan rail in New Zealand, to financial analysis of cost allocation and optimal rail fares. We consider that overall success will therefore depend heavily on

- judicious use of pre-existing information; combined with
- careful attention to properly representing the precision/reliability of the results.

With these considerations in mind, we now elaborate on the methodology outlined in the Proposal Summary Form. We anticipate that the final report will follow a similar structure to what follows in the description section (with the addition of an executive summary and appendices).

3.1 Description of Methodology

Literature review

The final report will include a section summarising the way metropolitan rail is organised in New Zealand, noting for example the technologies used and planned, the network and train service operators, and other relevant facts such as there being a vertically integrated structure in Wellington but not Auckland. Key funding channels will also be identified.

We will then review and summarise history of metropolitan rail in New Zealand over the last 15-20 years, with particular reference to:

- the way capital and operating costs have been funded in New Zealand;
- recent and planned investments in infrastructure and rolling stock; and
- the rationales given for these decisions.

We will also outline the way the theoretical and applied international literature views the general issue of cost sharing for metropolitan rail and compare this at a high level with current structures in New Zealand.

Economic principles for costing and cost allocation

This stage of the methodology involves standing back from what is currently happening in New Zealand and drawing on economic principles to assess what should happen.

This work will consider operating costs and capital costs separately. It will also have regard to the potential for increasing returns to patronage in passenger rail and the implications of this.

We will start with very basic economic principles concerning efficiency and equity, trace these through the cost allocation literature (without labouring the point) and distill from this analysis the economic principles relevant to cost allocation in this context.

This work will not be limited to cost allocation however. We will also consider the level of revenues needed by the monopoly network operator in order to recover costs over time. We will address this through well established principles of regulatory economics, and will describe an appropriate structure for estimating necessary revenues.

The final step is to apply these principles, compare their implications with the status quo, highlighting any differences (under- or over-payment) by stakeholder group. It should be noted that in some cases, this approach leads to quite wide ranges of potentially fair and efficient costs. For example, it is common for economists to observe that anything between "incremental cost" and "stand-alone cost" is potentially acceptable. While this is often true, it is also often unhelpful from a practical standpoint. We will explain how co-operative game theory can narrow these ranges.

Economic modelling and estimation

This section of work will use diagrams and text to describe how externalities and other relevant parameters (notably capital and operating costs and patronage) fit within an economic model of cost sharing for metropolitan rail. This will support our analysis of how costs should be allocated.

We expect that we will need to draw on (fully documented) third party sources to compile information on some relevant parameters, particularly demand elasticities but possibly also including some estimates of externalities. For other information (patronage and fare data, cost estimates) we anticipate that the rail operators will hold the relevant information, while existing funding levels and structures will be drawn from the literature review stage.

It is important to note that Covec would be very keen to undertake direct econometric estimation of key parameters where possible. Our team includes highly skilled econometricians capable of such work. However we need to be realistic about our time allocation in the context of this particular project, so unless good quality data are readily available we may need to rely on third party sources.

Using these inputs we will estimate the direct and externality benefits currently accruing to different stakeholder groups in NZ's metropolitan rail sector. Potential beneficiary groups include:

- rail patrons;
- road-based commuters;
- road accident victims;
- landlords and other property owners;
- central and local governments; and

- the general public.

Financial analysis

We will develop a financial model that explores different methods for achieving full cost recovery over time. This will be spreadsheet based and we will use it to explore a range of possible scenarios for allocating costs. Scenarios will vary according to depreciation profile (which affects the allocation of capital costs over time) and different cost allocations between groups. The report will summarise this scenario analysis succinctly.

Policy implications

The final step is to pull together all of the above analysis to describe and justify the cost allocation options that would be consistent with the principles and the empirical realties in NZ.

It also seems that NZTA would like a set of optimal rail fares for metropolitan rail in Wellington and Auckland calculated. We will set up the financial model to ensure that fares emerge as one of the outputs. We note however that there is a reasonable chance that the final result will be a range of values for fares rather than a single value.

More substantively, we note that it may well be efficient to use some price discrimination in setting fares (eg off-peak discounts), and the RFP notes that potential for zonal fares and integrated fares. Decisions on these matters are likely to be very influential for patronage outcomes. We consider that such matters are beyond the scope of this project. Our optimal fare recommendations are likely to be at a higher level of aggregation.

3.2 Milestone Schedule

The following table shows our proposed milestone schedule for this project assuming work is commenced by 11 October 2012. Our planning suggests that there will be a complete draft available for peer review by the end of March 2013. Beyond that point the schedule is somewhat leisurely so we consider that it would be possible to advance it so that the entire project is completed by 30 June 2013 if required.

Milestone schedule	Completion date	Cost	Invoice amount	Invoice amount as %age of total cost
Milestone 1: Literature review & economic principles	7/12/12	$12,000	$4,000	5%
Milestone 2: Steering group meeting 1	14/12/12	$1,000		

Milestone schedule	Completion date	Cost	Invoice amount	Invoice amount as %age of total cost
Milestone 3: Empirical modelling (economic and financial)	1/3/13	$31,000	$20,000	25%
Milestone 4: Steering group meeting 2	8/3/13	$1,000		
Milestone 5: Complete draft for peer review	29/3/13	$11,000	$16,000	20%
Milestone 6: Peer review complete	19/4/13	$5,000		
Milestone 7: Steering group meeting 3	26/4/13	$1,000		
Milestone 8: Draft final research report	28/06/13	$10,000	$32,000	40%
Milestone 9: Final report published	30/07/13	$8.000	$8,000	10%
	Totals:	**$80,000**	**$80,000**	**100%**

3.3 Strengths and Weaknesses

We consider that our proposed methodology is the best way to address the research questions posed by NZTA. Its main strength is that it is firmly grounded in both factual and theoretical terms. This means that the results will be practically useful while also able to be robustly defended against intellectual challenge if necessary.

A secondary strength is the clear indications given above that Covec will judiciously select data, information and methods so as to deliver a report that covers a lot of ground without being shallow in any way. Where further detailed empirical work is warranted but beyond scope, we will recognise that and qualify our conclusions and recommendations accordingly. This approach should help to ensure that the report is genuinely useful to all stakeholders.

This proposal has no significant weaknesses.

4 Research Project Outputs

The primary output of this project will be a comprehensive research report suitable for publication on the NZTA's website. As outlined above, this report will include a description of our methodology and findings. We would also be happy to make our spreadsheet modelling available for publication.

We are well aware that many of the largest and most significant rail-related decisions have been highly influenced by political considerations in recent years, and arguably this is likely to continue. In our view, this is all the more reason to develop and promote sound advice of the type we propose, firmly grounded in both fact and theory. It is therefore critical that the report be, and be perceived to be, objective and politically neutral.

Covec has considerable experience of working successfully to provide sound and objective advice to government agencies facing politically charged environments. In the last 2-3 years we have completed such projects for three different government agencies in connection with

- the government's investment in UltraFast Broadband
- amendments to the legislation governing the dairy industry; and
- regulating natural monopolies.

In our experience, stakeholders are more inclined to buy into and respect analysis of this type if they are engaged in a respectful and disciplined way during the process of analysis. We will work closely with NZTA to form an appropriate steering group and will then strive to ensure that each member of this group is able to understand and respect the final outputs.

In summary, this is not simply a report writing project. Rather, NZTA can be assured that Covec, while working towards the final report, will:

- interact with stakeholders in a respectful and disciplined manner;
- seek to accommodate alternative views where possible but in any case ensure they are covered in the report; and
- do our utmost to ensure NZTA's satisfaction.

5 Implementation

We expect that the primary end users of this research will be the NZTA itself, other central government transport policymakers (e.g. the Ministry of Transport), funding agencies (eg Auckland Transport) and metropolitan rail service operators.

As outlined above, our research report will include specific recommendations in terms of the cost shares that would be appropriate for all relevant stakeholder groups, and high-level recommendations regarding rail fares. It seems likely that implementation of the recommendations will require actions by several different agencies. For example, to the extent that rates funding is appropriate, local government Councils will need to be involved in order to secure full implementation.

In the event that discussions and/or negotiations are required to progress implementation through agencies that are "one step removed" from rail industry issues, Covec is willing and able to assist in those processes, pursuant to a follow-on contract.

6 Risk Assessment

The primary risks of this project are related to the methods used in the empirical estimation of key parameters. As noted above, Covec is willing and able to formulate and estimate robust econometric models for this purpose, but doing so within the available timeframes will require early access to suitable data. We will pursue this matter vigorously at the outset of the project, but there is a risk that we will need to rely instead on third party estimates for some of the key parameters.

There are no material risks regarding Covec personnel. We have put forward a strong and well-balanced team that is not unduly reliant on any single person, and are therefore confident that the project could be delivered on-time and to a high standard even if one of our team became unavailable for any reason.

7 Research Capability, Experience & Capacity

7.1 Proposed Team

Covec is pleased to offer a highly experienced team for this project. The team has many successful projects to its credit, including work involving

- the estimation of externalities associated with rail transport;
- welfare and regulatory economics for government agencies; and
- detailed financial modelling

Further details of our relevant experience are given in section 7.2 below.

Following are brief details of the proposed team members and their proposed roles in the project. Full CVs are attached to this proposal.

Reuben Irvine is an economist with over 10 years of professional experience. He has expertise in competition, regulatory and taxation economics, and experience in analysing economic, regulatory and public policy issues across a wide range of sectors, including network industries, such as telecommunications. Reuben has particular expertise in analysing complex issues in welfare economics including the interaction of direct and external costs and benefits. For this project, Reuben Aaron will be the project leader, responsible for management and delivery, and will be NZTA's primary point of contact.

Dr Aaron Schiff is an economist with ten years of consulting and academic experience. He is highly skilled in data analysis and economic modelling. Aaron has recently led a research project on aviation data gaps and indicators for the Ministry of Transport and is currently leading work on transport indicators for NZTA. He has also led work for Watercare on demand forecasting and tariff design, and consulted for a range of sectors in New Zealand and abroad, including transport, telecommunications, banking and payment systems. Aaron will be involved in all aspects of this project.

Dr John Small has over 20 years of experience in econometrics, economic analysis and public policy. He has worked in across all utility sectors and advised key decision makers at the highest levels of government and industry. John previously led Covec work to develop a model for evaluating public rail infrastructure investment (including externalities) for the Ministry of Transport, and has recently been closely involved in advising government agencies on sensitive issues related to fibre-optic investment (UFB), the dairy sector, and the design of economic regulation. John will be involved in all aspects of this project.

Dr Tim Denne has 25 years of experience in economic analysis and public policy. He has worked in transport, energy, natural resource, industrial and environment sectors. Recently his work has included difficult applications of welfare economics to the design of bio-diversity offsets, and to the analysis of bus transport in Auckland. Tim was

previously a member of the core team designing the ETS and he has advised the Ministry of Justice on risk measurement approaches that could be used as the basis for a risk-based alcohol licence fee, and data gap analysis for MfE to assist it in its analysis of the value of alternative water allocation approaches. Tim will be involved with all aspects of this project, particularly in relation to the treatment of externalities.

7.2 Relevant Experience

Covec is New Zealand's foremost economics and research consultancy. We are regularly tasked to analyse and advise government agencies on the most difficult and contentious of issues. Our analytical approach is firmly grounded in economic theory, uses data and other information judiciously, and is reported through clear, concise and complete documents. While we have used and are familiar with all of the tools and modelling techniques available to modern economists, we are also acutely aware that tool/model *selection* is a rare skill. For example, if a general equilibrium model is necessary and appropriate, we will use it. However in many cases (including this one), there are much better methods available.

In selecting recent experience of relevance to this project we have chosen projects that illustrate the following features of our track record.

- Transport economics
- Rail investment
- Tariff setting
- Cost allocation
- Financial modelling
- Welfare analysis
- Political sensitivity
- Econometrics and statistics

More details of Covec's experience and expertise can be found on our website at www.covec.co.nz.

Rail Infrastructure Investment Appraisal: Covec was engaged (in 2005-06) by the Ministry of Transport to develop a framework for evaluating public investment in rail infrastructure. The purpose was to assist the Ministry to develop sound advice for Ministers in response to requests for funding from the monopoly network owner/operator. The framework was oriented towards rail freight rather than metropolitan rail. It incorporated externalities including those arising from reductions in road freight and was encapsulated in a written report and a spreadsheet model. [*Rail investment, transport economics, welfare analysis, econometrics and statistics*]

Bus Contract Benchmarking: Covec is assisting NZTA to develop a benchmarking approach to public transport contracting. This would enable regional councils to use information from competitive bids to inform price setting for negotiated contracts. It is examining the feasibility of a benchmarking system based on different levels of data availability and includes the evaluation of systems using data envelopment analysis

(DEA), econometrics and component cost benchmarking. [*transport economics, econometrics and statistics*]

Transport Indicators and Benchmarking: Covec is currently working for NZTA to develop a framework for measuring the contribution of land transport to the wellbeing (welfare) of New Zealanders. This project involves developing indicator definitions, reviewing international practice, and making recommendations for specific indicators and how these could be presented in a coherent wellbeing framework. [*transport economics*]

Vehicle Fleet Model: Covec developed for EECA a model of the vehicle fleet that includes vehicles in size, age, and fuel categories, plus projections of vehicle kilometres. It is used to project future fuel demand and to analyse the impacts of technology shifts and government policy. [*transport economics, econometrics and statistics*]

TMIF Aviation and Maritime Data Gaps: Covec was engaged by the Ministry of Transport to undertake two separate projects to review existing aviation and maritime data in New Zealand and assess data gaps in the Ministry's Transport Monitoring Indicators Framework (TMIF). These projects involved developing a set of data definitions (consistent with international standards), developing methodologies for populating the indicators, assessing available data, and consulting with the aviation and maritime industries regarding the practicalities of populating the indicators. [*transport economics*]

Monopoly Regulation: Covec has been advising the New Zealand Commerce Commission for several years on aspects of its monopoly regulation regime under the Commerce Act. Of particular relevance here, we advised on cost allocation issues, which are important for regulated airports and electricity distribution businesses. We also advised in detail on the valuation of regulated assets and depreciation policies both of which are relevant to KiwiRail's network business. [*tariff setting, cost allocation, political sensitivity*]

Dairy Economics: Covec was asked to assist the Ministry of Agriculture and Fisheries (now MPI) to assess Fonterra's pricing for farm gate milk during 2011-12. We developed a conceptual framework, interrogated Fonterra's modelling (including cost allocation issues) and advised on several contentious aspects of the legislation recently passed by Parliament. [*tariff setting, cost allocation, financial modelling, political sensitivity*]

Telecommunications Liberalisation: Covec advised the governments of Vanuatu and the Solomon Islands (2007-8) during separate processes, each of which resulted in monopoly telecommunications companies yielding their franchise licences several years early and accepting a new model of regulated competition. Our work involved face-to-face negotiations, detailed modelling of the financial implications for the monopolists, tariff design, and the design of regulatory regimes. In the case of Vanuatu, Covec was subsequently contracted to regulate the market for the first three years following liberalisation. [*tariff setting, welfare analysis, financial modelling, econometrics and statistics, political sensitivity*]

Welfare Economics in Network Industries: In June 2012, Covec taught a three-day short course for analysts at the New Zealand Treasury on the subject of competition and regulation in network industries. The course included coverage of foundational concepts drawn from welfare economics, the theory and practice of economic regulation in New Zealand and elsewhere, and the tools and methods of competition analysis. The course was well received and we have recently agreed to repeat it for the Government Economics Network over the next two weeks. [*welfare analysis, cost allocation, tariff setting*]

7.3 Track Record

The following projects in addition to those listed in the previous section demonstrate Covec's track record in providing similar services.

Project name	**Economic Framework: Land Transport Funding Decisions**
Description	Covec was commissioned to develop a framework that the Ministry of Transport could use to compare alternative solutions to funding shortfalls arising in the context of the "pay-as-you-go" approach to land transport funding in New Zealand. The alternative options included deferral of some projects, increasing fuel taxes and RUCs, and borrowing. Starting from first principles, we used the concepts and methods of economics to develop and illustrate a robust and useable framework.
Location	Auckland
Contract value	s 9(2)(b)(ii)
Programmed completion date	June 2012
Completion date	June 2012
Client contact	Margaret Mabbett Manager, Funding and Infrastructure, Ministry of Transport s 9(2)(a) m.mabbett@transport.govt.nz

Project name	**Water demand modelling and forecasting**
Description	Watercare engaged Covec to analyse and model the drivers of demand for water in Auckland. This data-intensive project involved time-series analysis of demand trends, as well as cross-sectional analysis of demand across Auckland as a function of population and business characteristics in different areas. The resulting data analysis was presented in a comprehensive report to Watercare, with visualisations of demand and the relationships to demand drivers, as well as a spreadsheet model capturing these relationships.
Location	Auckland
Contract value	s 9(2)(b)(ii)
Programmed completion date	October 2011
Completion date	November 2011
Client contact	Charlotte Reed Tonkin & Taylor (formerly Demand Management Planner at Watercare) s 9(2)(a) creed@tonkin.co.nz

Project name	**Analysis of Air NZ – Virgin Alliance**
Description	For the Ministry of Transport, Covec undertook an economic competition and welfare analysis of the proposed trans-Tasman alliance. This involved extensive data analysis and quantitative modelling of trans-Tasman airfares and demand (passenger flows), using data from arrival and departure cards and commercial data sources.
Location	Wellington
Contract value	s 9(2)(b)(ii)

Programmed completion date	December 2010
Completion date	December 2010
Client contact	John Macilree Principal Advisor, Ministry of Transport s 9(2)(a) j.macilree@transport.govt.nz

7.4 Capacity and Technology

We expect that completing this project will require approximately 320 hours work over approximately six months assuming most of the work will be completed by the end of March 2013 as envisaged in the milestone schedule. This represents less than a 10% workload on average for the team members. Taking into account expected other work over the project timeframe; we are confident that we have sufficient capacity to complete this project by the deadline.

No significant equipment or technology will be required for this project beyond standard computer hardware and software, which we already have available.

7.5 References or Reference Sites

The following referees can be contacted in relation to our experience and expertise:

Margaret Mabbett Manager, Funding & Infrastructure, Ministry of Transport
m.mabbett@transport.govt.nz
s 9(2)(a)

Andrew Hume Manager, Resource Management Policy, Ministry for Primary Industries
andrew.hxxx@xxx.xxxx.nz
s 9(2)(a)

Calum Gunn Chief Advisor, Regulation Branch, Commerce Commission
calum.gunn@comcom.govt.nz
s 9(2)(a)

8 Project Steering Group and Peer Review

8.1 Project Steering Group

We propose to discuss the precise composition of the steering group with NZTA. However at this point it would seem helpful to have representatives from the following organisations present:

- NZTA
- The Ministry of Transport
- Auckland Transport
- Kiwi Rail
- Veolia
- Greater Wellington Regional Council
- Auckland Council

8.2 Peer Review

A complete draft report will be peer reviewed by milestone 6 of milestone schedule presented above. The draft final report provided to NZTA will incorporate the reviewers' comments.

We propose that one of the peer reviewers be:

Dr Adolf Stroombergen	Chief Economist and Director Infometrics

Rather than approaching a second peer reviewer at this proposal stage, we would like to discuss this choice with NZTA. The main alternatives we propose would be

(a) An econometrics specialist, in the event that the data are available to undertake our own modelling directly; or

(b) An international specialist in rail funding.

(c)

Annex A: Company Detail

a.	**Full legal name:**	Covec Limited
b.	**Trading name:**	Covec Limited
c.	**Contact person:**	John Small Covec PO Box 3224, Shortland St, Auckland 09 916 2012 john.small@covec.co.nz
d.	**Contract authority:**	Same as contact person
e.	**GST registration number:**	80-555-199
f.	**Financial viability and stability:**	Covec has been in business for over 10 years and is currently profitable. Financial accounts are available on request.
g.	**Confidentiality:**	We confirm that our employees' agreements and subcontractor or consultant contracts stipulate that the information gained by individuals working on customer projects is not to be commercially exploited, nor disclosed to any party after such agreements or contracts have been terminated.
h.	**Legal status:**	Limited liability
i.	**Country of residence:**	New Zealand
j.	**Details of owners/controllers:**	Tim Denne John Small Shane Vuletich
k.	**Insurance:**	Professional indemnity Up to NZ$2,000,000 QBE Insurance (International) Ltd General liability Up to NZ$2,000,000 QBE Insurance (International) Ltd
	Lawyers:	Webb Henderson Level 1, 110 Customs St West PO Box 105-426, Auckland 09 970 4100 info@webbhenderson.com

Bankers:	Kevala Shismanian ASB 0800 272 222 kevala.shismanian@asb.co.nz
Accountants:	Lynne Small Earthstar Chartered Accountants s 9(2)(a) lynne@earthstar.co.nz

Dr John Small

John applies the tools and techniques of economics to issues at the boundary between public policy and private business, and on either side of that boundary.

He has worked in all major network industries, in banking and finance, agriculture, food processing, and on regional economic development. He is particularly interested in competition, regulation, market risk assessment, efficient contracting, and start-up businesses.

Areas of Expertise

- Competition & regulatory economics
- Economic & social development
- Economic modelling & analysis
- Financial analysis
- Forecasting & projections
- Research & data collection

Education

PhD in economics
The University of Canterbury, 1993

BA in economics (1st class honours)
The University of Canterbury, 1990

BSc in economics
The University of Canterbury, 1989

Employment History

Director
Covec, New Zealand
2001 – Present

Lay Member
High Court of New Zealand
2003 – Present

Head of Department, Economics
University of Auckland
2003 – 2004

Director
CRNEC – University of Auckland
1998 – 2004

Director
Network Economics Consulting Group, Australia
1998 – 2001

Lecturer & Senior Lecturer, Economics
University of Auckland, New Zealand
1994 – 2004

Lecturer, Economics
University of Canterbury, NZ
1993

Teacher, Mathematics
Karamea School, Karamea, NZ
1987 – 1988

Experience – Representative Sample

Telecommunications Regulation. Won international tender to supply and support the first independent regulator of telecommunications in Vanuatu.
AUSAID, 2008-10

Dairy Economics. Expert advice to team of officials co-ordinated by MAF to investigate milk pricing in New Zealand. *MAF, 2011-12.*

Infrastructure Valuation and Cost Recovery. Expert advisor to Commerce Commission during development of "input methodologies" that define how regulation will be applied to electricity and gas networks and airports.
Commerce Commission, 2009-10.

Market Rules. Expert advisor on proposed change to rules governing wholesale electricity market in Australia. *Australian Energy Markets Commission, 2012.*

Heritage Valuation. Investigating the value to society at large from planning restrictions designed to preserve heritage features in certain Auckland locations. *Auckland City Council, 2008-10.*

Water Development Options: Two reports. One focused on evaluation of alternative (and complementary) options for augmenting supplied of fresh water (including demand management); the other evaluating network development options for waste water infrastructure. This work was undertaken as part of the "three waters" programme of work.
Watercare Ltd, 2007.

Waste Policy: Advising on costs and benefits of alternative methods for reducing waste-to-landfill in the Auckland region..
Auckland Council, 2011-12

Aviation Merger: Economic modelling to predict the impact of a proposed trans-Tasman alliance between Air New Zealand and Virgin on aviation competition and the New Zealand economy more generally.
Ministry of Transport, 2010-11

Telecommunications Negotiations: Economic modelling of compensation and direct negotiations with incumbent telecommunications company to prematurely end its statutory monopoly Work required forecasting of company profits under status-quo and competitive scenarios.
Government of Vanuatu, 2007
Government of Solomon Islands, 2009-09

Gas Pipeline Investment: appointed to a Panel of Expert Advisors convened by gas industry co-regulator to reform gas pipeline access arrangements and investment approval processes.
Gas Industry Company, 2011-12

Demand for Fibre Services in Auckland: Major report quantifying potential demand for fibre-to-the-home and modelling the business case for investment.
Auckland, Manukau and Waitakere Cities, 2008

Broadcast Royalties: Economic analysis of the appropriate royalty payable by radio broadcasters to recording companies pursuant to a reference to the Copyright Tribunal, including econometric modelling of the value to record companies of radio airplay.
Radio Broadcasters Association, 2008-09

Electronic Payments. Developed an electronic payments strategy for national grocery retailer faced with significant increases in transaction costs due to industry shifts.
Foodstuffs, 2011

Electricity Market Reform. Sequence of meetings with Minister of Energy to explore options for significant adjustments to NZ electricity market arrangements.
Ministry of Economic Development, 2006

Oil Security: Economic analysis of the social value to New Zealand of holding additional oil stocks and on mechanisms for increasing stocks and the competitive impacts of these.
Ministry of Economic Development, 2004

Electricity Network Modelling: Econometric modelling and other advice for new regulatory regime for electricity distribution companies.
NZ Commerce Commission, 2003

California Grid Investment with Real Options: Development and application of a real options methodology for assessing grid investment proposals taking generation investment into account, with London Economics International.
California Independent System Operator, 2001-02

Bank Capital Modelling: Jointly commissioned by banks to build econometric model linking the real business cycle to the rate of bank asset impairment.
Westpac, ANZ Bank, ASB Bank, Bank of New Zealand, 2007

Consumer Behaviour – Forex Conversions: Econometric modelling of consumer reactions to extra disclosure of international currency conversion fees on credit card statements.
Bank of New Zealand, 2006

Inflation Forecasting – RBNZ: Comparative study of empirical methods for forecasting inflation.
Reserve Bank of New Zealand, 1995

Tax Policy Econometrics: Sequence of projects, 1992-97. Work included empirical analysis of tax policy and the construction of the first formal revenue forecasting model, which is still in use today.
New Zealand Inland Revenue Department, 1992-7

Publications

Small, John, (July 2009) "Utility Regulation in New Zealand", *Network* 32: 1-6.

Guthrie, G., J. Small, and J. Wright, (2006) "Pricing access: Forward-looking versus backward-looking cost rules", *European Economic Review* 50(7): 1767-1789.

Small, J. (2004) "Market definition and the design of competitive electricity industries", *Competition and Consumer Law Journal* 12(2): 236-246

Aoki, R., and J. Small, (2004) "Compulsory Licensing of Technology and the Essential Facilities Doctrine", *Information Economics and Policy* 16: 13-29.

Small, J. (2002) "Public Sector Reform in New Zealand: Implications for Japan", *The Otemon Journal of Australian Studies* 28: 115-124.

Reeves, J.J. (2000) C.A. Blyth, C.M. Triggs and J.P. Small, "The Hodrick-Prescott Filter, a Generalization, and a New Procedure for Extracting an Empirical Cycle from a Series", *Studies in Nonlinear Dynamics and Econometrics* 4(1): 1-16.

Small, John (2000) "An Overview of Utility Regulation in New Zealand", G. Lawrence (ed.), *Utility Regulation in Australia and New Zealand*, *Thompson Financial, London* Ch 4.

Small, John (2000) "The Distribution of Estimates of the Marginal Cost of Taxation", in G.W. Scully and P.Caragata (eds), *Taxation and the Limits of Government*, Kluwer Academic Publishers, MA, 115-126.

Small, John and Patrick Caragata (2000) "The Effect of Aggregate Tax Levels on Output Growth in New Zealand", in G.W. Scully and P.Caragata (eds), *Taxation and the Limits of Government*, Kluwer Academic Publishers, MA, 89-98.

Small, John P. and Patrick Caragata (2000) "Regression Based Estimation of Effective Tax Rates" in G.W. Scully and P.Caragata (eds), *Taxation and the Limits of Government*, Kluwer Academic Publishers, MA, 289-305.

Mckenzie, D. and J. Small (1997) "Econometric Cost Functions for Cellular Telephony in the United States", *Journal of Regulatory Economics* 12: 147-157.

Small, J.P. (1997) SHAZAM 8.0: A Software Review, *Journal of Economic Surveys*, 11: 447-453.

Small, J.P. and A. Harris (1996) "Universal Service and Local Telephone Network Access", in Hansen S. (ed) *Universal Service with Network Competition*, CRNEC, University of Auckland.

Small, J.P. (1995) "Testing and Estimation with Seasonal Autoregressive Mis-specification", *Journal of Quantitative Economics*, 11: 21-33.

Small, J.P., D.E.A. Giles and K.J. White, (1994)"The Exact Powers of Some

Autocorrelation Tests When Relevant Regressors are Omitted", *Journal of Statistical Computation and Simulation* 50: 45-57.

Small, J.P. (1994) "The Exact Power of Some Autocorrelation Tests When the Disturbances are Heteroscedastic", *Journal of Econometrics* 61: 383-394.

Small, J.P. (1993) "The Limiting Power of Point Optimal Autocorrelation Tests", *Communications in Statistics* (Theory and Methods), 22:2463-2470.

Giles, D.E.A. and J.P. Small (1991) "The Power of the Durbin-Watson Test When the Errors are Heteroscedastic", *Economics Letters* 86:441-446.

Dr Aaron Schiff

Aaron specialises in theoretical and empirical economic modelling, regulatory and competition issues, intellectual property and innovation, forecasting, and data analysis and visualisation.

He has published papers in peer-reviewed international journals, and has consulted for a number of sectors in New Zealand and abroad including fixed and mobile telecommunications, banking, payments systems, and aviation.

Areas of Expertise

- Industrial organisation
- Competition policy
- Regulatory economics
- Intellectual property economics
- Data and statistical analysis
- Econometrics and forecasting
- Quantitative modelling
- Telecommunications
- Network economics
- Aviation
- Payment systems

Education

PhD in economics
The University of Auckland, 2005

MCom in economics (1st class honours)
The University of Auckland, 2000

BCom in economics
The University of Auckland, 1998

Employment History

Director
Covec, New Zealand
2002 – 2006 & 2008 – Present

Visiting Fellow
Centre for Air Transport Research
University of Otago, New Zealand
2009 – 2010

Lecturer
Department of Economics
University of Auckland, New Zealand
2002 – 2006 & 2008 – 2009

Visiting Researcher
Institute of Economic Research
Hitotsubashi University, Japan
2006 – 2008

Examples of Relevant Experience

Aviation Data: Review of New Zealand aviation indicator data and development of recommendations for filling data gaps.
NZ Ministry of Transport, 2011

Data Analysis: Econometric analysis of the drivers of water demand in Auckland.
Watercare, 2011

Economic Modelling: Economic analysis of the welfare effects of constrained competition on a major gas pipeline.
Gas Industry Company, 2011

Economic Modelling: Quantitative public interest analysis of a proposed alliance between Air New Zealand and Virgin Blue.
NZ Ministry of Transport, 2010

Data Analysis: Business case modelling of investment in rural broadband.
Vodafone New Zealand, 2010

Forecasting: Preparation of the official New Zealand tourism forecasts.
NZ Ministry of Tourism, 2002 – 2010

Data Analysis: Development of a retail performance benchmarking system.
A major New Zealand Bank, 2010

Data Analysis: Development of a website for benchmarking the performance of firms within peer groups.
Benchmark New Zealand, 2009

Economic Modelling: Analysed and modelled the effects of additional competition in international internet bandwidth on retail broadband markets in New Zealand.
Kordia, 2009

Aviation: Economic analysis of the key drivers of the New Zealand aviation sector.
New Zealand Ministry of Tourism and Foundation for Research, Science and Technology, 2009 – 2010

Tourism: Assessment of the impact of higher oil prices on New Zealand inbound tourism.
Foundation for Research, Science and Technology, 2008

Publications

Duval, D. & A. Schiff (2011). Effect of air services availability on international visitors to New Zealand. *Journal of Air Transport Management*, forthcoming.

Haab, T. C., A. Schiff & J. Whitehead (2011). Web 2.0 and economic education. In K. McGoldrick & G. Hoyt (eds.), *International Handbook on Teaching and Learning Economics*, Edward Elgar, forthcoming.

Becken, S. & A. Schiff (2011). Distance models for New Zealand international tourists and the role of transport prices. *Journal of Travel Research*, forthcoming.

Becken, S. & A. Schiff (2011). Demand elasticity estimates for New Zealand tourism. *Tourism Management*, **32**: 564-575.

Aoki, R. & A. Schiff (2010). Intellectual property clearinghouses: The effects of reduced transaction costs in licensing. *Information Economics and Policy*, **22**: 218-227.

Aoki, R. & A. Schiff (2010). Clearinghouses, patent pools and incentives to innovate. In Aoki, R. (ed.) *Topics in Economics of Intellectual Property and Innovation*, Maruzen: Tokyo.

Becken, S., M. Nguyen & A. Schiff (2010). Impact of oil prices on New Zealand tourism: An economic framework. *Land, Environment & People Report No. 12*, Lincoln University.

Schiff, A. (2009). New Zealand aviation data review. Report for Centre for Air Transport Research.

Becken, S., A. Carboni, S. Vuletich & A. Schiff (2008). Analysis of tourist consumption, expenditure and prices for key international visitor segments. *Land, Environment & People Report No. 7*, Lincoln University.

Kennes, J. & A. Schiff (2008). Quality infomediation in search markets, *International Journal of Industrial Organization*, **26**: 1191-1202.

Schiff, A. (2008). The 'waterbed' effect and price regulation, *Review of Network Economics*, **7**: 392-414.

Aoki, R. & A. Schiff (2008). Promoting access to intellectual property: Patent pools, copyright collectives and clearinghouses, *R&D Management*, **38**: 189-204.

Kennes, J. & A. Schiff (2007). Simple reputation systems, *Scandinavian Journal of Economics*, **109**: 71-91.

Schiff, A. (2003). Open and closed systems of two-sided networks, *Information Economics and Policy*, **15**: 425 – 442.

Schiff, A. (2002). Two-way interconnection with partial consumer participation, *Networks and Spatial Economics*, **2**: 295 – 315.

Schiff, A. (2002). The economics of open source software: A survey of the early literature, *Review of Network Economics*, **1**: 66 – 74.

Schiff, A. & P. C. B. Phillips (2000). Forecasting New Zealand's real GDP, *New Zealand Economic Papers*, **34** (2): 159 – 182.

Awards

Japan Society for the Promotion of Science Postdoctoral Fellowship, 12/2006 – 5/2008.

Japan Society for the Promotion of Science Grant-in-Aid for Scientific Research, 2007.

University of Auckland new staff research grant, 2006.

Econometric Society Australasian Meetings postgraduate travel award, 2003.

University of Auckland graduate research fund grant, 2003.

Vodafone Doctoral Scholarship in Network Economics, 2000 – 2002.

University of Auckland Graduate Scholarship, 1999.

Senior Scholarship in Economics, 1998, University of Auckland.

Flying Officer Alfred P. Fogerty Scholarship in Economics, 1997.

Dr Tim Denne

Tim Denne is an economist with over 25 years' experience in policy, economic and financial analysis, and design of policy and markets. He writes policy and strategy papers, develops numerical models and economic analyses. He has led numerous consultancy studies, chaired government-industry workgroups, workshops and meetings, and is a frequent conference speaker. He has advised private companies, government departments and local authorities in many countries.

Previously he has worked in central and regional government in New Zealand, including (briefly) as strategy leader at the Auckland Regional Council. He was formerly Senior Managing Consultant at Oxford Economics Research Associates.

Areas of Expertise

- Policy & cost benefit analysis
- Financial Analysis
- Energy & climate change
- Environment & natural resource management
- Transport
- Forecasting & projections
- Commercial transaction support

Education

MSc (1st Class Hons) Resource Management, University of Canterbury 1983
PhD University of London 1988

Employment History

2003- Covec Ltd
2002-03 – Strategy Leader, Auckland Regional Council
2000-02- Oxford Economic Research Associates
1999-00 Center for Clean Air Policy, Washington DC
1990-94, 96-99 Environmental Resources Management, UK
1988-90, 95-96 Ministry for the Environment, NZ
1986-88 Research Fellow, Imperial College, UK
1985-86 Research Economist, UK CEED
1983-84 Research Assistant, Centre for Resource Management, NZ

Key Industry Sectors

- Natural Resources
- Energy-intensive manufacturing
- Electricity generation
- Waste & recycling
- Forestry
- Transport
- Ports

Examples of Relevant Experience

Bus contract price benchmarking (2011) assisting NZTA to develop a methodology to improve the efficiency of negotiated public transport contract pricing.

Harvested Wood Product Accounting (2011) assisting MAF to evaluate alternative approaches to accounting for emissions from forestry in the Emissions Trading System.

Gas demand forecasting (2010-11) providing a regulated utility with a set of demand forecasts to support its proposed Regulated Asset Base.

Evaluation of the NZ Insulation Fund (2010-11) A cost benefit analysis of the government's subsidy programme for insulation and clean heating, including energy saving and health benefits.

Regulatory Impacts of Options for the Foreshore and Seabed (2010) Inputs to the government's RIS for new legislation options for the foreshore and seabed for Ministry of Justice.

Possible Impacts of the Foreshore and Seabed Legislation on Port Companies (2010) for Ministry of Justice.

Property rights and the Foreshore and Seabed (2009) A thinkpiece for the Ministry of Justice on economic theory as it applies to property rights issues and the foreshore and seabed.

Estimating the impacts of loss of fishing grounds (2009) A study of the costs of closure of commercial fishing grounds and the distribution of those costs.

Analysis of Energy Efficiency, Energy Conservation and Renewables Policy (2009-10) An analysis of the market failure justification for energy policy interventions and the possible net benefits of specific measures. For Ministry of Economic Development.

Allocation of Emission Units under the ETS (2009-10) Development of rules for the free allocation of emission units for stationary energy and industrial process emissions. Assistance to MfE in the roll-out of the allocation programme.

Forecasting coal prices (2009) An examination of current and projected future coal prices in domestic and international markets (for Ministry of Economic Development).

Fuel rationing (2009) Design of a system of liquid fuel quantity rationing that could be used in the event of a significant supply failure. For Ministry of Economic Development.

Forecasting demand for liquid fuels in NZ (2008) As part of the preparation for the sale of Shell's NZ assets, this project involved the development of a projection model for demand in all sectors.

Financial viability of NZ Steel (2008) an assessment of the medium-run viability and expected production levels at NZ Steel's Glenbrook plant as an input to the valuation of the on-site power plant for a potential purchaser.

Water tariffs (2007) Assisting Metrowater to develop an appropriate set of tariffs (structure and rate) to meet a range of organisational objectives.

Economic evaluation of potential for biofuels in New Zealand (2006) analysis for Ministry of Transport of costs of meeting biofuel supply targets, plus recommendations on policy options to achieve targets.

Social and Economic Impacts of Vehicle Emission Limits (2006) an analysis for Ministry of Transport of the impacts of regulations to control the emissions rates of imported vehicles.

Review of Policy Instruments to Reduce Greenhouse Gas Emissions in the Transport Sector (2005) Evaluation for MfE of policy options for reducing fuel use in the transport sector.

Oil Demand Restraint (2005) A review of options for rapid reductions in demand for oil products and recommendations for an Emergency Response Plan. (MED)

Review of MED energy modelling (2005) A detailed assessment of MED's energy supply and demand model relative to its objectives and international best practice. Recommendations are made for model development.

Costs and benefits of oil security in New Zealand (2004-05) A review for MED of the costs and benefits of increasing levels of oil storage to meet the IEA's 90 day storage requirement.

Stakeholder Review of MED energy modelling (2004) A review of stakeholder uses of MED energy model output and the Energy Outlook as an input to planning for development of MED energy modelling capability.

Social and Economic Impacts of Vehicle Emissions Testing (2004-05) Analysis for the Ministry of Transport of the likely impacts on vehicle owners of a vehicle emissions testing rule. The study combines a database of the emission characteristics of the vehicle fleet, vehicle ownership data matched to socio-economic characteristics linked to the owner's location.

Reuben Irvine

Reuben is an economist with over 10 years of professional experience. As a consulting economist he has expertise in competition and regulatory economics, and experience in analysing economic, regulatory and public policy issues across a wide range of sectors, including environmental policies.

Reuben has also worked in highly-regarded public sector organisations both in New Zealand and abroad, where he has undertaken complex policy and economic analysis, research and has been involved in the legislative process.

Areas of Expertise

- Policy and cost-benefit analysis
- Competition analysis
- Regulatory analysis.
- Legislative process

Education

MCom in economics
The University of Auckland, 2002

BCom in economics
The University of Auckland, 1997

Employment History

Consulting Economist
Covec, New Zealand
2006 – Present

Economist
The Competition Authority, Ireland
2002 – 2005

Policy Analyst/Senior Policy Analyst
Policy Advice Division, Inland Revenue, New Zealand
1998 – 2002

Examples of Relevant Experience

Maritime Activity Indicators: Provided recommendations for filling data gaps regarding the maritime transport sector.
Ministry of Transport, 2011

Coastal erosion protection: Cost-benefit analysis of proposed coastal erosion protection measures.
Hastings District Council, 2011

Electricity grid investment: Analysis of potential economic benefits from additional grid investment in the lower South Island.
Transpower, 2010

Forestry: Cost-benefit analysis of proposed national standards for plantation forestry.
Ministry for the Environment, 2010

Urban limits and infrastructure costs: Economic analysis of proposed Tauranga urban limits and impacts on infrastructure costs and funding.
Environment Bay of Plenty, 2009

Telecommunications regulation – Vanuatu: Provided ongoing economic assistance to Vanuatu Telecommunications Regulator. Work included analysis of antitrust implications of retail pricing schemes, design and implementation of Universal Access Policy, and training in competition economics.
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Water pricing: Analysis of Metrowater's water pricing.
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