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**A Framework
for Incorporating Environmental Issues
into the Evaluation of State Highway
Roading Projects**

**A thesis presented
in partial fulfilment of
the requirements for the degree of
Master of Philosophy (Environmental Planning)
at Massey University
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Abstract

A framework for incorporating environmental issues into the evaluation of State Highway roading alternatives is developed. The steps taken in the research method included: a review of current valuation and evaluation techniques for incorporating environmental issues into the evaluation process; a review of the current State Highway evaluation framework in New Zealand; and a study of two State Highway roading projects.

Principal participants in the evaluation process of both case studies were interviewed and a comparative review of the case studies undertaken.

An "ideal" evaluation framework was developed during the study. This framework was based on the comparative review of the case studies and an analysis of current practice and techniques.

The "ideal" evaluation framework involves Regional Councils, rather than Central Government, controlling the evaluation process and Regional Land Transport Committees making the final decision as to the "best" alignment option.

Changes to the Resource Management Act 1991 are recommended to enable a more effective and integrated evaluation process. Such changes include clearly defining "consultation" and increasing the amount of information to be submitted by resource consent applicants. Specifically, applicants would be required to detail the type of evaluation technique used, evidence that the process had been independently reviewed and the findings of the independent review.

The "ideal" evaluation framework consists of a detailed planning process comprising 13 integrated phases within four contexts. These contexts are institutional, ecological, socio-economic and engineering. In the second phase of the planning process, community and organisational values are assessed using Focus Groups and Attitude Surveys. This phase determines the limits of each context prior to the evaluation of alternatives.

The research demonstrated that the most appropriate and effective evaluation technique for incorporating environmental issues into the evaluation of State Highway roading alternatives is the Goals Achievement Matrix (GAM).

Based on the findings of the case study reviews the formation of a Community Group and employment of an independent advisor(s) is recommended.

Provided that the "ideal" evaluation framework is based upon the criteria recommended in the study (including effective, appropriate consultation and a clear understanding of who is the final decision-maker), this framework could be used to successfully incorporate environmental issues into the evaluation of State Highway roading alternatives.

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List of Abbreviations

ARC:	Auckland Regional Council
CG:	Consultative Group
DOC:	Department of Conservation
HBRC:	Hawke's Bay Regional Council
LGA:	Local Government Act 1974
MfE:	Ministry for the Environment
RC:	Regional Council
RLTC:	Regional Land Transport Committee
RLTS:	Regional Land Transport Strategy
RMA:	Resource Management Act 1991
RPS:	Regional Policy Statement
Transit:	Transit New Zealand
TNZ:	Transit New Zealand
TNZ Act:	Transit New Zealand Act 1989
WRC:	Wellington Regional Council

Glossary

Alignment - The line that a State Highway takes horizontally and vertically across the landscape, ie, straight or curved alignment.

Anthropocentric - Human-centred.

Bypass - A route designed to avoid or detour from a specific area.

Designation - A provision made in a district plan to give effect to a requirement made by a requiring authority under Section 168 (or Section 168A) or Clause 4 of the 1st Schedule of the RMA.

Ecocentric - Environment-centred.

Effects - As defined in Section 3 of the RMA "in this Act, unless the context otherwise requires, the term 'effect' in relation to the use, development, or protection of natural and physical resources, or in relation to the environment, includes -

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects -

regardless of the scale, intensity, duration, or frequency of the effect, and also includes -

- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact".

Environment - As defined in Section 2 of the RMA includes -

- "(a) ecosystems and their constituent parts, including people and communities; and
- (b) all natural and physical resources; and
- (c) amenity values; and
- (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters".

Environmental Issues - Those issues which are not easily measured in dollar terms.

Environmental Factors - For the purposes of this study this has the same meaning as environmental issues.

Evaluation - "The whole process of comparing plans: the framework devised for the analysis, the principles of assessment, the measures employed in the comparison, and the marshalling of evidence" (Lichfield et al, 1975). For the purposes of this study "evaluation process" means the evaluation of State Highway roading alternatives.

Externalities - The indirect effects of roading projects.

Intangibles - Costs and benefits of impacts which Transit has not developed methods for valuing in monetary terms.

Intrinsic - As defined in Section 2 of the RMA "in relation to ecosystems, means those aspects of ecosystems and their constituent parts which have value in their own right, including -

- (a) their biological and genetic diversity; and
- (b) the essential characteristics that determine an ecosystem's integrity, form, functioning, and resilience".

Iwi Authority - As defined in Section 2 of the RMA "the authority which represents an Iwi and which is recognised by that Iwi as having the authority to do so".

Kaitiakitanga - As defined in Section 2 of the RMA "the exercise of guardianship; and, in relation to a resource, includes the ethic of stewardship based on the nature of the resource itself".

Local Authority - As defined in Section 2 of the Transit New Zealand Act 1989 "any regional council or territorial authority within the meaning of the Local Government Act 1974".

Mana whenua - As defined in Section 2 of the RMA "customary authority exercised by an Iwi or hapu in an identified area".

Natural and Physical Resources - As defined in Section 2 of the RMA "includes land, water, air, soil, minerals, and energy, all forms of plants and animals (whether native to New Zealand or introduced), and all structures".

Project - As defined in the TNZ Act "an individual land transport related activity and includes administration, planning, design, and supervision".

Realignment - Altering the alignment of a road or State Highway to reduce the number of accidents, reduce travel time and generally improve the nature of the State Highway.

Regional Council - A local authority established under the Local Government Act 1974 to sustainably manage the region's natural and physical resources.

Requiring Authority - Under Section 166 of the RMA, (a) Minister of the Crown or (b) a local authority or (c) a network utility operator approved as a requiring authority under Section 167 of the RMA.

Stake-holders - Individuals or a group of individuals who have an interest or concern in a project.

State Highway - As defined in the TNZ Act "a State Highway declared as such under Section 11 of the National Roads Act 1953 or by the Authority under this Act; and, for the purposes of any payments the Account, also includes any proposed State Highway".

Structures - As defined in Section 2 of the RMA "any building, equipment, device, or other facility made by people and which is fixed to land".

Taonga - Property; treasure; artefact or relic.

Tangata Whenua - As defined in Section 2 of the RMA "in relation to a particular area, means the Iwi, or hapu, that holds mana whenua over that area".

Territorial Authority - Has the same meaning as in Section 2 (1) of the Local Government Act 1974.

Transit New Zealand - A Central Government agency established under the Transit New Zealand Act 1989 to "promote policies and allocate resources to achieve a safe and efficient land transport system that maximises national economic and social benefits".

Treaty of Waitangi - Has the same meaning as the word "Treaty" as defined in Section 2 of the Treaty of Waitangi Act 1975.

Valuation - A stage in the evaluation of State Highway alternatives which derives the values of the effects of the alternatives, through objective, analytic or subjective approaches.

Waahi tapu - Cemetery or reserved ground.

Waka - A Maori canoe.