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# **The Price of Mauri**

*Exploring the validity of Welfare Economics when  
seeking to measure Mātauranga Māori*

A thesis  
submitted in partial fulfilment  
of the requirements for the degree  
of  
**Doctor of Philosophy in Economics**  
at  
**The University of Waikato**  
by  
**SHAUN BILLY AWATERE**

The University of Waikato  
2008



## Abstract

Since the 1980s New Zealand has pursued neo-classical or market-based policies with a particular fervour. Market-based options are seen by resource management decision makers as essential frameworks for efficiently allocating resources, an approach that continues to support the view of the inherent dominance of Western knowledge. This is particularly concerning, given that Māori (the indigenous people of New Zealand), have an important role to play in New Zealand resource management and perceive their own knowledge systems have been marginalised. The primary goal of this thesis is to explore the validity of welfare economics when seeking to measure quantitatively Mātauranga Māori or Māori views of the environment through the contingent valuation method. A contingent valuation study is carried out using three separate samples drawn from the general Māori population in Auckland city, a hāpu/sub-tribe indigenous to the Auckland isthmus, and drivers of motor vehicles in Auckland city. Data collection modes include a postal survey and face-to-face interviews. This thesis challenges the validity of political-legal ethnicity constructs to measure Mātauranga Māori. The search for a central tendency will lead to biased, misleading and inaccurate results. The thesis also challenges the validity of contingent valuation to produce true economic measures and to measure and identify Mātauranga Māori. Despite advances in analytical techniques, economic efficiency measures are always deficient, given the difficulty of capturing and anticipating all impacts and valuing them appropriately. Mātauranga Māori is derived from a Māori epistemology and should be considered or analysed with primary reference to this body of knowledge. Economic analysis is only one important cog in the machinery of resource management policy. Given that an economist's contribution to local and regional resource management is most valuable when focusing on the "economic efficiency" of the proposed resource allocation, it is appropriate that other perspectives such as Mātauranga Māori be considered.

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## Glossary of Māori Words

Sources for the Glossary include: Barlow (1991); Kawharu (2000); Moorfield (2005); Ngata (1993); Smith (1999); and Te Hoe Nuku Roa (Ed.) (1996).

Aotearoa	New Zealand
hapū	sub-tribe
harakeke	New Zealand flax, <i>Phormium tenax</i>
Hawaiiki	ancient homeland – the places from which Māori migrated to Aotearoa/New Zealand
hui	gathering
iwi	tribe
kai	food
kai moana	seafood
kaitiaki	resource manager
kaitiakitanga	the expression of a two way relationship that involves obligations to give, receive and repay
kānga kōpiro	fermented corn
karakia	prayer
kaumātua	elder
Kaupapa Māori	a Māori epistemology
koha	contributions for time
koura mara	fermented crayfish
kura	feathers used as decoration
mana	prestige
mana whenua	territorial rights
manaakitanga	hospitality, kindness
Māori	the indigenous people of New Zealand
Māoritanga	Māori culture, practices and beliefs
marae	gathering place
Mātauranga Māori	Māori knowledge
mauri	life force
mihi	speech of greeting

moana	sea
ngā taonga tuku iho	those treasures that have been passed down
Ngāti Porou	tribal group of East Coast area north of Gisborne to Tihirau
Pākehā	New Zealander of European descent
rangātira	leader
rangātiratanga	leadership
rongoā	medicine
Tāmaki Makaurau	Auckland
Tangata Whenua	indigenous people of the land
taonga	treasured possessions
tapu	sacred
Te Ao Māori	Māori ontology
te reo	Māori language
tikanga	correct procedure or customs
tipuna	ancestor
Tūranga-nui-a-Kiwa	Gisborne
wā kāinga	true home
wairua	soul
whakapapa	genealogy
whakatauki	proverb or saying
whānau	family
whanaunga	relation
whanaungatanga	building and maintaining relationships
whenua	land
whenua tipu	ancestral land

## Glossary of Abbreviations

ANOVA	analysis of variance
CBA	cost-benefit analysis
CV	contingent valuation
GEC	general environmental concern
KMR	Kaupapa Māori Research
MCI	Māori cultural identity
NOAA	National Oceanic and Atmospheric Administration
RMA	Resource Management Act 1991
THNR	Te Hoe Nuku Roa
WTA	willingness to accept
WTP	willingness to pay

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koha	contributions for time
koura mara	fermented crayfish
kura	feathers used as decoration
mana	prestige
mana whenua	territorial rights
manaakitanga	hospitality, kindness
Māori	the indigenous people of New Zealand
Māoritanga	Māori culture, practices and beliefs
marae	gathering place
Mātauranga Māori	Māori knowledge
mauri	life force
mihi	speech of greeting

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Ngāti Porou	tribal group of East Coast area north of Gisborne to Tihirau
Pākehā	New Zealander of European descent
rangātira	leader
rangātiratanga	leadership
rongoā	medicine
Tāmaki Makaurau	Auckland
Tangata Whenua	indigenous people of the land
taonga	treasured possessions
tapu	sacred
Te Ao Māori	Māori ontology
te reo	Māori language
tikanga	correct procedure or customs
tipuna	ancestor
Tūranga-nui-a-Kiwa	Gisborne
wā kāinga	true home
wairua	soul
whakapapa	genealogy
whakatauki	proverb or saying
whānau	family
whanaunga	relation
whanaungatanga	building and maintaining relationships
whenua	land
whenua tipu	ancestral land

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RMA	Resource Management Act 1991
THNR	Te Hoe Nuku Roa
WTA	willingness to accept
WTP	willingness to pay

# 1 Natural Resource Management in New Zealand

Māori, the indigenous people of New Zealand, recognise the interrelatedness and the interdependence of all things in the world. Whakapapa (genealogy), an important concept within the Māori worldview explains the relationship Māori have with each other, natural resources, the environment, and the world, as well as with spiritual and cosmological entities. Based on this belief a large number of responsibilities and obligations were assumed by Māori to sustain and maintain the well-being of people, communities and natural resources (Haami & Roberts, 2002; Marsden, 1989; Marsden & Henare, 1992; Mead, 2003). Whakapapa is an integral part of all traditional Māori institutions and is a major determinant of rights to use, access and manage natural resources (Mahuika, 1998). The implementation of whakapapa is through *kaitiekitanga*<sup>1</sup> – the expression of a two-way relationship that involves obligations to give, receive and repay (Kawharu, 2000).

Land, mountains, valleys, rocks, water and sea ways are viewed not only as resources, but more importantly, as manifestations of collective identity. They are the essential roots that entwine the component parts of what it means to be Māori. Such resources are vital *taonga* (treasured possessions) to be protected. The role of *kaitieki* (resource manager) reflects the individual and collective role to safeguard *ngā taonga tuku iho* (those treasures that have been passed down) for present and future generations (Crengle, 1993; James, 1993; Kawharu, 2000; Minhinnick, 1989; Tomas, 1994).

## 1.1 *Kaitiekitanga*

*Kaitieki* and the recently introduced term *kaitiekitanga* refer to the responsibility certain entities, not exclusively people, have to protect and guard the *mauri* of particular people, groups, objects, resources, traditions, practices and places. It is the interface between the spiritual and the physical dimensions of natural resource management. It is a process that regulates human activity with the environment. The

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<sup>1</sup> Within this document the Ngāti Porou dialect has been used – this reflects the tribal identity of the author



regulatory function is derived from mana (James, 1993). A practical philosophy, the kaitiaki role is a process that is locally defined and owned.

The role of kaitiaki involves but is not limited to managing resources in a sustainable manner. The traditional institution of kaitiaki does not stand alone; it is part of a complex social, cultural, economic, and spiritual system that has been established through long tribal associations with the environment. Kaitiaki and kaitiakitanga cannot be understood without reference to the values inherent in the belief system (Crengle, 1993; James, 1993; Kawharu, 2000; Minhinnick, 1989; Tomas, 1994).

Only persons sanctioned by iwi through whakapapa, inherited nurtured responsibility, or election and instruction by kaumātua can be regarded as kaitiaki (Awaroa ki Manuka, 1991). Kaitiaki have mana whenua (authority over a particular area) designated by iwi (tribes) and hapū (sub-tribes) to carry out the duties of a kaitiaki (Kawharu, 2000; Mahuika, 1998). Everybody has a limited kaitiaki function, a responsibility to manage natural resources sustainably; however, mana whenua and certain individuals within whānau (families) and hapū are mandated to fulfil the role.

## ***1.2 Problems with New Zealand Planning***

There is growing realisation by local government that understanding Māori views and beliefs is essential for natural resource management decisions. The Māori values information currently used by resource management agencies in New Zealand is inadequate, which has resulted in very low participation rates by iwi and hapū in local government resource management processes (Blackhurst et al., 2003; Whangaparita, Awatere, & Nikora, 2003). This is not surprising given the two different conceptualisations of sustainable management in New Zealand: i) the view that underpins the Resource Management Act 1991 (free market ideology), and ii) sustainable management based on Māori ideology (Michaels & Laituri, 1999).

The New Zealand planning conundrum is that although mainstream planners generally express a willingness to work with an alternative paradigm based on a

Māori epistemology, the current legislative framework lacks a meaningful commitment to Māori perspectives. Recent studies have identified several reasons for Local Government's lack of implementation:

- A lack of understanding of the status that iwi and hapū have through the Treaty of Waitangi<sup>2</sup> and in the Resource Management Act 1991 process.
- Local Government's are unclear about the consultation processes conducted with iwi or hapū.
- The low capacity of iwi and hapū to participate in Local Government processes.
- A lack of understanding toward the relevance of Māori information to environmental issues (Blackhurst et al., 2003; Whangaparita et al., 2003).

Recent studies have identified a gap between what was stated in policy and plans and what was actually implemented by planners. Whangaparita et al. (2003) found that Environment Waikato's<sup>3</sup> Regional Plan, Annual Reports, Regional Policy Statement and Regional Coastal Plan acknowledged matters of significance to Māori within the region. However, a review of Environment Waikato research reports indicated that many reports made little acknowledgement of matters specific to Tangata Whenua (indigenous people) other than stating Environment Waikato's legal obligation to the Treaty of Waitangi. Blackhurst et al. (2003) found that while many district plans had developed processes for iwi participation, there was little evidence to suggest that these processes had been implemented. This was due in part to the reasons identified above, which included issues of iwi capacity and a lack of clarity of the status of iwi and hapū in the resource consent process. In addition to the well-known implementation issues is the fundamental problem of co-opting indigenous knowledge into Eurocentric frameworks.

The Resource Management Act (RMA) 1991 includes provisions to recognise and take into account iwi and hapū environmental interests under sections 6(e), 7(a) and 8

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<sup>2</sup> The founding document of New Zealand, an agreement between the British Crown and iwi concerning the ownership of natural resources

<sup>3</sup> Regional planning authority in the Waikato district

(Resource Management Act, 1991). In practice, iwi and hapū perspectives of the RMA have differed from their counterparts in local government. Most certainly, as Tutua-Nathan (2003) ascertains, before these sections can be effectively implemented, “tikanga Māori has to be understood by local and central government, the courts, and the general public” (Tutua-Nathan, 2003, p. 40). A bone of contention for Māori (Crengle, 1993; Kawharu, 2000; Love, 2003; Matunga, 2000; Minhinnick, 1989) is that the RMA uses a concept that is inherently Māori, derived from hundreds of years of close association with the natural environment, and defines it from an English Common Law perspective. According to Tomas (1994), kaitiaki and the exercise of kaitiakitanga as used in the RMA are taken out of context:

Kaitiakitanga is a concept which has its roots deeply embedded in the complex code of tikanga – the cultural constructs of the Māori world which embody the way Māori perceive the natural world and their position within it. It includes the rules and practices which were the means by which Māori regulated their world. Through its inclusion in the RMA the concept has become divorced from its Māori cultural and spiritual context. It has been redefined in terms of guardianship and stewardship, two terms arising out of feudal England. It has also been reduced from a fundamental principle of Māori society to one factor for consideration among many. (p. 30)

The RMA defines kaitiakitanga as the exercise of guardianship, and includes with it the ethic of stewardship. In effect this fundamental Māori principle has been co-opted by the New Zealand government in order to achieve its goals and aspirations. Māori lawyer Moana Jackson (1992) comments that:

... the process of redefinition continues the attempt by an alien world to impose its will on the beneficiaries of a different world. It captures, redefines and uses Māori concepts to freeze Māori cultural and political expression within parameters acceptable to the state. It no longer seeks to destroy culture and the word through direct rejection or overt denial, but tries instead to imprison it within a perception of its worth that is determined from the outside... Those who pursue such goals do not acknowledge the values and

validity of that philosophy as understood by Māori in terms of their beginning. Rather they misinterpret it or choose those elements which they believe can be reshaped into a bicultural gloss on the exercise of Pākehā [non-Māori] power. (p. 8)

Māori perceive their value systems have been marginalised and the role of kaitiaki has been diminished. Little weight has been given to Māori perspective and customs for conservation matters and for the management of natural resources (Awatere, Ihaka, & Harrison, 2000). Improving the quality of information (either economic or Mātauranga Māori) can assist decision-makers to make decisions that are more informed.

### ***1.3 Conflicts in World View with Regard to Implementation – Cost-Benefit Analysis***

The challenge in writing this thesis has come from wrestling with the prescriptive discourse of the economics literature and the ontological beliefs of an indigenous knowledge system. Ethically, Māori ontology is biocentric – the belief that all life is equally valuable and humanity is not the centre of the universe. Māori ontology acknowledges the inherent or intrinsic values within an ecological system: encapsulated in the concept of mauri. According to Barlow (1991):

Everything has a mauri, including people, fish, animals, birds, forests, land, seas, and rivers: the mauri is that power which permits these living things to exist within their own realm and sphere. No one can control their own mauri or life-existence. (p.83)

A dynamic relationship exists between Māori, other communities of people and the natural environment. This relationship is many layered and endemic to local hapū or iwi (Battiste & Henderson, 2000). Māori epistemology and ontological thought recognise the interrelatedness of knowledge to the lives and experiences of human-beings and their communities (Deloria, 1999). Whakapapa, the inter-relationship

between all forms of existence is important for understanding Māori preferences for the environment.

Cost-benefit analysis tools are used to assess changes in the improvement of an environmental outcome (Cummings, Brookshire, & Schulze, 1986; Mitchell & Carson, 1989). Tools such as non-market valuation are used by local government to help guide decision-making (Boxall, Englin, & Adamowicz, 2002; Kerr & Sharp, 2003; Maddison & Mourato, 2002). The contingent valuation method (CV) is a popular technique that can be applied to estimate values of public goods where markets do not exist. Proponents of non-market valuation argue that quantitative values make the decision-making task easier compared with reviewing for example the testimony of five to six iwi or hapū groups. CV therefore has an appeal in addressing resource management issues particularly within New Zealand.

CV is implemented through the lens of positivist economics. It is argued that viewing indigenous knowledge through this lens will lead to inaccurate and misleading results (Schreiber, 2000). Further concerns about CV are based on an underlying sense of distrust for CV, fueled by the perception that “academic research” or “outsider research” has been an experience of “unrelenting research of a profoundly exploitative nature” (Smith, 1999, p. 42) for indigenous peoples. Research is seen by indigenous peoples as an assimilationist tool to Europeanise all knowledge and heritage (Battiste & Henderson, 2000). There is a temptation for resource managers/policy analysts/local government planners to place more emphasis on a quantitative assessment. The danger, however, is that Māori values are seen from within the framework of welfare economics – a Western knowledge system.

#### ***1.4 Conflicts in World View with Regard to Implementation – Indigenous Knowledge in General***

Māori philosophy and ideology are constrained within the frameworks of state legislation in terms of resource management (Michaels & Laituri, 1999). Tutua-Nathan (2003) notes that while Māori philosophy ought to be considered within the RMA process, Māori philosophy must be consistent with the sustainable management

priorities as defined by the Act. This process of power/political interplay is not exclusive to Aotearoa but also occurs in other countries with an indigenous population. In Canada for example, the consideration of indigenous knowledge within environmental decision making has been promoted. Strategies to promote indigenous knowledge have, however, faced barriers including conflicts with government or industry agendas as well as the co-option of indigenous knowledge by non-indigenous researchers and practitioners. In the end, these barriers help maintain the power imbalance that exists between countries and indigenous people (Ellis, 2005).

Māori are rightly wary of providing their knowledge to those involved in resource management including researchers, policy analysts, planners or developers. Agrawal (2002) astutely notes that:

Once the knowledge systems of indigenous peoples are separated from them and saved, there is little reason to pay much attention to indigenous peoples themselves. (p. 204)

This is a key issue of concern for Māori and one of the main reasons why iwi and hapū groups are reluctant to share their information. In the course of assessing a resource management option, with regard to indigenous knowledge, it is easy to be caught up in the mechanics of valuation, placing a dollar value on indigenous values. Agrawal (2002) provides a cautionary note of warning for indigenous peoples in the pursuit of development. He insists on the need to keep in mind the ways in which power works. Understanding the relationships between indigenous peoples and power structures is essential to improving the lot of marginalised or indigenous peoples. Agrawal advocates that indigenous knowledge be not the only path towards achieving empowerment but also a worthy component in an arsenal of tools to achieve empowerment.

To give effective impetus to kaitiakitanga the recognition of rights needs to take place. On the one hand iwi and hapū can exercise their right as kaiteki based on mana whenua status and yet within a bi-cultural context there exist other players such as

businesses, local and central government, and other environmental interest groups each with their own agenda that may or may not conflict with those of iwi and hapū. It is through legislation and policy that rights to act as kaitiekitanga are recognised (Kawharu, 2000). Through my own experience recognition of kaitieki through local government policy depends on the actions of those within the councils to respond to iwi/hapū taking the opportunity to be involved in resource management at a local government level. While some local authorities respond favourably and are enthusiastic about the chance to be involved with local kaitieki groups, other councils are defensive and stand-offish.

There is considerable interest within New Zealand to quantify Māori values for the purposes of assessing public goods. This reasoning is based to a degree on the anthropocentric approach to public policy. A lack of methodological guidance within the Resource Management Act 1991 (Matunga, 2000) also reinforces adherence to mainstream planning practices that include consideration of economic valuation. There are three principal references to economics in the Resource Management Act 1991 – sections 5(20), 7(b), and 32 of the Act. Part 2 Section 6 of the Act identifies values that are matters of national importance. These values are to be considered when determining resource allocation. The challenge for resource allocators, particularly resource economists is to determine the values for these matters of importance including section 6(e) – the relationship of Māori with their ancestral resources.

Incorporating Māori values into environmental management should be seen as an opportunity for iwi and hapū to define the foundations of their knowledge systems. The challenge for both Māori and local government is to understand the application of these values within contemporary environmental management (Royal, 1996).

### **1.4.1 Hypothesis**

The primary goal of this thesis is to explore the validity of welfare economics when seeking to measure quantitatively Mātauranga Māori or Māori knowledge through stated preference techniques particularly through the contingent valuation method.

A number of further research questions were addressed to help achieve the goal set. They are listed below:

- a) What does cultural identity tell us about people's concern for the environment?
- b) Do protest bids provide useful insight in to Māori motives for supporting or rejecting environmental improvement/asset development?
- c) Does the contingent valuation method validate what we know about Māori ontology?

### **1.4.2 Methods and Methodology Used**

Contingent valuation surveys are a class of methods in which participants are asked their individual willingness to pay for a good or service, most often a collective, public product or non-market good, by means of such things as increased taxation, levies or donations. The contingent valuation method (CV) is used to estimate the demand and value the public has for a public good, including such things as environmental improvement. Willingness to pay (WTP) surveys are used by applied economists for the generation of net benefits for project evaluation (for a recent example see Denne, Irvine, Atreya and Robinson (2007)). It is generally conceded that CV is a reliable way to ascertain the value of a non-market good that is not traded in a market and such valuations are increasingly important in the context of the managed development of public resources.

CV has been developed in applied economics for more than 25 years. Evaluation of the method has led to the development of a prescribed approach (Arrow, Solow,



Portney, Learner, & Schuman, 1993; Hausman, 1993; Mitchell & Carson, 1989) to obtain an unbiased response from those sampled. However, the CV method still operates within a more general topic of research within social psychology – that of the attitude-behaviour relationship – because a positive WTP is an estimate of the supposed amount an individual will actually pay. WTP estimates have been described as merely the expression of an attitude towards a public good (Kahneman, Ritov, Jacowitz, & Grant, 1993). Testing the robustness of the methods has revealed a number of problems with CV including preference reversals (Ryan & San Miguel, 2000), failure of internal consistency and sensitivity to irrelevant factors combined with an insensitivity to factors that should vary an individual's WTP, such as income (Green, Jacowitz, Kahneman, & McFadden, 1998). McFadden and Leonard (1993) conclude that CV studies are troubled by psychometric distortions that present a challenge to the assumption in classical economic theory of underlying stable preferences for goods and services.

A number of CV studies have been conducted in countries like New Zealand that have a colonial history (Boadu, 1992; Choe, Whittington, & Lauria, 1996; Hadker, Sharma, David, & Muraleedharan, 1997; McPhail, 1993; 1994; Raje, Dhobe, & Deshpande, 2002; Reddy, 1999; Whittington et al., 1992; Whittington, Briscoe, Mu, & Barron, 1990). A discussion of CV studies conducted in developing countries by Whittington (2002) revealed three primary reasons for the poor implementation of these studies. Poor administration, inadequate scenario design and the lack of testing the effects of variations in survey design on WTP results were methodological issues seen by Whittington as symptomatic of implementing cheap “streamlined” CV surveys.

In New Zealand the importance of CV surveys is highlighted by legislation requiring costs and benefits to be assessed. Further there are requirements for a consultative approach to the development of public goods, and for attention to Māori (the indigenous people of New Zealand) interests in the development process. In practice, then, the decision and policy making concerns involve interaction with evidence based on Māori epistemologies. The Māori world-view is holistic in nature in that it

embodies historical, environmental, and spiritual values, as well as modern experiences. Concerns arise for Māori communities when planners and developers utilise economic tools such as willingness to pay surveys to determine the total value of a proposed project.

This thesis presents work on the implementation of a contingent valuation study using three separate samples drawn from; the general Māori population in Auckland city, a hāpu/sub-tribe indigenous to the Auckland isthmus, and drivers of motor vehicles in Auckland city. Data collection modes include a postal survey and face-to-face interviews. A logistic regression model was applied to investigate the relationship between dependent variables (willingness to pay) and a host of independent variables including ethnicity, income, gender and general concern for the environment. The key difference between a logistic regression model and a linear regression model is that the response variable in the logistic model is binary or dichotomous – here “willing to pay” or “not willing to pay” – and the prediction given is of the probability of an individual being willing to pay.

### *1.5 Positioning the Thesis*

Gathering kai moana (seafood) was a predominant activity in which I was immersed in while growing up in the coastal city of Tūranga-nui-a-Kiwa (Gisborne). It was not only an economic activity to supplement the meagre wages earned from low-skilled labour but also a sense of identity; an identity that had been handed down through the generations. This sense of identity is encapsulated in the following whakatauki (proverb):

Ko ana kaimakamaka i aroha nei au; ko te waka tē tōia, tē haumatia

I think with regret of his lavish gifts of food, so that unsolicited all came to haul his canoe (Mead & Grove, 2001, p. 225)

This lament was for the death of Whetūkamokamo, a renowned chief of Ngāti Porou; a line of rangātira to which I whakapapa. The values implicit within the lament aptly apply within a modern day context. I remember with fondness the consternation faced by my mother (a Pākehā) every time my father went fishing or diving for shellfish – he would proceed to share the take with the rest of the extended whānau to the point where a meagre portion was left for the immediate family. Such was the compulsion to provide for the extended whānau, an influence no doubt learned from his father also a keen fisherman. At times it was difficult merely surviving particularly during the times of hardship we endured during the restructuring of the economy during the 1980s.

On reflection, these two things (economic restructuring and kaitiekitanga) had a profound impact on my personal outlook on life. And so it is within these influences that this thesis is approached. I readily admit that these influences are intertwined with how this thesis is approached. I make no attempt to clothe this thesis in objectivity. The position of this thesis is very much within normative economics.

### **1.5.1 Theory**

We cannot rid ourselves of the cultural self we bring into the field, any more than we can disown the eyes and ears and skin through which we take our intuitive perceptions about the new and the strange world we have entered (Scheper-Hughes, 1994)

I have no qualms with this approach for I am unashamedly Māori and so the arguments presented here will be subject to the ideologies and philosophies to which I have been exposed. However, I do not attempt to reject all claims of objectivity or impartiality. This would be hypocritical given that to utter such a statement would

lead to an endless circular argument. It is important to recognise the iwi-centricity of Māori ontology. The phrase “mā rātau anō rātau e korero” recognises that each hapū or iwi have their own distinct customs, practices and values. Māori scholars have argued that subjectivity is a valid process for acquiring knowledge. Māori Marsden (1975) asserts:

The route to Māoritanga through abstract interpretation is a dead end. The way can only lie through a passionate, subjective, approach... As a person brought up within the culture, who has absorbed the values and attitudes of the Māori, my approach to Māori things is largely subjective. The charge of lacking objectivity does not concern me: the so-called objectivity some insist on is simply a form of arid abstraction, a model or a map. It is not the same thing as the taste of reality. (p. 191)

I share the view with other indigenous scholars that research is based on culture, it is subjective, and it is bound to society's diverse institutions (Battiste & Henderson, 2000; Smith, 1999; Walker, 1997). It is within the epistemological position of subjectivity that I have positioned this thesis. The following proverb encapsulates the essence of why this thesis has been carried out with this epistemological philosophy in mind. It is from the coastal hapū of Ngāti Rangi, Reporua with which I have whakapapa links. Tibble (1984) is quoted as saying:

Na te ngutukura ko te hinengaro, na te hinengaro ko te mahara, na te mahara ko te whakaaro, na te whakaaro ko te korero, ma te korero ka tu he tikanga... (p. 2)

Engaging the senses stirs the emotions, engaging the emotions stimulates the intellect, stimulating the intellect stirs the memory, from the memory comes the thoughts, from the thoughts come the words, from the words we construct customs.

However, at the same time there is a sense of awareness that to abandon methodological norms of economics may stall any economic research progress into a mire of relativism. From a methodological position, this thesis recognises that there is

a distinction between positive-normative economics. I concede that to make any sort of economic research progress, priority must be given to the task of producing and falsifying economic theories. As Blaug (1980) opines it is only through the methodological process of hypothesis testing that value judgments and ideological views are minimised.

This concession as such presents an ethical dilemma. The ability of CV to package one aspect of the indigenous perspective and present it as representative of all things indigenous is both appealing and appalling. In effect it has decontextualised the indigenous perspective, rendering it malleable and conducive to the “mainstream” agenda. CV can be seen as having the power to condense Māori ontology to a single “magical” number. Capturing Mātauranga Māori in this way could be viewed as the Holy Grail for resource economists. The approach continues to support the view of the inherent dominance of Western knowledge. This is anathema, however, to the indigenous person who is horrified at the mere thought of placing a dollar value on the life of a kaitieki, whanaunga, a tipuna, on mauri – the very essence of life itself. However, in order to reconcile this conflict and manage this risk, I recognise that in the end the goal is to carry out a piece of research with integrity and validity while at the same time recognising the underlying values and ideology that have influenced the way the research has been carried out, analysed and interpreted.

### ***1.6 Structure of the Present Work***

The bulk of this thesis comprises four analytical chapters, each with its own discussion and conclusion. These chapters have been structured as papers, for possible publication at a later date. In Chapter 2 I present criticisms of the underlying theory of environmental valuation. This chapter first challenges the assumption that indigenous values can be transformed into the neo-classical framework, and second questions the validity of applied economics to measure these values. Criticisms of the cost-benefit analysis methodology within a New Zealand context are also presented.

Chapter 3 is interested in investigating the potential link between Māori ethnicity – expressed through a political-legal Māori cultural identity measure and a scale measuring concern for the environment. The chapter presents work from a quantitative survey using two separate samples drawn from the Māori population: one from the general Māori population in Auckland city; the other from a hapū within Auckland city. It is hypothesised that those respondents who have a good understanding of Mātauranga Māori are those with a secure cultural identity and they are more likely to be environmentally concerned. There is awareness that surveys are a softer option than face-to-face hui/meetings for those involved in consultation processes to do with resource management. This chapter is also concerned with potential claims of validity in survey responses representing the views of an entire ethnic group such as Māori.

Chapter 4 demonstrates a technique to isolate and quantify the “protest bid” in the application of a willingness to pay survey involving samples of drivers responding to value improvements in the road surface with associated environmental improvements. A survey of 700 respondents is used to identify the extent to which the contingent valuation method (CV) can measure willingness to pay (WTP) for public goods where the response is ethnically influenced. A constant is added to the design of the WTP question, performed within a referendum-type CV, to allow a “negative willingness to pay” to be demonstrated in different samples: Māori and others. These results are discussed in the context of “protected values” and the benefits of indirect measures that are concurrent with the application of CV to determine policy outcomes for the management of public goods.

The study in Chapter 5 explores whether CV can validate what we know about Māori ontology. This study employs logistic regression and presents work on the implementation of a CV study using the samples from Chapter 3 and Chapter 4. I hypothesise that Māori who are concerned for the environment are more willing to pay for environmental improvement. Methodological issues such as “interviewer effects” and “social desirability” may influence the way Māori act, particularly if there is a strong link to the environment (this connection between Māori and the

environment has been argued in the preceding sections of the current chapter). It is expected Māori should be more likely to approach CV as a tool for expressing cultural attitudes towards environmental management.

The final chapter makes concluding remarks based on the most significant findings of the thesis. This chapter also provides suggestions for future research.

### *1.7 Contributions of the Thesis*

In the New Zealand context there is little appreciation of just how Mātauranga Māori can be used in natural resource management. In fact, it is argued that very little attention has ever been given to the possibility that Mātauranga Māori might play a significant role at all. Participation by Māori in urban planning continues to be low (Blackhurst et al. 2003; Harmsworth, 2005; Jefferies et al. 2002), despite increasing Māori desire to participate, and legislation, such as the Resource Management Act 1991 and Local Government Act 2002, requiring local urban authorities to “recognise and provide” for Māori involvement (Matunga, 2000).

This research will potentially improve critical understanding of the application of Mātauranga Māori within the current regulatory framework. The research is strategically aligned with the principles of the Resource Management Act 1991 in recognising Māori cultural values in natural resource management assessment. It also addresses several sections of the Local Government Act 2002 in promoting collaboration with iwi and hapū agencies and determining cultural aspirations for long-term planning.

This thesis also aims to contribute to the New Zealand Government’s Māori research and innovation strategy. One of the four main themes of the strategy is concerned with “Enabling the interface between Māori knowledge and research/science and strengthening Māori knowledge” (Foundation of Research Science and Technology, 2008). The contribution is through explicit analysis of Mātauranga Māori within non-market valuation.

## 2 Welfare Economics: The Underlying Theory of Environmental Valuation

Economists are arguably some of the most influential people in the world – entire economies endure infrastructural upheaval based on the prescriptive works of academics. It is no wonder, therefore, that some parts of society have become wary of economists' sooth saying abilities. This scepticism of economics as a science is captured in the following quote by Bill Shaw (2001), professor of business ethics:

In “real” science and math,  $H_2O$  must equal water, and  $2 + 2$  must equal 4. In social science, for our purposes economics, self-interest and rationality can point in different directions: (a) growth-to-the-sky and (b) sustainable growth. Economics appears to be the only science in which two diametrically opposed propositions can exist side-by-side, apparently oblivious of one another. (p. 54)

The dilemma for welfare economics is that in the blind pursuit of efficiency, economics is bereft of a wairua (soul). A large accumulation of empirical evidence indicates that certain aspects of the microeconomic model do not describe people's ordinary decision-making processes (Arkes & Blumer, 1985; for example see Hoskin, 1983; Tversky & Kahneman, 1986). As Sen (1987) critiques:

The methodology of so-called “positive economics” has not only shunned normative analysis in economics, it has also had the effect of ignoring a variety of complex ethical considerations which affect actual human behaviour and which, from the point of view of the economists studying such behaviour, are primarily matters of fact rather than as normative judgements. (p. 7)



Many practitioners of welfare economics have fallen into the trap of believing that normative judgements are actual fact. There is a saying from my Māori ancestors that warns us to be wary of such falsehoods.

E hoa, rukea atu tō kura. Ka nui te kura kei uta e ngangahu mai nei.

O friend, throw away your red plume! There are many plumes clearly visible on the shore! (Mead & Grove, 2001, p. 26)

After travelling across the Pacific from Hawaiiki to Aotearoa and on sighting land from their vessel *Tainui*, the crew called to the guardian of the kura (a valued red plume) when they saw the red blossoms of the pohutukawa tree. Some of them tossed their worn out, sea-drenched feathers overboard, only to discover that the red flashes seen from the sea were perishable blossoms (pohutukawa) and not birds.

As an indigenous person you are taught to identify and nurture relationships with the environment. As a researcher you are taught to be impartial and objective. Māori academic Linda Smith (1999, p. 39) states that objectification is a process of dehumanisation. With this declaration in mind a subjectivist approach has guided the writing for this chapter. I present here criticisms of the underlying theory of environmental valuation. The chapter first challenges the assumption that indigenous values can be transformed into the neo-classical framework and second questions the validity of applied economics to measure these values.

## ***2.1 Objectifying Cultural Values***

It is ironic that the study of economics was originally concerned with people and their relationships with one another. Utilitarians such as Pigou and Marshall were concerned with social utility, the summation of individual utilities (Bromley, 1990). Their ethical stance was concerned with assessing alternative social states on the basis of achieving the most social welfare for society in general. The concept of utility is problematic, particularly since utility is referred to unobservable preferences. The seminal writing of Robbins (1932) cautions against the use of interpersonal

comparisons. Logically it is difficult to make such comparisons, given there is no common unit of welfare. Economic “science” seemed to be seriously undermined by this admonition.

The development of “New Welfare Economics” was a response to the conclusions made by Robbins. The search for an objective economic “science” continued with alterations made to the concept of Pareto optimality. The theorem of Pareto optimality remains one of the key concepts of new welfare economics. The principle of Pareto optimality is that policy changes that make at least one person better off without making anyone worse off are Pareto-improving. The general consensus is that Pareto made these statements as pure economics, free from any type of value judgement (Blaug, 1980, p. 142; Sen, 1997, p. 23). The inherent problem with the theorem was the unit of measure utility/opphelimity (Pareto had an aversion to the term utility because of its undertones of cardinality (Blaug, 1980)). To rectify this situation, Kaldor (1939), Hicks (1939) and Scitovszky (1941) introduced the idea of compensation criteria – compensation payments (albeit hypothetical) between the gainers and the losers. In this way the compensation criterion is used as the litmus test to choose between different social outcomes. This criterion has become known as the potential Pareto improvement and is perceived as totally neutral, recommending no policy prescriptions, only stating whether one allocative state of social outcomes can make someone better off without making someone else worse off, while at the same time casting no judgement on which allocative state is more beneficial and whether to offer compensation to the losers, if there are any.

Little (1950) is scathing of the New Welfare Economics position, arguing there is no guarantee there will be a move to compensate losers:

It seems improbable that many people would, in England now, be prepared to say that a change, which, for instance, made the rich so much richer that they could (but would not) overcompensate the poor who were made poorer, would necessarily increase the wealth of the community. (p. 50)

Equally critical, Sen (1997) on economic inequality, makes the following analysis:

If the lot of the poor cannot be made any better without cutting into the affluence of the rich, the situation would be Pareto optimal despite the disparity between the rich and the poor... The almost single-minded concern of modern welfare economics with Pareto optimality does not make that engaging branch of study particularly suitable for investigating problems of inequality. (p. 7)

The work by Kaldor and Hicks had a significant impact on the way welfare economics was approached. Bromley (1990) astutely observes that while utility as it was known by Marshall and company was no longer in vogue, the New Welfare Economists ushered in a new era by making the distinction between production and distribution. Welfare economics now focused on creating efficiencies for producing commodities, distributional issues were left for politicians and philosophers. In essence, welfare economics was absolved of any ethical concerns regarding distributional issues.

The consensus today among welfare economic theorists is that the attempt to make welfare judgements without interpersonal comparisons of utility has been a heroic failure (Chipman & Moore, 1979; Suzumura, 1999). In practice, economic decision-making rarely achieves an outcome that is a potential Pareto improvement (Suzumura, 1999). Blaug (1980, chapter 5) provides a clear argument for placing Paretian economics firmly within the normative camp summing up the argument as follows:

The concept of Pareto optimality and the associated concept of PPIs *should* not be confused with theorems of positive economics. If this implies that economists must give us the notion that there are purely technical, value-free efficiency arguments for certain economic changes, and indeed that the very terms “efficient” and “inefficient” are terms of normative and not positive economics, so much the better: immense confusion has been sown by the pretense that we can pronounce “scientifically” on matters of “efficiency” without committing ourselves to any value judgements. (pp. 147-148)

Recognising that a normative approach is part and parcel of welfare economics, Harvard economists Bergson (1938) and Samuelson (1947) developed the concept of a social welfare function. This function is based on the belief that the analysis of the logical consequences of any value judgements, irrespective of whose ethical beliefs they represent, whether or not they are widely shared in the society, or how they are generated in the first place, is a legitimate task of welfare economics. Social welfare is increased “whenever at least one of the individual utilities on which it depends is raised while none is reduced” (Leontief, 1966, p. 27). Arrow (1951) later demonstrated that it is impossible to construct a Pareto consistent social welfare function.

In essence, Arrow proved mathematically that it is impossible to design a social welfare function that satisfies all the conditions of his theorem (refer to Sen (1979) for an in-depth analysis of Arrow’s theorem). Here is further evidence that argues against a process for collective decision-making that can aggregate individual utility and arrive at a consistent and coherent collective outcome. Sen (1979) argues that the impossibility is a result of combining a version of welfarism that excludes the use of non-utility information with making the utility information remarkably poor (particularly in ruling out interpersonal utility comparisons). Given these shortcomings of the underlying theory of welfare economics, the following section presents criticisms of the application of this theory, particularly cost-benefit analysis (CBA).

## *2.2 The Application of Measuring Cultural Values*

### **2.2.1 Cost-Benefit Analysis and the Environment**

Since the 1980s New Zealand has pursued neo-classical or market-based policies with a particular fervour. Market-based options are seen by resource management decision-makers as essential frameworks for efficiently allocating resources. The discourse of the Resource Management Act 1991 reflects this attitude with sections of the Act such as Section 32: 4(a) prescribing the evaluation of “the benefits and costs

of policies, rules, or other methods...” in the assessment of a proposed resource use option (Resource Management Act, 1991). It is accepted practice for economists in New Zealand to present cost-benefit analyses in the Environment Court as evidence for proposed resource use. Andrews (1982) explains that advocates of an “objective” approach to public investment economics couch their discourse in notions of rationality and efficiency. There is an acceptance of consumer sovereignty – the consumer rather than society or the community is a better judge of what gives them utility than anyone else. Emphasis is placed on market-based approaches and cost-benefit analyses (as the most efficient method for distributing resources) and not necessarily on the goals and aspirations set out by legislation. These goals and aspirations are most likely to be a reflection of the values and ethics that are most valued by society (the question of who makes up society is also of importance, particularly for indigenous peoples). Herein lies the problem. If the application of a piece of legislation is based on an ideology that is flawed and faces considerable criticism, how can evidence based on this ideology remain a valid option for resource evaluation? The following section looks critically at the cost-benefit approach and explores whether it is an appropriate method for resource evaluation particularly within the context of New Zealand and the role that Tangata Whenua play in resource management.

Criticisms of the cost-benefit approach have generally come from those who are not followers of the welfare economics doctrine. Ecologists, institutional economists and rent seekers have been the most vocal critics of the cost-benefit approach. This is not unexpected, given that welfare economics aspires to a reductionist position for complex problems such as environmental valuation. In contrast, institutional economics recognises the underlying social and legal issues that are part and parcel of economic activity. An insightful and cogent evaluation of cost-benefit approach from institutional economist Kapp (1970) follows:

Any suggestion to decide the justification of control measures in terms of a willingness to pay for them, or by assuming a capacity to compensate those who have to bear the costs of control out of increments of property values

or other monetary values accruing to others, fails to take sufficient account of three factors: a) actual markets are far from perfect – in fact they are “oligopolistic” in character, b) the consequences of environmental disruption are highly heterogeneous and cannot be compared quantitatively with one another, and c) the benefits obtainable from environmental control are equally heterogeneous and can neither be compared quantitatively with one another nor with the outlays for control. To quantify them nevertheless by means of some arbitrary monetary standard is at best problematical and at worst contradictory to logic if not in violation of our ethics. For what is the monetary value of human health and human life? What is the value of the quality of urban life or the beauty of a landscape that is being sacrificed in the process of urban expansion? The fact of the matter is that both disruption and improvement of our environment involve us in decisions which have the most heterogeneous long-term effects and which, moreover, are decisions made by one generation with consequences borne by the next. To place a monetary value on and apply a discount rate (which?) to future utilities or disutilities in order to express their present capitalized value may give us a precise monetary calculation, but it does not get us out of the dilemma of a choice and the fact that we take a risk with human health and survival. For this reason, I am inclined to consider the attempt of measuring social costs and social benefits simply in terms of monetary or market values as doomed to failure. Social costs and social benefits have to be considered as extramarket phenomena; they are borne and accrue to society as a whole; they are heterogeneous and cannot be compared quantitatively among themselves and with each other, not even in principle.

In fact, the more we admit that *all* benefits (secondary, indirect, intangible, etc.) of control measures ultimately have to be included in benefit-cost calculations, the more problematical becomes any evaluation in terms of one single monetary standard. In short, I fail to see that cost-benefit analyses as they stand today have a solution of the problem of evaluating either the social costs of the disruption, or the social benefits of the improvement of our environment by control measures. (pp. 25-26)

Further attacks on CBA have come from the philosopher Sagoff. He advocates that ethical arguments are worthy of their place in the set of information considered by decision-makers. Cost-benefit analysis does not necessarily provide the conviction that a value or belief is valid. Rather, it is up to evidence and expert opinion to support an ethical stance. Cost-benefit analysis, he argues, confuses preference with ethical and factual judgment (Sagoff, 1988). Sagoff's argument is directly applicable to New Zealand. Attempts to co-opt Māori values into the neo-classical approach need not occur. These values should be considered as they are on the basis of their own merit and judged on the basis of their ethical and moral value.

Sagoff (1988) reiterates the theme that cost-benefit analysis can not judge values and beliefs on their merits but asks who is the most willing to pay for those values and beliefs. Sagoff believes that analysts are ill-informed to believe that ethics and cultural values are the same as preferences. He questions the appropriateness of some analysts to co-opt political, cultural, and ethical values into a neo-classical framework by codifying these values as bequest values, existence values, intangibles, fragile values, or soft values.

The argument of individual choice or community responsibility is an important issue to address for resource management in New Zealand. Advocates of cost-benefit analysis place their faith in the individualistic notion of consumer sovereignty – the ideal that consumer purchasing power can influence how and what producers supply to the market. There is considerable concern and wariness on the part of Māori with regard to these ideals. New Zealand's neo-liberal transformation period during the period 1984–1999 had a profound detrimental impact on the health and well-being of Māori (Te Puni Kokiri, 1998; Te Puni Kokiri, 2000). Furthermore, a core principle/ethic of a Māori ontology is the concept of whanaungatanga. Embodied within this principle are ideals of building and maintaining relationships with immediate family, extended family, and the community. The concept of whanaungatanga can be likened to the view of acting as a citizen in a democracy, concern for the well-being of other members in society is of basic importance to society and the democracy. The way someone behaves in a market does not

necessarily reflect how they would act as an individual. As Sagoff says “I am not alone in possessing incompatible ‘consumer’ and ‘citizen’ preference orderings” (Sagoff, 1988, p. 53).

The underlying assumptions of cost-benefit analysis are based on a positivist approach. There are two basic assumptions. First, economic agents (individuals, households, firms, consumers) when confronted with a possible choice between two (or more) bundles of goods, have preferences for one bundle over another. Second, an economic agent attempts to maximise its overall level of satisfaction or utility (Deaton & Muelbauer, 1980; Varian, 1984). Attempts are made to develop the “correct” or objective social values or prices for each policy decision. There are numerous technical problems with cost-benefit analysis, including: unexpected gaps in measures of value; unexpected reactions to new information; erratic reactions to hypothetical options; inconsistent perceptions towards risk; and preference reversals (Hanley & Shogren, 2005). All these problems question the internal validity of cost-benefit analysis. Heinzerling and Ackerman (2002) also provide detailed criticism of cost-benefit analysis. For these two authors such analysis is a deeply flawed method that repeatedly leads to biased and misleading results. Given these shortcomings, there is good reason to question why we should believe the commonly used cost-benefit analysis is appropriate for environmental decision-making.

Criticism of applied cost-benefit analysis is generally concerned with five main issues: 1) problems with information; 2) choice of welfare measure; 3) hypothetical bias; 4) discounting; and 5) perceptions of risk. The following section looks at the arguments against cost-benefit analysis in further detail.

### **2.2.2 Problems with Information**

A major assumption of cost-benefit analysis is that consumers act rationally within a market-based institution (Becker, 1962; Heinzerling & Ackerman, 2002; Smith, 1991). However, markets do not necessarily exist in the case of environmental goods. It is also questionable whether people act rationally in this case. Since markets do not



exist for some environmental goods and it is presumed that markets are the most efficient method for allocating resources, applied economists have endeavoured to develop and refine stated preference methods such as the contingent valuation method (CV) to pursue rationality of the environment. This pursuit has entailed a normative approach and so it is no surprise that an analyst's perceptions of how behaviour ought to be differ from actual observed behaviour. This methodological approach has led us to believe that "preferences can be inferred (constructed) by analysis of the choices people make" (Kopp & Pease, 1997). This approach is delusional as it rests on the theoretical approach of positive economics. Sagoff (2004) provides a convincing argument as to why preference construction is ideologically a normative judgement:

...choices are themselves unobservable and must be inferred from assumptions the observer makes about opportunity sets and, therefore, preferences...  
Preferences represent theoretical constructs inferred from stipulated or ad hoc descriptions of behaviour. (p. 71)

Preferences and behaviour are conceptual and theoretical constructs (i.e. normative judgements) that are logically related. Observers determine a theory and infer that behaviour based on the preference set defined by the researcher. Choice does not reveal preferences; rather, assumptions by the researcher about preference reveal choice. Preference sets are subjectively constructed by researchers, otherwise there is no other way of knowing apart from the costly exercise of interviewing every person there is to determine the alternatives (Sagoff, 2004).

In fact there is increasing evidence to suggest preferences are exogenous and that consumers actually construct preferences during the CV exercise. If people have little or no knowledge about the good they are being asked to trade, they are unlikely to have pre-existing preferences for different bundles of this good. Rather, preference construction takes place at the time they are being asked willingness to pay (WTP) questions based on their attitudes, beliefs, values and ethics. In this situation preferences are context dependent (Gregory, Lichtenstein, Brown, Peterson, & Slovic, 1995; Kahneman, Ritov, & Schkade, 1999; Pouta, 2004; Spash, 2000; Spash

& Hanley, 1995). These issues raise the question of whether it is the role of CV to help develop consumer preferences for the environment.

Environmental economists have doggedly defended CV. Arguments as to why behaviour does not follow the tenets of rationality depend on which camp you belong to. Proponents of CV view any deviation from theory as an anomaly (see Hanley & Shogren, 2005) or that the interpretation or methodology is flawed (see Smith's (1992) and Harrison's (1992) criticisms of Kahneman and Knetsch (1992)).

Consumer behaviour that deviates from standard economic theory is filtered in a "non-explicit way that is much harder to recognize than when making explicit value judgements" (Gowdy, 2004, p. 247). In welfare economic theory, well-being or welfare only refer to an individual's well-being, anything else not related to an individual's welfare is excluded from consideration (Kaplow & Shavell, 2002). Subjective preferences are termed by welfare economists as "soft" "intangible" or "nonuse" values for which consumers may be willing to pay (Sagoff, 1988).

Alternative views, judgements, arguments and the moral positions of other experts are dismissed (Kaplow & Shavell, 2002). There is an element of risk in this approach because, as Sen (1987) notes, there is no evidence to suggest that individuals' self-seeking maximisation is the best approximation of actual human behaviour or that such maximisation will lead to the most optimal economic outcome.

There is a sense that value judgments are to be minimised, mitigated and removed during the streamlining process of CV. For example, protest bids that may reflect lexicographic preferences are generally dropped from CV analysis. Alternatively, respondents are forced to work within the normative framework of the researcher. Environmental benefits are assumed to be tradable and respondents are forced into making a trade-off. According to Sagoff (1988, p. 92), this is a category mistake. A category mistake arises when things or facts of one kind are presented as if they belonged to another kind. According to Ryle (1949) this is an "error of logic where concepts belonging to different categories are inappropriately related" (Ryle, 1949, p. 11).

A relevant example for New Zealand comes to mind. Māori want their ideas and perspectives such as mauri, mana, and tapu considered by planners for resource management. Asking Māori how much they would be willing to pay to have their values considered is a categorical mistake. Māori values are derived from a Māori epistemology and should be considered or analysed within this body of knowledge. Sagoff (1988) argues that these types of values and ethics should not be seen as preferences but as opinions and views:

They state what a person believes is best or right for the community or group as a whole. These opinions or beliefs may be true or false, and we may meaningfully ask that person for reasons that he or she holds them. But an analyst who asks how much citizens would pay to satisfy opinions that they advocate through political association commits a category mistake. The analyst asks of beliefs about objective facts a question that is appropriate only to subjective interests and desires. (p. 94)

If it is accepted that CV has a role to play in resource management, then analysts need to acknowledge explicitly the subjective nature of the method. Furthermore, there is an opportunity for sophisticated models to take into account moral and ethical concerns of consumers for resource management. Alternative views such as those of biologists, ecologists, and indigenous people who recognise the intrinsic values of the environment are an essential part of resource management. As Sagoff argues above, they should not be dismissed as irrelevant or treated as indicators of utility.

### **2.2.3 Choice of Welfare Measure**

In applied economics, consumer surplus is the accepted measure for consumer benefits. It is defined as the area under the Marshallian or ordinary demand curve and above the horizontal line for the equilibrium price. In the case of pure public goods the price is zero, so the area of consumer surplus is represented by the area under the demand curve for a given quantity of the goods. The consumer surplus model, however, does have some ambiguities, identified by Samuelson (1947) and Silverberg (1978), that were due to holding income constant rather than the level of utility. Hicks

(1941; 1943; 1956) adjusted the consumer surplus model by fixing the level of utility at an initial level with two associated measures (compensating variation and surplus), and two other measures, with constant utility at an alternative level (equivalence variation and surplus). In essence, the Hicksian demand curves are derived from Marshallian demand curves where total utility is held constant at different specified levels.

In general, contingent valuation surveys have focused on two compensating surplus measures: the consumers' maximum willingness to pay (WTP) to gain a quantity increase in the public good and remain at a current level of utility; the consumer's willingness to accept (WTA) compensation for a reduction in the provision of a public good. Compensating variation is used to estimate consumer WTP. It is defined as the amount of compensation, paid or received, that will leave the consumer in his initial welfare position following the change in price if he is free to buy any quantity of the commodity at the new price. Equivalent variation, on the other hand, is used to estimate consumer WTA. It is defined as the amount of compensation paid or received that will leave the consumer in his subsequent welfare position in the absence of the price change if he is free to buy any quantity of the commodity at the old price (Currie, Murphy, & Schmitz, 1971, p. 746).

Problems occur when attempting to compare and then aggregate consumer WTA or WTP. First, theoretical flaws open up the methodology to attack. The Hicksian demand curve is based on utility theory and as a result derivation of welfare measures can be problematic. Hanemann (1984) presents two welfare measures for consideration but notes that a normative judgement is required to determine the appropriate method of conducting welfare evaluations in a random utility context. Furthermore, assumptions on the part of the researcher must be made to identify the most appropriate utility function, welfare measure, statistical model, and analysis of responses. As Johansson, Kristrom and Maler (1989) point out, Hanemann's key applied economics paper works wonders when individual utility functions are homogenised; however, if individuals are not identical (as is likely in the real world) these detailed econometrics become as useful as a paper clip during a tornado.

Second, WTA estimates tend to far exceed estimates using WTP measures. This result is reprehensible to followers of the NOAA (National Oceanic and Atmospheric Administration) guidelines who tend to favour conservative estimates (see Arrow et al (1993)). Willig (1976) argued that there is a relatively insignificant difference in the computation of equivalent variation and compensating variation under the ordinary demand curve so it does not matter which measure is used. Bockstael and McConnell (1980) warn economists to be wary of Willig's conclusions regarding consumer surplus measures. The area under the ordinary demand curve is not always a reliable measure of welfare change and at best it is subject to great variation arising from the arbitrary choice of functional form.

Finally, these two compensating surplus measures assume consumers are entitled to their current level of utility or their current status of property rights with regard to the public good. The choice between WTP and WTA is dependent on the consumers' property rights. Perceived property rights are equally important as actual legal ones when dealing with contingent valuation (Mitchell & Carson, 1989).

Property rights have an important influence on how the elicitation question in a CV survey is framed. The theoretical assumptions of the neo-classical model that property rights are static and well-defined are a rarity when applied to public goods. Problems such as high transaction costs, poor information, free riders, and non-rivalry in consumption hinder the ability to apply the CV approach to valuing public goods. Choosing between the two consumer surplus measures can be problematic. The researcher determines whether consumers have the right to sell the public good or, if they want to enjoy the good, whether they have the right to buy it. The subjective decision by the researcher has a significant impact on how participants construct preference tradeoffs. In New Zealand the entitlements of Tangata Whenua to "public goods" further complicates the design of CV. Lockwood (1999) recognises that participants hold diverse property rights perceptions for natural resources. Elicitation questions will depend on how participants perceive their property rights status. The format of the CV elicitation question will depend on a normative judgement on the

part of the CV researcher with regard to their perceptions of property right entitlements.

#### **2.2.4 Discounting**

Discounting is a particularly prickly problem to deal with when environmental goods are being considered. In standard economic theory, discounting is relatively straight forward. The concept of the time value of money explains that having money now is more valuable compared with having the same amount in the future, due to its earning capacity. In cost-benefit analysis a social discount rate is applied to reflect the present value that society places on the future net benefit of a resource allocation. The process of discounting involves two moral judgements; 1) the decision to use a discount rate (Page, 1977), and 2) who chooses the discount rate and at what level?

Much of the welfare economics literature debates the second point (Baumol, 1968; Bradford, 1975; Feldstein, 1972; see Marglin, 1967; Sen, 1967). Environmental arguments against discounting have tended to be disregarded on the basis of efficiency (Markandya & Pearce, 1991). Recently the issue of intergenerational equity and efficiency was tackled by some leading economists led by Arrow. These economists strongly recommend using cost-benefit analysis with discounting for making decisions concerning environmental health and regulation (Arrow, Cropper, Eads, & Hahn, 1996). Following the doctrine of welfare economics, guidelines were developed in the tradition of Paretian economics. Efficiency concerns derived from cost-benefit analysis were to be regarded alongside equity issues. This approach has been termed by Page (1997) the “separated approach”. Page (1997) identified four reasons why the separated approach is of particular concern for intergenerational equity:

- The choice of the discount rate can have a profound effect on the intergenerational distribution of well-being, opportunity, and resources.
- The process of valuation in cost-benefit analysis neglects equity considerations.

- The asymmetry of market power [all to the present and none to the future].
- The choice of choosing the “correct” discount rate from a theoretical and empirical perspective is unresolved.

Given these considerations, it seems that discounting is fundamentally problematic and that further exploration of the concept is fraught with difficulty. Page (1997), however, offers a way out similar to that advocated by Sagoff (1988): an integrated approach that recognises that efficiency and equity are interrelated. Similarly, Markandya and Pearce (1991) look towards the concept of sustainability (maintaining or enhancing natural capital) as a key parameter or constraint in deciding environmental protection. The discount rate would work within the sustainability parameters set and no longer becomes a key issue in terms of achieving a conservation goal. Following these recommendations it is argued that intergenerational equity should be explicitly stated as a key moral or ethical concern from the start of the resource management decision. This proposal has important implications for resource management in New Zealand. Resource management generally has long-term implications with benefits or costs accruing to future generations. Discounting renders future values almost valueless the further into the future these net benefits are accrued. Likewise, the net cost of environmental damage in the distant future seems falsely palatable (Hanley & Spash, 1993). Equally important are the implications for Māori and their aspirations for meaningful participation in environmental decision-making. Resource management planning in New Zealand is dominated by a colonising discourse (Matunga, 2000). Māori views need only be “taken into account”, “regarded” or “recognised and provided for” (Resource Management Act 1991: s. 6, 7 and 8). If Māori voices are to be heard within planning then these voices need to be part of the process that identifies at the start those moral and ethical reasons that are important for society.

Why are these voices important? They are important to address not only current equity issues but also potential intergenerational equity concerns. A core concept of Māori ontology is whakapapa. It is the notion that binds a person to those from the past as well as to those who are yet to come, in a sense recognising the

interrelatedness of humans to each other, their history, and the ecology within which they live. Based on this belief a large number of responsibilities and obligations were assumed by Māori to sustain and maintain the well-being of people, communities and natural resources (Haami & Roberts, 2002; Marsden, 1989; Marsden & Henare, 1992; Mead, 2003). Intergenerational concern is embodied within the following proverb:

Hutia te rito o te harakeke, kei hea te komako e ko? Ki mai koe ki au, he aha te mea nui o tenei ao, maku e ki atu he tangata, he tangata, he tangata.

If we pull the heart of the flax out where will the bellbird go? But if I was to ask what is the most important thing of all I would say it is people, it is people, and it is people.

The critical issue here is – should we rip out the heart of the flax bush, a major natural resource in everyday Māori life for immediate gain? If so the resource will be destroyed. And then do we ask later – what about the people?

As Stewart-Harawira (2005) demonstrates, this Māori epistemology is closest in thought to the Western philosophical model of hermeneutics. Stewart-Harawira identifies the concept of effective history, a “critical methodology for uncovering submerged meanings and interpretations of events and discourses” (Stewart-Harawira, 2005, p. 49), as an effective tool for social decision-making. It is important for critically examining why there is a dearth of plans that explicitly integrate Māori values into planning. Hermeneutics as a process is powerful because of its interpretive nature that emphasises the need to understand from within rather than from without. The challenge then for planners is to recognise explicitly the role Māori have to play in resource management decisions and to involve them at the beginning of the process.

The process itself will require further introspection. As Howitt and Suchet-Pearson (2006) point out, the concept of resource management is based on Eurocentric notions of conservation and development both dependant on a number of assumptions. First,



the separation of humans and nature; second, the superiority of humans over nature; and finally, the linear movement from a “wild”, natural state to one that is more developed and “civilised”. There is also the assumption of universal legitimacy. Rose (1999) has likened this process to a “hall of mirrors”. She writes that Eurocentric ontology:

...mistakes its reflection for the world, sees its own reflections endlessly, talks endlessly to itself, and, not surprisingly, finds continual verification of itself and its world view. This is monologue masquerading as conversation, masturbation posing as productive interaction; it is a narcissism so profound that it purports to provide a universal knowledge when in fact its practices of erasure are universalising its own singular and powerful isolation. (p. 177)

In the end, Eurocentric universalism fails to recognise and respect indigenous knowledge. Battiste and Henderson (2000) argue that co-option of indigenous knowledge and evaluation of indigenous knowledge within Eurocentric frameworks based on notions of universalism is irrational:

No worldview describes an ecology more accurately than others do. All worldviews describe some part of the ecology completely, though in their own way. No worldview has the power to describe the entire universe. (p. 38)

And yet this is what has occurred in New Zealand. Earlier I alluded to the view that the current planning regime is monocultural. While lip service is paid to aspects of Mātauranga Māori, ultimately these aspects have been redefined within a Eurocentric framework. Witness for example the use of kaitiakitanga within the Resource Management Act 1991 (RMA). The Act defines kaitiakitanga as the exercise of guardianship and includes the ethic of stewardship. Within the literature referring to kaitiakitanga, the most prevalent theme among contemporary Māori authors (Crengle, 1993; Kawharu, 2000; Marsden & Henare, 1992; Matunga, 2000; Minhinnick, 1989; Tomas, 1994; Tutua-Nathan, 2003) is that kaitiaki and the exercise of kaitiakitanga as used in the RMA is taken out of context. These authors also believe that to understand kaitiakitanga the ontology of Tangata Whenua needs to be considered.

The traditional institution of kaitieki does not stand alone; it is part of a complex social, cultural, economic, and spiritual system that has been established through long tribal associations with the environment. Kaitieki and kaitiekitanga cannot be understood without reference to the values inherent in the belief system (Crengle, 1993; Minhinnick, 1989). Tau et al. (1990) state that kaitiekitanga is not only about physical resources, it is also about maintaining a relationship with the metaphysical dimension through traditional value systems. Kaitieki and the recently introduced term kaitiekitanga refer to the responsibility that certain entities, not exclusively people, have to protect and guard the mauri (life essence) of particular people, groups, objects, resources, traditions, practices and places. A practical philosophy, the kaitieki role is a process that is locally defined and owned. The kaitieki role is not a process of ownership but an individual and collective role to safeguard ngā taonga tuku iho (translated literally as “those treasures that have passed down”) for present and future generations (Crengle, 1993; James, 1993; Minhinnick, 1989).

Intergenerational concern is not unique to Māori; non-Māori also share these concerns. Two American authors, Heinzerling and Ackerman (2002), critical of cost-benefit analysis point out:

Most spiritual beliefs call on us to value the lives of others – not only those closest to us, but also those whom we have never met. (p. 13)

In summary, there is a distinct conflict between the notion of discounting in cost-benefit analysis and the philosophy of kaitiekitanga. Challenges lie ahead for any policy analysis that attempts to consider Mātauranga Māori within the cost-benefit analysis framework. Furthermore, even more significant challenges lie in wait for those policy analysts brave enough to consider Mātauranga Māori within or alongside New Zealand’s current planning regime.

### **2.2.5 Hypothetical Market Bias**

The normative approach to designing a CV study has important implications for the validity of the method. While the validity of CV is multi-dimensional (see Mitchell and Carson, (1989)), this thesis is more concerned with construct validity, and particularly that aspect concerning theoretical validity. Theoretical validity determines whether a CV study's findings are consistent with theoretical expectations. In other words, is the relationship between the CV data and various independent variables consistent with economic theory? For example, the proportion of yes votes should decrease with increasing costs of the project proposed; contingent values should increase with income; and favourable attitudes towards the contingent proposal should see an increase in contingent values.

A key debate raging at the moment is focused on the alleged issue of hypothetical bias. Within the context of CV, the literature generally acknowledges that people overestimate their true valuations (Cummings et al., 1986; List & Gallet, 2001). In general, hypothetical bias is the difference between how participants act in hypothetical scenarios compared with actual referenda. The seminal paper by Cummings, Elliot, Harrison, and Murphy (1997) challenged the assumption of the National Oceanographic and Atmospheric Administration (NOAA) panel (Arrow et al., 1993) that a participant's behaviour is independent of the use of a real or hypothetical referendum mechanism. In contrast, Cummings et al. (1997) rejected this assumption and concluded that hypothetical bias existed when participants considered hypothetical referenda.

Among those who accept that hypothetical bias exists there are differing perceptions of how hypothetical bias should be addressed with regard to the validity of the CV method. For economists, hypothetical bias is an anomaly that occurs during the application of CV and can be removed *ex ante* (Cummings & Taylor, 1999; List, 2001) or *ex post* (Ethier, Poe, Schulze, & Clark, 2000; Hofler & List, 2004). Although there are techniques to evaluate the psychological underpinnings of responses by using follow-up questions (Curtis, 2001) or special techniques (Schkade

& Payne, 1994), the general principle is to alter the methodology of CV to eliminate any perceived bias (Baron & Leshner, 2000).

For psychologists, the perception of hypothetical bias and its implications for the validity of CV is investigated by exploring the attitudes and beliefs behind people's intentions and their resulting behaviour. Attitudes towards behaviour (such as the act of paying money for a proposed project) are much better predictors of resulting behaviour than stated intentions (Ajzen, Brown, & Carvajal, 2004; Meyerhoff, 2006). It is commonly acknowledged by psychologists that people often fail to act in accordance with their stated intentions (Ajzen et al., 2004). Respondents can be motivated by social pressure or desirability considerations or internally motivated where a respondent seeks to express their attitudes and/or held values (Spash & Hanley, 1995).

Related to the concept of hypothetical bias are other types of behaviour that are reflections of underlying ethics and morals that influence how participants respond within CV studies such as strategic bias (Mitchell & Carson, 1989), protest bids (Jorgensen & Syme, 2000; Morrison, Blamey, & Bennett, 2000) and yea-saying (Blamey, Bennett, & Morrison, 1999; Boyle, MacDonald, Cheng, & McCollum, 1998; Holmes & Kramer, 1995; Kanninen, 1995).

Compliance bias or yea-saying has significant implications for how CV is applied, particularly when issues of ethnicity are considered. While the issue of social desirability has been growing in the CV literature, particularly with regard to in-person interviews (for example, see Davis, (2004); Leggett, Kleckner, Boyle, Duffield, and Mitchell, (2003)), exploration of interviewer bias and ethnicity is relatively scarce (for a recent example see Loureiro and Lotade, (2005)). This is an important methodological issue for CV, especially considering that CV experts (Arrow et al., 1993; Mitchell & Carson, 1989) all recommend in-person interviews over self-administered or telephone administered surveys.

Psychologists have posited the belief disparity theory (Ajzen & Sexton, 1999) and found that within the context of CV, hypothetical and real contexts are qualitatively different. Normative beliefs are more likely to influence behaviour in real situations compared with hypothetical scenarios (Ajzen et al., 2004). As a result, Ajzen et al. (2004) found a strong bias for people to overestimate the likelihood that they will engage in a socially desirable behaviour. This bias produces unrealistically high WTP values for a proposed project.

Effort has been made to modify the methodology to persuade participants to act as if they were in a real market. It is possible to bring stated intentions in line with actual payments by the use of a cheap talk script or entreaty (Aadland & Caplan, 2003; Ajzen et al., 2004; Brown, Ajzen, & Hrubes, 2003; Cummings & Taylor, 1999; List, 2001). In order to succeed, this entreaty has to have the effect of changing a participant's beliefs, attitudes or ethical position to be consistent with actual payment conditions, thus reducing the gap between stated intentions and actual behaviour. Techniques that compare actual behaviour and stated intentions seem to be the option of choice for testing the validity of CV studies. For example, Schlapfer, Roschewitz and Hanley (2004) recommend comparing stated intentions with actual referendum decisions. These techniques provide a way forward for promoting the validity of stated preference elicitation methods.

### **2.2.6 Perception of Risk**

Risk management is an important policy consideration for natural resource management particularly in New Zealand. The Resource Management Act 1991 clearly outlines that risk assessment is carried out during an evaluation of a proposed policy or plan change (Resource Management Act, 1991, section 32(4b)). The foundational theory of risk in welfare economics is the expected utility theory. Over the past half century, this theory has come under considerable attack. The economic concept of risk suffers from the same fate as welfare economics in general. There are significant differences between theory and observation, and these differences threaten the validity of cost-benefit analysis (see Machina, 1987; Starmer, 2000).

Like the issue of preference construction, expected utility theory is derived from normative ideas of rationality. Descriptive evidence suggests that expected utility models are non-linear for individual preference functions. Furthermore, psychologists have shown that risk assessments by individuals are faced with such issues as response mode and framing effects (Machina, 1987). Responsiveness to these issues is similar to the issue of hypothetical bias: it depends on which camp you belong to (psychology or economics).

Aside from theoretical concerns, there are also unresolved issues regarding the application of assessing risk within cost-benefit analysis. An important observation from Hanley (2005) is that there is a lack of common risk currency between community and technocrats, implying that community perceptions of risk are subjective. He argues that there is a tendency for people's subjective assessment of environmental risks to differ systemically from objective assessments. Economists need to take care when making these types of judgements. Critics of positive economics are lucid in their arguments of its normative foundations. To lump economic analyses in the same category as objective assessments would be misleading. Munnichs (2004) goes one step further and argues that scientific risk assessment or "expert" knowledge in an applied context are characterised by "unspoken assumptions, blind spots, prejudices, and other kinds of bias" (Munnichs, 2004, p. 127). Munnichs (2004) suggests that what is important in terms of risk assessment is not the identification of real hazards but the development of a process that is accessible to experts of differing ideologies.

Further improvements to the risk management process can be achieved by decision processes that involve "the right people and the right information" (McDaniels, Gregory, & Fields, 1999, p. 508). The right people include not only technocrats but the whole of society. Reasons for public involvement in policy issues are outlined by McDaniels et al. (1999) and generally involve the sense of meaningful participation by citizens in public decision-making. The right information includes not only technical information but those values that are deemed important by the community.

In New Zealand there is still a need for meaningful involvement of Māori in resource management decisions. Participation rates by iwi and hapū in local government resource management processes are currently very low (Blackhurst et al., 2003; Whangaparita et al., 2003). Risk management decision processes that are more democratic would certainly provide for a more equitable outcome for Māori in terms of resource management. This thesis advocates for more research in this area but will not explore the development of a process any further.

### 2.3 Summary

In summary, welfare economics is perceived by many as economic science, a research methodology based on positivism – that is, a behavioural science trying to mimic the research approaches of biophysical sciences, having developed normative theories that are viewed as facts within a very narrow framework with some serious challenges to its validity. The level of understanding of the theory by economic philosophers and those who apply the theory is seriously disjointed. Contemporary work by neo-classical theorists has recognised that interpersonal utility cannot be reduced to a positive, value-free science. Mainstream theorists such as Blaug (1980) now reject the notion of a potential Pareto improvement as a value free policy guide.

Welfare economics is, after all, that branch of economics concerned with the ethical criteria by which we decide that one economic state of the world is more desirable than another, and to speak of *positive* welfare economics is literally to revel in paradoxical language. (p. 146)

While economic theorists recognise the flaws in Paretian economics, most practitioners of applied economics accept it as fact based and rarely challenge it on ethical grounds. Applied economics seems to be trapped in a time-warp and has yet to catch up. Gowdy (2004) argues that this lag has significant implications for environmental policy. The idiom “He hoe kōnukenuke – a crooked paddle” (Mead & Grove, 2001, p. 70) aptly describes the illusory plaudits of objectivity with which welfare economics are lauded.

The “theory of second best” posits that if one of the optimality conditions is not satisfied, incremental steps towards the next best alternative may not result in improving overall welfare (Lipsey & Lancaster, 1956). This theory provides a logical argument grounded within welfare economics theory against the adoption of incremental market-based approaches (Ackerman, 2005). The theory provides significant ammunition to those who oppose market-based approaches for reasons that are ethical, cultural, political or moral. Far too often critics of welfare economics are dismissed by economists for failing to provide adequate reasoning within the dogma of welfare economics, as can be seen in the criticisms of Kahneman and Knetsch (1992) by Smith (1992) and by Harrison (1992). Welfare economics is rooted in the belief that “everything has its price” or that everything has a trade-off.

And yet, policy analysts continue to turn a blind eye to the shortcomings of welfare economics theory. Improvements to this body of knowledge have generally focused on stream-lining current practices within the narrow framework prescribed. To abandon Pareto efficiency would be admitting that economic analysis is normative. The illusion of objectivity is a compelling goal for economics as a policy science. While this view is highly critical, this is not to disregard the positivist approach altogether but rather recognises that there is value in abstract theoretical models even if the characterisation of human behaviour is simplified within very narrow parameters (Sen, 1987). There is value in having a basic or some understanding of how humans behave within certain situations. However, like Sen and others, I believe economics can do more by considering ethical issues. Positivist models seem bereft of any wairua or soul when ethical considerations that play such an important role in everyday life are left by the wayside.

With this in mind, caution is required when using welfare economics to guide environmental policy decisions. Economics is only one important cog in the machinery of environmental policy. A point was raised by Kaldor (1939), who proposed that the economist’s contribution to a social decision be limited to focusing on the “economic efficiency” of the proposed resource allocation. Instead of economic efficiency being made the sole criterion for social decisions, other



perspectives ought to be considered. For moral reasons, ethical, social, and cultural considerations should be considered equally alongside economics in environmental decision-making. This is what Sagoff (1988) appeals for – that underlying moral considerations are used to guide decision-making for resource allocation, and particularly for environmental policy. Economists must ultimately take responsibility for the value-free outcome that has been prescribed. The distributional concerns that result from the prescribed policy will impact on the day-to-day survival of communities. As a practitioner of economics and as a member of a community, accountability to the people you serve should be of utmost importance.

### **3 What is the Degree of Mātauranga Māori Expressed Through Measures of Ethnicity?**

#### ***3.1 Introduction***

Confusion still exists within Aotearoa New Zealand as to the meanings of race and ethnicity. Of recent, nationalist politicians have been using the catch-cries of “race-based funding” and “one law for all” to woo potential voters. The media in general has not been clear on the difference between “race” and ethnicity particularly when reporting on political issues.

The debate within the literature as to the nature of ethnic identity continues today. On one side there are advocates of the concept that ethnicity is primordial. Sociologists and anthropologists attribute this view of ethnicity to Clifford Geertz (1963; 1973). Geertz (1963) writes that there are inherently transcendental aspects of ethnic groups that include blood ties, language and custom. Social scientists have interpreted Geertz’s work to mean that the primordial concept of ethnicity is similar to race – an objective, biological characterisation of human beings, fixed and unchanging (Kukutai, 2003; Spencer, 2006).

The primordial concept of ethnicity has been challenged by social scientists for some years now (Kukutai, 2003; Robson & Reid, 2001; Spoonley, 1988). For this group, the nature of ethnic identity is seen as a constructed phenomenon. The idea of socially constructed ethnicity was developed by the anthropologist Barth (1969). Another anthropologist, Richard Jenkins, synthesises this constructivist view of ethnicity as “to whatever extent, defined situationally, strategically or tactically manipulable, and capable of change at both the individual and collective levels” (Jenkins, 1999, p. 89). The debate, however, is muddled as critics from both sides argue about the shared characteristics of each position (For example see Jenkins (1999)).

The position taken in this chapter/thesis/study with regard to ethnicity is constructivist. The chapter supports the notion that a socially constructed view of ethnicity is more dynamic and stable than its controversial adversary, primordial

ethnicity or race. It also explores the construction of ethnicity within New Zealand from a political-legal perspective of Māori ethnicity and an indigenous perspective based on whakapapa (genealogy) and whānau (family). The current study is interested in investigating the potential link between Māori ethnicity – expressed through a political-legal Māori cultural identity measure and a scale measuring concern for the environment.

This chapter presents work from a quantitative survey using two separate samples drawn from the Māori population; one from the general Māori population in the metropolitan area of Auckland and the other from the traditional home of a sub-tribe that has been encompassed by the Auckland metropolis. It is hypothesised those respondents who have a good understanding of Mātauranga Māori are those with a secure cultural identity and are more likely to be environmentally concerned. An understanding of Mātauranga Māori provides people with a knowledge and understanding of the values and principles of Māori resource management, particularly kaitiakitanga (refer to Chapter 1). Indeed, those with a secure identity are more likely to be part of Māori institutions and society and are therefore more likely to partake in the act of kaitiakitanga. There is awareness that surveys are a softer option than face-to-face hui/meetings for those involved in consultation processes to do with resource management. The current study is concerned with potential claims of validity in survey responses representing the views of an entire ethnic group such as Māori. This is particularly concerning given that Māori have an essential role to play in New Zealand resource management. Involvement of Māori in resource management consultation processes may be perceived by some as race-based pandering. This type of view is problematic and non-productive and yet still prevails within New Zealand. Criticisms of the use of race within a New Zealand context follow.

### ***3.2 Race in Aotearoa***

The idea of race was part of the ideological justification for colonial expansion. This ideology led to the argument of the racial “superiority” of European society and the

“inferiority” of those being colonised. The contemporary form of this ideology continues in New Zealand today and is sometimes expressed as nationalism, particularly with the popular catch-cry of “we are all one people” (Spoonley, 1988, p. 17). For example in a highly contentious speech at Orewa, nationalist politician Don Brash (2004) appeals:

But we must build a modern, prosperous, democratic nation based on one rule for all. We cannot allow the loose threads of 19<sup>th</sup> century law and custom to unravel our attempts at nation-building in the 21<sup>st</sup> century. (p. 47)

Race as an ideology can be used to repress the authenticity of the values, traditions, culture and knowledge of a group of people. According to Smith (1999) the promotion of archetypical stereotypes of Māori such as good and bad Māori along with hierarchical categories of authenticity are used to “de-authenticate” contemporary indigenous people:

Questions of who is a ‘real indigenous’ person, what counts as a ‘real indigenous leader’, which person displays ‘real cultural values’ and the criteria used to assess the characteristics of authenticity are frequently the topic of conversation and political debate. These debates are designed to fragment and marginalize those who speak for, or in support of, indigenous issues. They frequently have the effect also of silencing and making invisible the presence of other groups within the indigenous society like women, the urban non-status tribal person and those whose ancestry or ‘blood quantum’ is ‘too white.’ (p. 72)

Furthermore, Templeman (1999) argues these stereotypes are used as tools to ensure that power is maintained with the coloniser:

...collectivities are usually not culturally homogenous, nor are values only shared by members of the same group. The most searing criticisms are also often made by members of the community itself, directed to what is seen as the ‘authentic’ core of the culture and to who has the right to define what this is. A

politics of recognition that neglects such differences, transformations and internal disputes only affirms the authority of those already in power. (p. 22)

In other words, failure to recognise the heterogeneity within a group suppresses the freedom of people to construct their own individual and collective identities.

A recent example of repressive authenticity of Māori identity from Brash (2004) follows:

The Māori ethnic group is a very loose one. There has always been considerable intermarriage between Māori and Pākehā. Anthropologists tell us that by 1900 there were no full-blooded Māori left in the South Island. By 2000, the same was true of the North Island. Today, nearly 70 per cent of 24 to 34 year old New Zealanders who identify as Māori are married to someone who does not. (p. 5)

These critical points of view from Brash seek to deny the inequities between Māori and Pākehā. Further nationalist arguments, particularly the belief that division is created through the recognition of Māori rights are used to discredit re-distributive and advancement programmes for Māori (Poata-Smith, 2004; Spoonley, 1988). Another example from Don Brash's (2004) infamous Orewa speech follows:

...there has been a divisive trend to embody racial distinctions into large parts of our legislation, extending recently to local body politics. In both education and healthcare, government funding is now influenced not just by need – as it should be – but also by the ethnicity of the recipient. (p. 2)

The benefits Māori receive from a range of targeted initiatives: special educational programs; separate political representation; and even special rugby teams are all seen by Brash as the product of invidious separatism. Brash argues that the “special privileges” received by Māori are unacceptable to Pākehā as they are seen as divisionary or that the same resources are not available to other minority groups.

Also employed with equal effectiveness was the emotive phrase “race-based funding”, which conjures up images of unfair advantage – anathema to Aotearoa’s perceived notion of an egalitarian society. Arguments about “special privileges” and “race-based funding” distort reality. In contrast to Brash’s opinion, Māori are over-represented in negative statistics. Sharples (2005) challenged this ideology in his maiden speech in parliament:

If Māori are the privileged group, why in my electorate are Māori not living in prime locations like Kohimarama, St Heliers, Mission Bay, or conversely, why are Māori concentrated inland in state housing sectors? Does privilege mean we Māori dominate certain illnesses such as diabetes, heart disease, asthma, glue ear and others? And that we die ten years earlier than Pākehā? Or is our real privilege to be revealed by this country’s disgusting incarceration figures? I say disgusting because in 1980, 1 in 1000 New Zealanders were in jail. In the early 90s 1 in 800 were in jail, but today there are 6,961 people in jail. 1 in 570 New Zealanders are in jail. But for Māori, the privileged group, 1 in 180 persons are in jail with a total of 3481 Māori inmates. (p. 1)

The confusion and controversy that surrounds the word race has seen a shift in the academic world from a biological definition of ethnicity to one that is socially constructed. The following section discusses how Māori ethnicity has been constructed in New Zealand by the government and alternative conceptualisations developed by indigenous academics.

### ***3.3 Māori Ethnicity***

Ethnic identity is defined as “the relationship(s) that individuals and collectives have with other individuals and collectives” (Jenkins, 2004, p. 5). Ethnic identity is a social construction on the order of being. Jenkins (2004) constructs a model of ethnic identity that has three orders:

- The individual order: implies a self-identification process.
- The interaction order: validation of the identity by the ethnic group, and

- The institutional order: the centrality of process (politics) for group identification and categorisation. Asserting, defending, imposing or resisting collective identification.

All human identities are by definition social identities. A person can have more than one identity and yet can be defined by one identity. Furthermore, identity is a dynamic concept and it must always be established during interactions with individuals and communities. Identity is not static but is fluid along a continuum (Jenkins, 2004).

Throughout their lives people acquire other identities and gain membership to other communities. Individuals create identities for themselves and others create identities for them (Fitzsimons & Smith, 2000). Sikka (2004) argues against simplistic notions of self-identification. She uses racism as an example of how self-identification does not necessarily mean automatic entry into a group one identifies with. Identity construction is influenced and reinforced by the way participants are identified by others including experiences of racism. Negative perceptions can lead people who may belong to an ethnic group by birth to choose not to identify and affiliate to that ethnic group. O'Regan (2001) observes that in "New Zealand it is common to hear people denying ethnicity as a basis of identity, choosing not to recognise their ethnic background as British, German or Māori but instead calling themselves New Zealanders" (p. 33).

These dynamics of power relationships play an important part in defining who we are. Spivak (2004) astutely notes that discursive framing of ethnic groups is about having a more manageable other. For example, ethnicity labels are constructed by institutions from the police, education institutions and general work-places. These constructions usually involve observable physical characteristics (Brunsma & Rockquemore, 2001; Mason, 2001; Nikora, 2007). This process is problematic, given that physical characteristics may be one aspect of many that form an individual's identity. It ignores other factors that are equally important including culture, language, history, and family relationships.

In response to political-legal constructs of colonising governments, indigenous scholars recognise that identity is dynamic, historically based, multifaceted and multiperspectival (Kukutai, 2003; Wren & Mendoza, 2004). Indigenous identity in comparison to ethnicity labels is not fixed in stone, it is moulded from within and constantly being challenged by its members and outsiders (Parekh, 1994). As Belich (1997) states with regard to the early years of European colonisation in Aotearoa “Contact was not a single encounter, in which European and non-European conceptions of Us and Them remained static, but an ongoing ricochet...” (p. 22).

Indigenous identity is shaped and lived by people in countries with a history of colonisation. Alfred and Corntassel (2005) state:

The communities, clans, nations and tribes we call *Indigenous peoples* are just that: Indigenous to the lands they inhabit, in contrast to and in contention with the colonial societies and states that have spread out from Europe and other centres of empire. It is this oppositional, place-based existence, along with the consciousness of being in struggle against the dispossessing and demeaning fact of colonization by foreign peoples, that fundamentally distinguishes Indigenous peoples from other peoples of the world. (p. 1)

The governments of some countries with a colonial history have constructed their own definition of indigenous identity based on the Eurocentric concept of ethnicity. For example indigenous people are referred to as “aboriginals” in Canada, “Native Americans” in the United States, and “Māori” in New Zealand.

Ethnic group within Aotearoa has been defined by the New Zealand Health information Service (1996) as:

not the same as nationality, race or place of birth. Ethnic groups are ... people who have culture, language, history or traditions in common. These people have a ‘sense of belonging’ to the group, which may not be based on birth. It is



possible to belong to more than one ethnic group. At different times of their life people may wish to identify with other groups.

This colonial process further alienates indigenous people from cultural practices and community aspects of being iwi or hapū towards a political-legal construction as “aboriginal” or “Māori” (Alfred & Cornthassel, 2005).

As indigenous peoples, Native Hawaiians share a similar history of dispossession and colonisation as Māori. Concerted efforts for the revitalisation of Hawaiian culture have recently taken place. This process of decolonisation has led to the affirmation of what it means to be a Native Hawaiian. For some, a Hawaiian’s connections between land and ancestors are integral to a Hawaiian cultural identity. Furthermore, they are essential ingredients for reforming the image of what it means to be a “healthy Hawaiian” (McMullin, 2005).

Likewise for Māori land, mountains, valleys, rocks, water and sea ways are viewed as not only as resources, but more importantly, as seminal sources of collective identity. They are the essential roots that entwine the component parts of what it means to be Māori. In general, aspects of this ontological framework are shared with other indigenous people (Deloria, 1988; Jaimes, 1992; Kawagley, 1995; Trask, 1993).

While the conceptualisation of indigenous identity has been discussed in the literature, very few studies have explored identity based on indigenous epistemology. Alfred and Cornthassel (2005) advocate an alternative model to political-legal constructs; that of the Peoplehood model. The Peoplehood model is viewed as four interlocking concepts: sacred history; ceremonial cycles; language; and ancestral homelands (Holm, Pearson, & Chavis, 2003; see for example Spicer, 1962; Thomas, 1990). This view of identity is both dynamic and interconnected. Relationships (or kinship networks – whakapapa) is seen as the core of an indigenous identity.

Whānau (family relationships) is also seen as a key ingredient of Kaupapa Māori theory for formulating Māori identity. Smith (1997) asserts there is

...an extricable relationship between the social, cultural, and economic emancipation of Māori on the one hand, and the revitalisation and maintenance of whānau structures on the other. In these terms, the long-term survival of Māori language, knowledge and culture are bound to the survival of Whānau structure. (p. 448)

Whakapapa is a social construct, a Mātauranga Māori concept that establishes a metaphysical link between the individual, the whānau, the hapū, and the iwi. Whakapapa or kinship ties can be used to place oneself within the wider Māori community. Whakapapa “was developed over centuries to deal with Māori cultural process, personal and group ambitions, destinies and pragmatics” (Ritchie, 1992, p. 117). Recognising your whakapapa of one tribe did not exclude you from access to another tribe. Acknowledging the kinship ties from both parents “provides links into every corner of every tribal kindred” (Ritchie, 1992, p. 117). Iwi and hapū affiliation is not fixed; it is fluid and dynamic depending upon the context the individual faces.

This definition encompasses aspects of both the subjectivist and the primordial approaches. Being Māori means sharing whakapapa (biological descent), culture, knowledge, and customs. There is also an acknowledgement that you are part of a wider collective and your interactions with the wider group help define who you are. Smith (1997) argues that Kaupapa Māori theory is a commitment to Māori epistemology. Kaupapa Māori theory is a process that helps reconstitute Māori identity in the modern world. It is at the intersection between whakapapa and whānau that identity is formed and where Kaupapa Māori theory is active. Both whakapapa and whānau can be interpreted dynamically from a subjectivist position, consequently identity (re)formation follows this process (Fitzsimons & Smith, 2000).

A study carried out by Te Hoe Nuku Roa (1996) looks at further developing the concept of Māori identity. The central theorem of Te Hoe Nuku Roa is that cultural identity is an amalgam not only of self-identification of an ethnic group but also personal attitudes, cultural knowledge, and participation in Māori society. Te Hoe

Nuku Roa (THNR) is a longitudinal study that tracks the progress, problems, aspirations and circumstances of Māori people from a diverse range of livelihoods and over a 10 – 15 year period. It explores the realities of Māori lives based on an integrated approach of analysing and synthesising results from social, economic and cultural indicators. The study is based on a multi-axial framework made up of four interacting dimensions – paihere tangata (human relationships); Te Ao Māori (Māori culture and identity); ngā āhuatanga noho-a-tangata (socio-economic circumstances); and ngā whakanekeneketanga (change over time) (Durie, 1998).

Māori cultural identity is an important component of Te Hoe Nuku Roa's research. The THNR research team set about defining Māori cultural identity based upon seven cultural indicators:

- self-identification as Māori,
- whakapapa (ancestry),
- marae participation,
- whānau associations (extended family),
- whenua tipu (ancestral land),
- contacts with Māori people, and
- te reo Māori.

Using responses from a detailed questionnaire THNR identified four cultural identity profiles from a sample of 650 adult Māori:

- Compromised – Respondents fail to identify as Māori even though there is evidence to suggest they participate in Māori society, institutions and Te Ao Māori.
- Notional – Positive self-identification as Māori but little or no involvement in Māori institutions, society, and Te Ao Māori.
- Positive – Positive self-identification as Māori, not as much involvement in Māori institutions, society, and Te Ao Māori compared with those with a secure identity.

- Secure – Positive self-identification as Māori and greater access to and participation in Māori, institutions, society, and Te Ao Māori.

These profiles and cultural indicators have been used in a number of studies to date (Hirini & Flett, 1999; Jahnke, 2002; Ministry of Social Development, 2002; Stevenson, 2004; Te Hoe Nuku Roa (Ed.), 1996). A Māori cultural identity measure that has been developed by THNR (1996) and conceptualised by Stevenson (2004) is the focus of this current study. The study investigates the potential link between Māori cultural identity and general concern for the environment.

### *3.4 Survey Methods*

Ngāti Whātua o Ōrākei is currently recognised by the Crown as one of many hapū and iwi that exercises kaitiakitanga (environmental management) on the Tāmaki isthmus (Auckland region). The decision to work with Ngāti Whātua o Ōrākei was based in part on the established relationship Landcare Research<sup>4</sup> has with the Ngāti Whātua o Ōrākei Trust Board. Ngāti Whātua o Ōrākei researchers were employed to carry out 100 interviews. Participants who identified as members of Ngāti Whātua o Ōrākei and who had whakapapa links to the Ngāti Whātua o Ōrākei researchers were selected. The response rate for the interviews was 75%. Another sample was randomly selected from the Tāmaki Makaurau Māori electoral rolls (Tāmaki Makaurau is a Māori electoral roll option that comprises Auckland City, a large part of Waitakere City, and Manukau City). A survey was mailed to 2000 people on the electoral roll. The response rate for the survey was approximately 19%. According to Dillman (1978), high mail survey response rates require an up-to date list of names and addresses, a well-designed and carefully pre-tested questionnaire, and a sponsor, such as a university or government body, who has a non-commercial identity. The last two recommendations were implemented for the current survey. The use of electoral rolls as a sampling frame between elections most likely influenced the low response rate for the survey as the database was off-cycle, being updated, at the time

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<sup>4</sup> The organisation I currently work for. It is a Crown Research Institute that is primarily involved in environmental research.

of drawing the sample. An attempt to minimise non-response rates was made through a single follow-up mailing and the use of a prize draw incentive.

### ***3.5 Survey Design and Implementation***

A contingent valuation survey (see Appendix A), “Improvements to the Road Surface and Roadside Survey”, was pre-tested with a wide cross-section of the community. It was important the survey was pre-tested with a diverse range of Māori participants as feedback from these participants was essential to make the survey clear and precise.

Six questions were included in the contingent valuation survey that investigated the cultural identity of Māori participants. Only participants who indicated their ethnicity included Māori in Question 50 of the survey (Which ethnic group do you belong to?) were invited to answer this last set of questions. Participants who identified with more than one ethnicity including New Zealand Māori were open to answer the *Māori Identity* section of the “Improvements to the Road Surface and Roadside Survey”.

The questions used in the *Māori Identity* section of the survey were based on the seven cultural indicators used by Te Hoe Nuku Roa. These cultural indicators examined a participant’s knowledge of Te Ao Māori, te reo Māori and participation within Māori institutions and society. Responses from the seven sub-scales were combined to form a profile of Māori cultural identity (MCI).

Question 51 of the survey explored whakapapa. Participants were asked: How many generations of your Māori ancestry can you name? Responses ranged from 0 to 5, and participants were assigned a rank based upon how much ancestry they knew. The basis of Question 51 was to extend the self-identity process to that of a collective identity. Other key markers in Māori cultural identity included in the survey focused on access to and participation in Māori institutions and society. Questions asked participants how often they visited marae (Question 52), how much interaction they had with Māori communities (Question 55), the level of interest in whenua tipu –

ancestral land (Question 54), and the importance of whānau (Question 53). Te Reo Māori is an important marker within the Māori cultural identity framework. Question 56 sought to determine a participant's level of print and broadcasting media fluency.

The idea of a secure identity is based upon self-identification as Māori along with high scoring in the cultural indicators. Those participants identifying as a positive identity have lower levels of participation in Māori society and Te Ao Māori in comparison to the secure identity group while those with a Notional Identity have no access to Māori society or Te Ao Māori apart from self-identifying as Māori.

Implicit within Durie's model of cultural identity is the assumption that competency in te reo Māori leads to a greater understanding of Mātauranga Māori. Mātauranga Māori encompasses all aspects of Māori knowledge from philosophy to cosmology, and is a dynamic and evolving knowledge system (Mead, 2003). Within this context of mātauranga resides contemporary knowledge that have been developed from traditional values and adapted within the hegemony of Western values. Contemporary knowledge includes Māori adaptation of agricultural and horticultural practices to management techniques that are more sustainable for land utilisation (i.e. crop rotation) (Harmsworth, Warmenhoven, Pohatu, & Page, 2002). Acknowledgement of contemporary knowledge as an integral part of Mātauranga Māori recognises its dynamism.

To explore this issue further a question was added to the Māori identity section of the interview schedule for the interviews with Ngāti Whātua hapū. Question 57 asked participants "How important are Māori values (e.g., Manaakitanga, Whanaungatanga, Kaitiakitanga, Rangātiratanga) for how you live your life?" A potential problem of understanding the question arises when this lexicon is used in interviews with people other than academics. While non-academics may not understand the textbook definition of these core concepts of mātauranga, they more than likely carry out the practice of these concepts depending upon the strength of their cultural identity. Two further questions were added to the Identity section of the schedule to investigate a participant's association with a key concept of Māori resource management –

kaitiekitanga. Participants were asked whether they had an interest in hunting, gathering or collecting kai (Question 58). Participants were also asked how important they felt restoring indigenous plants to areas were for weaving or rongoā (Question 61). In addition to the seven original sub-scales, the three new sub-scales based on Mātauranga Māori were combined to form a new set of Māori cultural identity (MCI) profiles for the current study.

A series of attitudinal questions on general environmental concern were also included in the survey and the interview schedule. Attitudinal questions are increasingly being used in contingent valuation surveys to test the validity of willingness to pay responses and Harris et al. (1989) advocate for more direct, conventional psychometric approaches to assess the validity and reliability of survey measures. The purpose of this study is to explore the relationship between Māori cultural identity and environmental concern.

A General Environmental Concern scale (GEC) consists of 31 items and is designed to measure participants' concern for the environment. This scale was a composite of five previously reported scales (Walton, Thomas, & Dravitzki, 2004). The majority of questions focused on participants' perceptions of pollution, property rights and environmental policies. Māori environmental concern ought to be reflected in a relatively high rating on the environmental concern index.

## ***3.6 Results***

### **3.6.1 Respondent Characteristics**

The main differences between two samples are presented here. One sample was drawn from the hapū Ngāti Whātua o Ōrākei and is termed “Interview”. The other sample was selected from the Tāmaki Electoral rolls and is described as “Survey”. The differences between the mean scores for each sample group are presented below in Table 1.

*Table 1: Key Demographic Differences in the Mean Scores for Interview and Survey*

*Samples*

Group Statistics	Interview (N=61)		Survey (N=331)	
	Mean	SD	Mean	SD
Age	31.15	12.12	39.24	13.14***
Income	\$29,830	\$16,426	\$39,450	\$20,757**
Proportion Female	.46	.50	.59	.50*
Proportion Urban	.88	.32	.96	.20*

\* p. < .05 \*\* p.< .01 \*\*\* p.< .001

The Māori population has a relatively younger age structure in comparison to non-Māori with a large proportion in the 15 – 44 year group. For instance about 3 in 8 people of Māori ethnicity are aged under 15 years (Statistics New Zealand, 2007). Auckland City has the largest concentration of Māori in the country – 24%. Auckland also has one of the highest proportions of Māori adults aged 25 – 44 – 30% (Te Puni Kokiri, 2001). The Interview sample however is significantly younger than the Survey sample. This may have been a mode effect. Older people are more likely to respond to surveys than younger people (Dillman, 1998).

In 2003, the average income for Māori in Auckland was \$24,596 per year (Leung-Wai & Nana, 2005). In contrast, the mean incomes for the sample groups are \$29,830 (Interviews) and \$39,450 (Survey), respectively. It was expected that the Survey sample would have higher incomes, given that the mean population is older and that Māori in Auckland tend to earn higher incomes. The sample from Ngāti Whātua o Ōrākei has a slightly higher average income compared with the Māori population in Auckland. Education or labour force status may be factors that explain these differences. However, information on educational qualifications and labour force status were not collected during the interviews.



The majority of the survey sample live in an urban environment (96%). On the other hand, a small proportion of Ngāti Whātua stated that they live in a rural area (12%). This finding is inconsistent with the assumption that since Ngāti Whātua o Ōrākei is based in Auckland city the majority of the hapū must live in the city. An explanation for this incongruency may lie in the history of Ngāti Whātua o Ōrākei. A key year for Ngāti Whātua o Ōrākei was 1951 which saw the forced relocation of the hapū by the government from their traditional base at Ōkahu Bay to Bastion Point. This was a time of tremendous upheaval for Ngāti Whātua o Ōrākei. While some were relocated to the state homes on Kupe Street and other homes at Bastion Point, others were forced to seek accommodation further afield. As a result, successive generations of Ngāti Whātua live outside the wā kāinga (homelands) but still maintain some links with the hapū.

### **3.6.2 Māori Cultural Identity**

A comparative analysis is carried out between the samples (Interviews and Survey) and Te Hoe Nuku Roa's (1996) study. Each sample is grouped into an identity profile using the Māori cultural identity (MCI) profiles developed by THNR (1996). A comparison is also made between the Interview sample and the new MCI profiles based on the additional questions exploring participants perceptions of Mātauranga Māori.

Table 2: Māori Cultural Identity Profiles

Sample/Study	Māori Cultural Identity				Total
	Secure	Positive	Notional	Compromised	
Interviews (MCI (New))	37 (60.7%)	18 (29.5%)	6 (9.8%)	-	61 (100%)
Interviews (MCI (Original))	43 (70.5%)	17 (27.9%)	1 (1.6%)	-	61 (100%)
Survey	135 (40.8%)	172 (51.9%)	24 (7.3%)	-	331 (100%)
THNR	47 (35.0%)	71 (53.0%)	8 (6.0%)	8 (6.0%)	134 (100%)

Table 2 shows that the identity profiles for the Survey and the Te Hoe Nuku Roa (THNR) study are comparable. The only difference is that the Survey (40.8%) has a slightly higher percentage (but not significant  $\chi^2(2, N = 457) = 0.41, p = 0.8$ ) of participants with a Secure Identity than THNR (35.0%). It should be noted that the THNR study also included a fourth grouping of Compromised Identity (6%), which consisted of participants who failed to identify as Māori even when there was evidence of participation in cultural institutions and knowledge of whakapapa and te reo Māori. The current study did not analyse the Compromised Identity because only participants who self-identified as Māori through the ethnicity question were asked to answer the questions in the *Māori Identity* section of the survey. Some participants who identified as New Zealand European and answered the questions in the *Māori Identity* section were omitted from the study. It was believed these participants had failed to read or fully comprehend the instructions on answering the questions in the *Māori Identity* section.

A prominent feature of Table 2 is that most of the Interview sample have a secure identity (70.5%) using the original MCI measure – a much higher proportion than in

the Survey population (40.8%). This difference is likely to be caused by the Interview sample having access to their wā kāinga (homeplace). A chi-square test shows that the difference in cultural identity is statistically significant,  $\chi^2(2, N = 392) = 18.79, p < 0.001$ .

With the introduction of the new set of Mātauranga Māori questions to the MCI measure, the strength of MCI for the Interview sample is tempered somewhat. While a large proportion of the Interview sample using the new MCI measure still has a secure cultural identity (60.7%), this proportion is less than the proportion for the original MCI measure. The difference between the Interview sample with the original MCI measure and the Interview sample with the new MCI measure is statistically significant  $\chi^2(2, N = 122) = 6.67, p = 0.04$ . This is not entirely unexpected, given the introduction of the Mātauranga Māori questions has raised the level of complexity of the MCI measure. One third of the measure is now weighted towards Māori ontological concepts. These concepts are distinct and should not be confused with environmental concern. One measure is based on Māori knowledge while the other is based on Western knowledge. Consequently a greater variation amongst the Interview sample with regard to identity profiles is expected.

### **3.6.3 General Environmental Concern**

A General Environmental Concern scale (GEC) was included with the survey. The scale consists of 31 items and is designed to measure participants' concern for the environment. This scale was a composite of five previously reported scales (Walton et al., 2004). The scale of GEC was appended for the current survey with the addition of a question on cultural heritage. Participants were asked whether "Cultural and historical resources such as archaeological and pa sites should be protected from development". The majority of questions focused on participants' perceptions of pollution, property rights and environmental policies. The GEC scale from Walton et al. (2004) and the new GEC scale were collated and are presented in Table 3. The mean GEC for two samples, Interviews and Survey are compared, and the standard deviation is also presented.

Table 3: General Environmental Concern

	Interviews (N=61)		Survey (N=331)	
	Mean	SD	Mean	SD
GEC (Original)	89.70	11.76	92.50	11.23
GEC (New)	94.25	12.14	96.95	10.94

The statistics in Table 3 illustrate that the mean for the Interview sample is less than that for the Survey sample for both GEC scales. On average, participants from the Survey sample have a greater concern for the environment. An independent samples test for equality of means indicated there is little evidence for a difference between the two groups for either the GEC (Original), ( $t[390] = -1.78, p = 0.08$ ) or GEC (New), ( $t[390] = -1.74, p = 0.08$ ) scales. At this stage we would conclude that Māori from the Survey and Māori from the Interviews have a similar concern for the environment.

Further tests were carried out to delve deeper into the relationship between Māori cultural identity (MCI) and general environmental concern (GEC). It is hypothesised that the more secure a participant's Māori cultural identity, the greater their concern for the environment. This reasoning is based on the concept of kaitiakitanga – the notion of safeguarding natural resources for the benefit of future generations. It is assumed that having an understanding of kaitiakitanga is part and parcel of having a secure Māori cultural identity. This understanding of kaitiakitanga should be expressed through relatively high GEC scores.

A Kruskal-Wallis one-way ANOVA test was used to test for differences in GEC rankings between the three identity groups (MCI) for each sample. These tests were carried out independently for each sample. Separate tests were also carried out with

GEC (Original) and GEC (New) as response variables. A Kruskal-Wallis test was used because the independent variable, MCI, is categorical with a ranked order from notional identity to secure identity. The mean GEC scores for each category are presented with standard deviation in brackets (see Table 4 and Table 5).

The Interview sample was analysed first. The Notional level had one response and was dropped from the analysis. The chi square statistics for GEC (Original) and GEC (New) respectively give no evidence of any difference,  $\chi^2(1, N = 60) = 0.76, p = 0.38$  and  $\chi^2(1, N = 60) = 0.77, p = 0.38$ . That is, there is no evidence to suggest Māori who are more secure in their cultural identity using the MCI (Original) measure are more concerned for the environment compared to those that are less secure in their identity. This result is contrary to prior expectations. It was expected that those Māori with a secure identity would be more concerned for the environment. Another Kruskal-Wallis one-way ANOVA test was carried out on the Survey sample to test for differences in the MCI (Original) categories with GEC (Original) and GEC (New) as response variables. It was found that the chi square statistics for GEC (Original) and GEC (New) respectively provide weak evidence of a difference,  $\chi^2(2, N = 331) = 4.73, p = 0.09$  and  $\chi^2(2, N = 331) = 5.66, p = 0.06$ , but the actual differences are comparable to those with the Interview sample.

Table 4: One Way Anova Between MCI (Original) and GEC

Sample	Response variable	MCI (Original)			p value
		Secure	Positive	Notional	
Interview (N=61)	GEC (Original)	90.65 (116.8)	87.76 (201.7)	82.00 ( )	0.38
	GEC (New)	95.33 (122.7)	92.06 (217.1)	85.00 ( )	0.38
Survey (N=331)	GEC (Original)	93.71 (108.9)	92.06 (128.5)	88.88 (102.8)	0.09*
	GEC (New)	98.33 (114.2)	96.42 (135.5)	93.04 (106.6)	0.06*

\* p. < .1 \*\* p.< .05

Finally, a Kruskal-Wallis one-way ANOVA test was carried out on the Interview sample to test for differences in the new categories of MCI with GEC (Original) and GEC (New) as response variables (see Table 5). The chi square statistics for GEC (Original) and GEC (New) respectively are  $\chi^2(2, N = 61) = 1.50, p = 0.47$  and  $\chi^2(2, N = 61) = 1.72, p = 0.42$ . Once again there is no evidence to suggest that Māori who are more secure in their cultural identity using the new measure of cultural identity are more concerned for the environment than those less secure in their identity. No further tests were carried out with the new categories of MCI for the Survey sample as these data were only collected for the Interview sample.

Table 5: One Way Anova Between MCI (New) and GEC

Sample	Response Variable	MCI (New)			p value
		Secure	Positive	Notional	
Interview (N=61)	GEC (Original)	89.78 (117.3)	90.89 (139.9)	85.67 (314.3)	0.47
	GEC (New)	94.43 (124.0)	95.50 (145.3)	89.33 (347.1)	0.42

\* p. < .1 \*\* p.< .05

What are the reasons for these results? One possible reason is that there were few in the Notional category and there was significant clustering around the secure identity group. This could be due to the MCI measure ranking cultural identity too generously. These results pose some interesting questions for resource management. The following section discusses the implications of these results and the usefulness of using ethnicity measures to gauge Māori perceptions of the environment.

### 3.7 Discussion

Conceptualisations of Māori ethnicity are a delectable moving feast. It is encouraging that Māori perceive themselves as more than a monistic construction of government agencies. Being Māori should mean more than being an overly represented negative statistic. So what are the determining factors for “being Māori?” Is it the consumption of traditional foods such as koura mara (fermented crayfish) or kānga kōpiro (fermented corn) that define your identity? Is it your ability to korero Māori? Is it the wearing of ink on the skin? Or is it your ability to recite whakapapa for a number of generations. Social anthropologists and policy analysts have been struggling with this issue for decades. Māori ethnicity is all of the above and more.

If it is accepted that the concept of being Māori is politically constructed, how meaningful is a Māori ethnicity variable for conveying ethical and attitudinal aspects of Māori perspectives of the environment? A growing number of critics (Chapple, 2000; Rata, 2004; Tremewan, Sissons, & Yan, 2005) question the reliance on an ethnicity measure within public policy. Their main arguments centre on the perception that ethnic identity is heterogeneous, resulting in anomalous and ambiguous distributions of social programmes. However, while criticism of government policy is healthy in most democratic societies, claims that the legitimacy of an ethnic group and the unique role Māori share as Treaty of Waitangi partners are compromised by diversity within Māori seem somewhat dubious (Kukutai, 2003). Baehler (2002) notes that these arguments against ethnicity measures are incomplete for two reasons:

Firstly, they neglect the fact that difficulties in determining group membership are not peculiar to ethnicity. Deciding who will and will not count as ‘disabled’ requires judgment calls and arbitrary lines of demarcation not unlike those associated with ethnicity classification... Secondly, the arguments above construe the concept of distribution too narrowly. (p. 28)

Policy analysts and researchers need to be up front about the different reasons for why ethnicity measures have been used in research or policy (Kukutai, 2003). Different classifications of Māori will be used at various times, based on the type of policy outcomes required. For example if the goal of a particular policy is to target all Māori then a descent or ancestry criteria could be appropriate. In the case of resource management, more appropriate criterion for gauging Māori perspectives of the environment are first Tangata Whenua status followed by kaitieki status. Representatives of these criteria are more likely to present a more informed view of Mātauranga Māori perspectives of the environment. My argument for this reasoning follows.

Māori ethnicity measures are generally political-legal constructions. It is no wonder that attempting to use this construct to measure an indigenous ontology will be



problematic. An attempt was made to build upon an existing measure of identity – the Māori cultural identity (MCI) measure as developed by Te Hoe Nuku Roa, to improve its effectiveness at measuring Māori ontology. The new MCI measure included a number of questions weighted towards Māori ontological views of the environment based on Kaupapa Māori. The new questions have made the MCI measure an even richer measure of identity. It has increased the complexity of what it means to be Māori. It has increased the heterogeneity, the dynamism of what it means to be Māori.

Does the new MCI measure imply that the Interview sample is less secure in their cultural identity compared with those using the original MCI measure? Not necessarily. This depends on whether Mātauranga Māori about the environment is an essential part of one's identity. Taking a subjectivist position it can be argued that the issue of identity is for iwi and hapū to decide. What value then is there in the MCI measure? The MCI measure, however is a reflection of general principles shared among iwi and hapū. The Māori resource management literature presents an ontological view that portrays the natural environment as an essential element of Māori cultural identity. The literature gives impetus to the argument that Mātauranga Māori about the environment is a shared principle in Māori epistemology. This does not necessarily imply that it is shared uniformly amongst all Māori. What this means for resource management is that expertise or knowledge of local ecologies is most likely found within those that maintain a close relationship with that ecology – kaitiaki. Surveying or interviewing a random sample of iwi and hapū may not necessarily provide an informed perspective of mātauranga Māori. Nor would we expect it to, given that we wouldn't expect that all non-Māori have an in-depth understanding of an ecological concept such as biodiversity.

Further tests were carried out to explore the relationship between having a secure identity and general concern for the environment. It was hypothesised that the more secure participant's Māori cultural identity, the greater their concern for the environment. The resulting analysis shows there is little evidence for differences in concern for the environment among the identity groups for either the Survey sample

or the Interview sample. The few individuals in the Notional group may explain why no relationship was found. The distributions for both samples are piled-up on the right-hand side towards a secure identity. The categories of cultural identity may need to be redefined so that MCI gives a more uniform spread across them.

Another explanation could be that the MCI measure is not an accurate reflection of Māori ontological perspectives of the environment. The potential scenarios that are highlighted next support this statement. It is possible to have Māori who are environmentally aware and have a good understanding of Te Ao Māori not rank highly in the MCI measure for diverse reasons. Some of these reasons include the lack of te reo Māori ability and the difficulty of visiting their marae, especially if they are based in an urban area. Te reo Māori and association with cultural institutions are two indicators that have high weighting, and as a result these participant's are understated. Another scenario can potentially over-state a participant's Māori cultural identity. This may occur in the case of participants who have excellent te reo Māori skills or are fluent and have greater access to Māori society and institutions but do not practice kaitiekitanga. Indeed, as the MCI statistics demonstrated, cultural identity for the Interview sample lessened when the mātauranga Māori questions about the environment were introduced. These issues raise the question of whether kaitiekitanga is a valid principle underlying contemporary Māori cultural identity.

Where does this leave us? We know that the Interview sample have higher MCI than the Survey sample (as confirmed by an independent samples t test). As Durie (2003) points out, a number of urban Māori do have access to their wā kāinga, and as a result a more secure cultural identity. Further studies involving Māori identity should collect iwi/hapū information in order to delve further into the relationship between access to wā kāinga and strength of MCI. On the surface it looks as though those in the Survey sample are more concerned for the environment than the Interview sample; however, statistical analysis shows that the difference between the samples is not statistically significant. We cannot reject the claim that the Survey sample is equally concerned for the environment as the Interview sample. Using an environmental attitude scale will generally present consistent attitudes of concern

from Māori samples. This means there is no difference between someone who identifies as Māori using the electoral rolls and someone who identifies as Māori through their membership as a hapū or iwi member with regard to their attitude towards the environment as expressed through the environmental concern scale.

One issue of concern is that these expressions of environmental concern are articulated through a Eurocentric-based measure. The degree to which Mātauranga Māori perspectives of the environment coincide with the environmental concern scale was not investigated. It is recognised that each measure (MCI and GEC) has their own valuable role to play in the research process. It is not the place of this study to suggest which measure is better for explaining Māori perspectives of the environment. There is, however, recognition that exploration of Mātauranga Māori perspectives should be based on Māori epistemologies such as Kaupapa Māori. Unfortunately, further direct comparisons between the identity profiles for the Survey and Interview samples are stymied for two reasons: 1) The MCI (New) measure was not tested for the Survey sample; and 2) no hapū or iwi statistics were collected. Further research should explore the role of using Kaupapa Māori theory for environmental decision-making. Two paths could be taken. One path could be to continue refining the MCI framework as attempted by this study through the co-option of Mātauranga Māori principles. It is recommended that questions focusing on Mātauranga Māori perspectives of the environment are included within the MCI framework. The inclusion of these questions would add to the richness of political-legal constructs of Māori cultural identity.

An alternative path falls within the domain of the politics of indigeneity. Smith (1997) advocates for epistemologies that are unique to Māori, such as Kaupapa Māori. This path argues for redefining Māori identity based on whakapapa and whānau. There is a common misconception that whakapapa is literally the same as descent. Callister (2004), for example, equates proof of whakapapa to become a Kāi Tahu iwi beneficiary as the same process for eligibility to the Māori electoral role option. The Māori electoral roles require participants to have Māori descent (Electoral Enrolment Centre, 2005). By and large the focus on descent has been a

product of the politics of indigeneity (see Maaka and Fleras (2005)). Access to resources through the Treaty of Waitangi claims or through government institutions has been a primary driver for the focus on descent. The political-legal process essentially has driven the need for descent as a key component of Māori identity. In contrast other authors (Fitzsimons & Smith, 2000; Ritchie, 1992) argue that whakapapa is subjective, constructed and interpretive. Iwi and hapū affiliation is not fixed; it is fluid and dynamic depending on the context the individual faces.

Further research that conceptualises Māori environmental attitudes should also be explored within a Kaupapa Māori framework. While it may be argued that the literature provides ample evidence of Māori environmental perspectives, focus on traditional views stymies the development of a culture. As Tutua-Nathan (2003) has argued, tikanga is not static; kaitieki can reconstruct traditional customary practices to adapt to contemporary situations in a manner that is consistent with iwi needs and aspirations. The ability of a knowledge system to grow is not peculiar to Eurocentric epistemology. The challenge is for Kaupapa Māori research to explore and define contemporary Māori environmental perspectives.

### ***3.8 Conclusion***

The use of ethnicity markers in quantitative research is generally a contentious issue. Power dynamics and colonisation play key roles in how ethnicity measures are used. Concrete numbers can provide decision-makers with solid evidence on which to base their judgement. Stevenson (2004) warns that cultural identity is much more complex than an ordinal number. He points out that a person's cultural identity is a cumulative process, and reflects a history of personal choice and social influences which will be reflected in their cultural identity but may not be explained:

The use of any statistical measure to describe a group of people will always be problematic. Loss of detail accompanying the reduction of data to some measure of central tendency may be more misleading than if anecdotal or discursive techniques were used (focus groups for example). (p. 43)

Stevenson (2004) concludes that caution should be used when employing the MCI measure and that researchers should be clear as to the limitations of the measure. Indeed use of constructed identity measures is tenable as long as researchers/policy analysts are explicit in explaining their motivations behind its use. To hide behind a thin veil of objective primordiality is illusory.

In the current study a conscious effort was made to integrate Māori environmental perspectives into Te Hoe Nuku Roa's MCI measure. It has been argued that Māori ontological perspectives of the environment are a key component of Māori identity. Changes to the MCI measure increased the level of heterogeneity and dynamism within a sample of Māori. It was explained that Mātauranga Māori of the environment, like metaphysics, are philosophical concepts that people perceive with varying levels of comprehension. While heterogeneity of identities was present, Māori environmental concern as measured by a scale based on Eurocentric values showed homogeneity amongst Māori.

The conclusion from these findings is that surveying or interviewing a sample of iwi and hapū may not necessarily provide an informed perspective of Mātauranga Māori. It may provide consistent information on environmental concern which may not be congruent with a Kaupapa Māori philosophy of the environment. As a result, qualitative research methods such as hui, focus groups and marae consultations should be used to complement quantitative methods. It is important to identify key individuals within hapū and iwi, i.e. kaitieki/resource managers, for a more informed view of resource management. Kaitiekitanga is not something shared by all people who identify themselves as Māori. Everybody has a limited kaitieki function – a responsibility to protect the environment – however, Tangata Whenua and certain individuals within whānau and hapū are mandated to fulfil the role of a kaitieki.

## 4 The Influence of Ethnicity on Protest Bids in Contingent Valuation Surveys

### 4.1 Introduction

The contingent valuation method (CV) is used by researchers to estimate the demand and value the public has for a public good. This includes such things as road development with associated environmental outcomes (Transfund, 2004).

Willingness to pay (WTP) surveys are used by planners as part of the resource assessment process for the generation of cost-benefit ratios (for a recent example see, Sullivan, McMillen, Hensher, and Koorey (2001)). It is generally conceded that CV is a reliable way to ascertain the value of a non-market good that is not traded in a market, and such valuations are increasingly important in the context of managed development of public resources. In New Zealand the importance is highlighted by legislation requiring costs and benefits to be assessed. Further, there are requirements for a consultative approach to the development of public goods, and attention to Māori interests in the development process. In practice, then, the decision – and policy-making concerns involve interaction with evidence based on Māori epistemologies. The Māori world-view is holistic in nature in that it embodies historical, environmental, and spiritual values, as well as modern experiences. Concerns arise for Māori communities when planners and developers utilise economic tools such as willingness to pay surveys to determine the total value of a proposed project.

This chapter describes an adjustment to CV used to measure an ethnic response to a willingness to pay question through the indirect measure of a “protest bid”. The example used is the application of a WTP survey to value road-surface improvements and to measure the perceived utility of improved environmental outcomes from road corridor development. The identification of a protest bid in a sample of Māori participants is used to highlight the value of measuring protest, and points to the importance of monitoring methods used to estimate positive WTP estimates.

To exclude from analysis completed returned surveys is unusual in applied social psychology, but at its outset in CV the practice was common. When willingness to pay survey techniques were being developed it was a normal practice to discard 30–50% of surveys because they represented a protest bid, expressed as a “zero response” to a willingness to pay item (Hausman, 1993). The remaining surveys were considered a “core of serviceable data” to derive WTP estimates (McDaniels, Kamlet, & Fischer, 1992). Over the past 25 years CV has developed within applied economics, guidelines for the proper application of the methodology have been produced, and the problem of the protest bid has been marginalised because recommended methods no longer involve removing survey responses or the identification of a “zero willingness to pay”.

The protest bid, when described as a zero-response, aligns with other special types of responses within the application of CV. A protest bid should be distinguished from strategic bidding where participants overstate their true willingness to pay due to a perceived differential benefit from the contingent application. Spash (2002) recognises that special interest groups may have “fundamental disagreement” in value sets that are addressed by CV. Sagoff (1988) questions the implicit “consumer ideology” inherent in a request to value a public good, suggesting certain participants are likely to reject the underlying economic theory that CV attempts to model. In addition, some literature identifies “protected values” (values that resist tradeoffs with other values, particularly economic values) as commonplace and measurable when drawn from the issues that are the normal focus of the applications of CV (Baron & Pranca, 1997). From these perspectives there is considerable risk of distorting the true nature of a public response using CV without understanding the underlying motivations for the offered WTP. Although there are techniques to evaluate the psychological underpinnings of responses by using follow-up questions (Curtis, 2001) or special techniques (Schkade & Payne, 1994), the general principle is to alter the techniques and practice of CV to eliminate any identified bias methodologically (Baron & Leshner, 2000).

Few published CV studies have investigated the relationship between the specific values of economics and the values of ethnic groups. The economics discipline has a distinct hegemony through its influence in framing discussion and analysis. Similarly, specific values of ethnic groups may be protected (Baron and Pranca, 1997) and this may influence their choices and responses. Studies to date have used the ethnicity measure to investigate cultural differences between ethnic groups and their willingness to pay (Loomis, Bair, & Gonzalez-Caban, 2002; Loomis, Gonzalez-Caban, & Hesseln, 2004). These studies were conducted in multi-cultural and metropolitan societies and found no statistically significant difference in WTP between ethnic groups.

In countries with a history of colonisation there is growing interest in ensuring the values of ethnic groups such as indigenous people are not lost in decision making within the dominant economic framework (Adamowicz et al., 2004; Boxall, Englin, & Adamowicz, 2003; Haener, Dosman, Adamowicz, & Boxall, 2001; Rolfe & Windle, 2003). Likewise in former European colonies in Africa and Asia there is growing interest in identifying the values of indigenous peoples particularly with regard to willingness to pay for drinking water (Boadu, 1992; Choe et al., 1996; Hadker et al., 1997; McPhail, 1993; 1994; Raje et al., 2002; Reddy, 1999; Whittington et al., 1992; Whittington et al., 1990). These studies recognise the need to effectively include indigenous people's perspectives of the natural environment within the resource management regimes of post-colonial societies. This poses a challenge to the resource management decision-maker when the dominant resource management regime co-opts indigenous values for its own purposes. This is a complex problem given the diverse, dynamic and holistic nature of indigenous knowledge systems. Furthermore, the indigenous perspective is intertwined with people, their history, culture and ecosystems. While similarities in knowledge exist between different indigenous peoples through a shared relationship with the natural environment, knowledge varies on national and even local scales. Indigenous knowledge also continually grows and changes as ecological pressures influence its development (Battiste & Henderson, 2000; Grenier, 1998; Johnson, 1992; Mitchell & Carson, 1989; Sillitoe, 2002).



The recommended processes for designing a CV survey are provided by Mitchell and Carson (1989) and the NOAA (National Oceanic and Atmospheric Administration) panel (Arrow et al., 1993). In-person surveys, dichotomous choice question format, a precise and realistic scenario, alerting participants to trade-offs and an open-ended follow-up question, and other techniques have been prescribed to enhance the validity of CV results. Referenda-type questions are generally regarded as reducing error associated with overbidding (Mitchell & Carson, 1989) as well as reducing the opportunity for the extreme right skew of the distribution of responses when unconstrained amounts provoked 30–50% zero responses. More recent studies seek to enhance and prescribe best practices for the methodology. Mitchell (2002) deconstructs CV and provides further consideration of the methodological issues for survey designers. Whittington (2002) develops appropriate techniques for administering the CV in developing countries. Cummings and Taylor (1999) designed a “cheap talk script” to minimise hypothetical bias.

Testing the robustness of the methods has revealed a number of problems with CV, including preference reversals (Ryan & San Miguel, 2000), failure of internal consistency, and sensitivity to irrelevant factors combined with an insensitivity to factors, such as income, that should vary an individual’s WTP (Green et al., 1998; Sen, 1993). McFadden and Leonard (1993) conclude that CV studies are troubled by psychometric distortions presenting a challenge to the assumption in classical economic theory of underlying stable preferences for goods and services.

Mitchell and Carson (1989) identify potential sources of bias in contingent valuation WTP estimates that are primarily derived from poor scenario design, improper sampling design or execution, and improper benefit aggregation. Mitchell and Carson list many potential biases that are relevant for CV. Biases that occur when a respondent misrepresents their true WTP and can include hypothetical bias (Frykblom, 1997; Loomis, Brown, Lucero, & Peterson, 1996) and compliance bias (yea saying) (Blamey et al., 1999; Boyle et al., 1998; Holmes & Kramer, 1995; Kanninen, 1995). Implied value cues bias such as starting point bias (Cummings et

al., 1986) occurs when the scenario description is treated by “respondents as providing information about the "correct" value for the good” (Mitchell & Carson, 1989, p. 240). Biases associated with the respondent not understanding the scenario as the researcher intended it to be are classified as scenario misspecification biases. An example of this type of bias is payment vehicle bias (Mitchell & Carson, 1989) where a respondent's WTP decision is influenced by the type of payment vehicle used in the scenario. Economists seek to minimise and remove potential biases in the application of CV.

This chapter is concerned with the underlying ethics and values that influence individual decision-making. Recognising the potential for fundamental ideological disagreement and the history within CV of eliminating participant responses as protest bids, the problem of understanding protest bidding in a special interest group is approached by measuring both WTP using NOAA recommended guidelines, and measuring protest bids defined methodologically as resulting in a negative WTP. This is achieved by asking people to evaluate how much of a benefit they would return for the realisation of a good, thus concurrently evaluating a positive WTP when the value exceeds the notional discount, and a “negative WTP” (protest bid) when the individual's WTP is lower than the direct benefit they would receive based on the contingency being realised. This is easy to achieve when considering road improvements when the mechanism for the WTP estimate is an improvement in weekly petrol expenditure for a participant, through reduced fuel consumption. An improvement to the road surface for example, can reduce overall petrol consumption and therefore individually benefit the road user. If this benefit is tied with some other characteristic to which the individual is asked to contribute, for example, a quieter road environment, the interesting question then becomes how much of the benefit are people willing to give up to attain the additional benefit of a reduced noise environment. If they give back the discount they receive from reduced fuel consumption they provide a positive WTP. If the benefit of the contingency is taken, there is a proper protest. If people are mistaken about the benefit they receive, this can be excluded as error, which is achieved by determining whether individuals can

acknowledge the retention of the benefit (effectively asking whether they are actually protesting).

Recognising this new method of dealing with protest bids, it is therefore possible to consider whether ethnicity, in itself, might influence a WTP estimate. A sample consisting of Māori and non-Māori was drawn to determine the answers to the following questions:

1. Are genuine protest bids represented by the “no responses” in general attempts to measure a positive WTP?
2. What method is appropriate for measuring protest bids? Is it possible to recognise a motivation to affect the resultant calculation of a WTP by offering unrealistic responses that would not align with a behavioural intention?
3. If protest bids can be defined methodologically, to what does it relate? In particular, does it relate to ethnicity?

#### ***4.2 Survey Methods***

Two thirds of a total sample of 3000 (2000 participants) were randomly selected from the Tāmaki Makaurau electoral roll database (Tāmaki Makaurau is a Māori electoral roll option that comprises Auckland City, a large part of Waitakere City, and Manukau City). Electoral rolls have been used previously to obtain samples in New Zealand CV studies (Lambert, Saunders, and Williams, 1992; Riley, 1990). Only those respondents who indicated in the survey that they owned a motor vehicle were selected for this study. The other 1000 participants were randomly selected from observations of vehicle licence plates in three locations in Auckland: Central City, Pakuranga, and Manukau City. Heavy vehicles, campervans, motorcycles, buses, and company vehicles were excluded.

Each sample was sent the same survey. To mitigate the influence of potential bias from having two sample groups, a series of questions concerning driver behaviour were included. A total of 700 respondents answered the mail-out survey with more than half the respondents (377) identifying themselves as Māori. The response rate

for the survey was approximately 23%. According to Dillman (1978), high mail survey response rates require an up-to date list of names and addresses, a well-designed and carefully pre-tested questionnaire, and a sponsor, such as a university or government body, who has a non-commercial identity. The last two recommendations were implemented for the current survey. The use of electoral rolls as a sampling frame between elections most likely influenced the low response rate for the survey as the database was off-cycle, being updated, at the time of drawing the sample. An attempt to minimise non-response rates was made through a single follow-up mailing and the use of a prize draw incentive. Nevertheless, the comparison between the groups of participants is unlikely to be affected by a low response rate as analysis indicates there is no particular bias in the response rate across the samples. Furthermore this is a quasi-experimental design involving the observation in a dependent measure across two ethnic groups – Māori and non-Māori. This affords some opportunity, albeit with a small sample, to account for how difference in the two samples affects variation in the dependent measure (protest bid) even if other differences other than ethnicity need to be taken into consideration. The yes or no responses may be better described as expression of attitudes than as indicators of economic value, contrary to the assumptions of contingent valuation (Kahneman et al., 1993).

### ***4.3 Survey Design and Implementation***

The “Improvements to the Road Surface and Roadside Survey” was pre-tested with a wide cross-section of the community (see Appendix A). It was important the survey was pre-tested with a diverse range of Māori participants. As a section of the survey had been written specifically for Māori participants, feedback from these participants was essential to make the survey clear and to provide the information participants want and need to make willingness to pay decisions.

The design of the survey followed as close as possible the guidelines set out by the NOAA panel (Arrow et al., 1993; Mitchell & Carson, 1989). A contingent valuation scenario investigated consumer’s willingness to pay for improvements in a public good – road construction. This scenario described how better construction techniques

could produce better road surfaces. The advantages described included: increased braking capacity by 10%; decreased noise by 5 decibels; and a decrease in fuel costs of 10% (Dravitzki & Wood, 2000). The reference levels for the scenario were quite clearly defined in terms of fuel costs, braking capacity and noise levels. This implied that the construction of roads with these characteristics would be more expensive than conventional road construction. As a result this cost might be borne by the participant in the form of increased fuel taxes to pay for the proposed public good.

The referendum model was used to frame the willingness to pay or bid questions. Mitchell and Carson (1989) prefer the referendum model for public goods as it invokes the correct payment context and the full range of appropriate values. They also recommend the take-it-or-leave-it approach as the elicitation method for mail-out surveys. The main advantages of the take-it-or-leave-it approach is that the participant only has to make a decision based on one price, an action similar to the respondent acting in a private market or voting referenda. Starting point bias was minimised by basing the predetermined prices on a study by Walton, Thomas, and Cenek (2002) that looked at the willingness to pay for road surface improvements. Walton et al. (2002) used the open-ended format to frame the WTP questions. The range of bids for the “Improvements to the Road Surface and Roadside Survey” centred on the average WTP from Walton et al. (2002). Bids ranging from \$1.00 to \$5.50, with increments of \$0.50, were framed for the “Improvements to the Road Surface and Roadside Survey”. Each bid had a discrete randomised sub-sample of participants who were asked if they were willing to pay an extra amount of their weekly petrol bill to achieve all the benefits of the proposed scenario.

#### **4.3.1 Isolating Protest Bidding from Mistaken Beliefs about Benefits**

Not all people who provide a negative WTP by stating “no” to a positive gain as calculated according to individual circumstances (i.e. a seemingly irrational response based on individual travel circumstances) actually recognise the benefit, and these people need to be taken into account when isolating the protest bids. In other words, while people ought to take up a net benefit to themselves on a weekly fuel bill by

supporting the notional cost represented to them in the referendum question, not everyone can recognise the relationship between the discount and their circumstances. A prerequisite for a protest bid, as opposed to an emotive rejection of the method itself, is recognition of a benefit that is rejected. This was achieved by a question asking participants directly whether they would gain more from the reduction in petrol costs than the cost presented in the referendum question. Participants were asked to assess whether the value of the 10% discount in fuel costs provided by Scenario 1 was more or less than the extra WTP bid needed to get all the combined benefits to see improvements to the road surface. Participants could respond by the following options: More, Less or About the Same.

#### ***4.4 Results***

Table 6 outlines the differences in Māori and non-Māori in their general demographics, travel behaviours and attitudes significantly related to the request for a contingency involving increased road costs. The Māori sample is significantly younger, even once those non-drivers captured by the different sampling technique are removed. Māori are also more likely to be female. Māori own older vehicles and estimate travelling further than non-Māori, most notably on long-distance trips. Māori also report spending more money each week on petrol than non-Māori.

Table 6: Key Demographic Differences in the Mean Scores for Māori and non-Māori Samples, Excluding those Māori who do not Drive

Group Statistics		Māori (n=286)		non-Māori (n=254)		
		Mean	SD	Mean	SD	
General	Age	39.25	12.47	45.03	15.25	***
	Proportion Female	0.57	0.50	0.33	0.47	***
	Proportion Urban	0.96	0.20	0.95	0.22	
Vehicle Use	Age of Main Vehicle (yr regd)	1995	3.36	1997	3.37	***
	CC rating of Main Vehicle	2242	785.70	2136	692.45	
	Annual Distance Travelled (km)	19169.58	10369.75	16539.22	8184.54	***
	Proportion use of unleaded 91	0.77	0.43	0.71	0.46	
	Weekly Petrol bill (\$)	47.00	23.74	41.35	18.44	**
	Freq. of Long Dist. Trips (per yr)	6.42	3.79	5.37	3.65	***
Attitudes	% Pref. Commercial Road Users	41.14	23.47	39.92	20.86	
	Petrol Tax Appropriateness (¢)	18.23	9.68	21.83	9.22	***
	General Environmental Concern	97.55	10.70	91.59	12.17	***
	Preferred level of Petrol tax (¢)	11.44	9.01	11.68	9.32	

\* p. < .05 \*\* p.< .01 \*\*\* p.< .001

When asked to consider whether the 10% weekly fuel subsidy (or discount) is greater or less than the random notional contingent value to pay for the improvement (the WTP referendum question), Māori show a tendency to agree that the amount is “about the same”,  $\chi^2 (3, N=600) = 9.044$ ,  $p. < .01$ , despite there being no actual

difference in the actual bid amounts presented to each group,  $\chi^2 (9, N=623) = 12.41$ ,  $p. > .05$ .

As expected from an economically rational group, there is a massive effect for those who answer “yes” to the referendum when the perceived benefit from the fuel subsidy is greater than the contingent bid,  $\chi^2 (2, N=600) = 17.01$ ,  $p. < .001$ . One is about 2.5 times more likely to say yes than no when it is recognised that there are beneficial savings from the fuel subsidy compared with the actual contingent bid. This estimate is much higher than the odds ratio when compared with those who have a neutral outcome; then the odds ratio in favour of saying “yes” is about 50% more when it is recognised that the outcome is beneficial to the individual compared with a neutral outcome.

Due to the inclusion of attitudinal questions, it is possible to identify the sensitivity recognised in the bidding (i.e. people will say “about the same” until you give them \$2.31 more a week but will recognise a loss – a payment at just \$ 0.50 a week). People are highly sensitive to a payment but not so sensitive to the discount. The difference between a notional gain recognised by a discount is about 5 times less than the recognition of a payment.

Definitions of “protesting” are formed by estimating those who claim to gain “more” from the contingency but state they are not willing to pay the amount requested by the referendum. This defines the group conservatively as there is evidence of large asymmetry in the perceived benefits/costs. This group (N=44) are more likely to be Māori (30), as opposed to non-Māori (14). The difference is very highly significant ( $\chi^2 (1, N=153) = 13.29$ ,  $p. < .001$ ), with the odds ratio indicating Māori are nearly four times more likely to present a protest bid than non-Māori (OR = 3.8 1.8-8.1 ).

Table 7 outlines the relationship of the other factors measured in the study to those calculated to be presenting a protest bid.



Table 7: Key Demographic Differences in the Mean Scores for Protesters and Others

Group Statistics		Protest Bidders (n=44)		Others (n=109)	
		Mean	SD	Mean	SD
General	Age	40.91	12.36	41.85	13.70
	Proportion Female	0.41	.50	0.44	.50
	Proportion Urban	0.81	.29	0.97	.16
Vehicle Use	Age of Main Vehicle (yr regd)	1995	3.64	1996	3.71
	CC rating of Main Vehicle	2293	887.22	2335	724.28
	Annual Distance Travelled (km)	17613.64	9867.65	18119.27	8506.23
	Use of unleaded 91	0.68	.47	0.73	.45
	Weekly Petrol bill (\$)	42.23	14.11	48.11	21.24 *
	Freq. of Long Dist. Trips (per yr)	4.77	2.89	6.68	3.86 **
Attitudes	% Pref. Commercial Road Users	41.36	23.78	39.81	18.13
	Petrol Tax Appropriateness (¢)	16.82	10.01	21.83	9.95 **
	General Environmental Concern	93.20	11.04	96.25	10.24
	Preferred level of Petrol tax (¢)	9.01	9.01	11.03	9.42

\* p. < .05 \*\* p.< .01 \*\*\* p.< .001

Note that key differences between Māori and non-Māori do not relate significantly to a protest bid. Being Māori, taking fewer long-distance trips (Māori in general report taking more long-distance trips), and perceiving petrol tax to be inappropriate, combine to characterise the “protesters” in our sample. Key to the interpretation is

that Māori collectively do not travel more than non-Māori, or hold a general concern about the level of tax on petrol.

#### *4.5 Discussion*

Of those participants who stated that the value they would get from the discount would be greater than they would give as a payment to see improvements to the road surface (i.e. a protest bid), a greater proportion than expected are Māori. This indicates: (1) There is an ethnic difference in protest bids; and (2) Māori are more likely to offer a protest bid than non-Māori.

Ajzen, Rosenthal, and Brown's (2000) investigation suggests willingness to pay estimates are based on psychologically reasonable considerations. When extended to consideration of strategic overbidding, Posavac (1998) recognises that overbidding occurs in those who are differentially affected by the proposed change. Strategic overbidding is therefore considered a rational process indicative, albeit indirectly, of the appropriate response given individual circumstances. A direct comparison to this context, Walton, Thomas, and Jackett (2002) found in their sample that protest bids were more likely from those with higher weekly petrol bills and higher annual distance travelled. People who protested preferred the option of pursuing a general taxation rather than a levy on fuel consumption. Following this reasoning, the finding that Māori are nearly four times more likely to protest indicates a reasoned disapproval for the suggested improvements in roading. The issues, then, are why such an indirect measure reveals a difference between Māori and non-Māori, what it relates to, and the implications for the method when the overall direct measure of WTP estimates is not significantly different in both groups.

It is reasonable to infer that Māori are differentially affected by the alteration of a non-market good such as the improvement of a roading surface. This is not simply because Māori travel greater distances, despite the fact that Māori are dually over-represented in the very high and very low ranges of annual travel and report having a greater number of long trips.

Protest against paying for road improvements may be derived from mistrust by some Māori about the survey technique employed. These attitudes towards researchers have been developed from the exploitation and abuse of the rights of indigenous people with regard to research (Battiste & Henderson, 2000; Harrison, 2001; Smith, 1999). Some indigenous communities have legislated strict procedures for regulating research (Papua New Guinea and Western Samoa), while Native Americans control access to people for research and limit it to members of the community (Te Awakotuku, 1991). However, with a similar design, Awatere (2005) found that on average Māori are more willing to pay for improvements to the roadside in the form of native vegetation compared with non-Māori, regardless of income or price, and notwithstanding that low incomes associated with Māori would normally invoke low WTP. This finding is consistent with Spash (2002), who found that a strong personal duty regardless of the cost was positively correlated with WTP. He concluded that WTP biodiversity improvement is partially related to people's ethical concern for marine animals, plants and ecosystems.

Māori, as the indigenous people of New Zealand recognise the inter-relatedness and the interdependence of all things in the world (see Chapter 1). Based on this belief a large number of responsibilities and obligations were assumed by Māori to sustain and maintain the well-being of people, communities and natural resources (Haami & Roberts, 2002; Marsden, 1989; Marsden & Henare, 1992; Mead, 2003). Whakapapa is an integral part of all traditional Māori institutions and is a major determinant of rights to use, access and manage natural resources (Mahuika, 1998). The implementation of whakapapa is through kaitiakitanga – the expression of a two-way relationship that involves obligations to give, receive and repay (Kawharu, 2000).

Kaitiakitanga may be a form of what has elsewhere been described as a protected value. According to Baron and Pranca (1997), protected values are "... those values that resist tradeoffs with other values, particularly economic values" (p. 1). Such values are particularly characterised as being insensitive to the quantity of benefit associated with the contingency. Research of protected values has identified certain

key characteristics such as an omission bias, the effect being normally observed only for acts, not omissions. Protected values have been linked to CV by Baron and Leshner (2000), but they only identify the concerns outlined here that (1) protest responses appear to be an unlimited refusal to accept the economic benefits of the cost-benefit trade off, and (2) these are thought to be overcome methodologically. By observing and quantifying differences in ethnic groups in their protest bid behaviour it is possible to use the method outlined to test the idea that the protest bid is a genuine form of the protected value. This could be achieved by observing “omission bias” and other characteristics associated with protected values using the method outlined.

Another reason for the high propensity for Māori to protest against a public good such as roading development may be based on historical grievances. In some cases historical arrangements were made to secure partnerships between the British Crown (embodied by the New Zealand government) and Māori (Durie, 1994; Kawharu, 1977; Walker, 1990). Land was exchanged for infrastructure development, access to markets, and military protection (Waitangi Tribunal, 1994; 1995a; 1995b). However, the price paid by some Māori for this trust in the British Crown was the near total loss of their taonga (assets) and cultural identity (Blair, 2002; Waitangi Tribunal, 1987). It is possible that historical grievances based on the diverse methods used by the British Crown for land acquisition may have resulted in the perceived negative attitude (or protest bid) of some Māori towards paying for public goods such as developing new roads. This issue requires further investigation in future contingent valuation surveys but the option left clearly open by the findings is that Māori are over-represented as strategic bidders and that this is related significantly to the perceived over-taxation through the current petrol tax.

Roading development in general and the externalities created by roads (such as stormwater run-off) are seen by some Māori as having an adverse effect on their resources within the natural environment (Douglas, 1984; Te Wai-Puanga-Aqua-Rigel, 1993). Māori therefore may be more likely to protest against the concept of development unless that development is compatible with the concepts of sustainable

management and kaitiekitanga (refer to Kawahru (2000)). The framing of contingent valuation surveys that contain ideas of sustainable development and kaitiekitanga require further consideration.

#### ***4.6 Conclusion***

Willingness to pay estimates pertaining to infrastructure activities do not necessarily detect differences in different communities through the direct measure of WTP, rather they may mask underlying protest or protected values, especially if these responses are removed from consideration. They are subject to a bias that is evident by assessing this indirect measure of attitude towards the proposed contingency. Indirect measures, such as the derivation and analysis of the protest bid, give a useful insight into the potential sources of underlying disagreements with the development and alteration of public goods in communities, and especially, as demonstrated here, with indigenous communities such as Māori.

The traditional follow-up questions associated with WTP measures, used to detect bias (such as age, income, etc.) are insufficient to measure the nature of the different orientation Māori have towards their hypothetical contribution. This problem raises the need for more research to determine the mechanism influencing Māori before more accurate estimates of public WTP for asset development can be achieved.

## 5 Exploring the Validity of Willingness to Pay for Indigenous People

### 5.1 Introduction

Recent attempts have been made to include Māori, the indigenous people of New Zealand, in environmental planning. This strategy is not new but is practised in countries with a history of colonisation. At the same time New Zealand planning and policy are entrenched within a neo-classical framework. Market-based options are seen by resource management decision-makers as essential frameworks for efficiently allocating resources. Resource assessment tools such as cost-benefit analysis are accepted practice in New Zealand and are seen as one option for including Māori ontological beliefs into environmental planning. The question is, are these attempts to quantify Māori perspectives within a neo-classical framework valid? Does the end result from the valuation exercise reflect what iwi and hapū say are their environmental beliefs?

An alternative argument is to consider Māori ontological beliefs as they are on the basis of their own merit and judged on the basis of their ethical and moral value. If this argument is accepted, why continue down the path of non-market valuation? The worth of indigenous knowledge is not considered of itself but from the outside, from the perspective of the coloniser (Jackson, 1992). When the opportunity arises for those in power to consider indigenous perspectives, there are usually strings attached. As a result of Pākehā exercise of power, the indigenous perspective is constrained within non-Māori epistemological and ontological frameworks and models. Consequently, I am compelled to consider the validity of including or evaluating Māori ontological beliefs within the domain of welfare economics.

This chapter explores whether the contingent valuation method (CV) can validate what we know about Māori ontology, and presents work on the implementation of a CV study using, as mentioned earlier in the methods and methodology section (p. 9), two separate samples drawn from the Māori population, one from the general Māori population in the metropolitan area of Auckland and the other from the traditional

home of a sub-tribe that has been encompassed by the Auckland metropolis. I hypothesise that Māori who are concerned for the environment are more willing to pay for the environment. Methodological issues such as “interviewer effects” and “social desirability” may influence the way Māori act, particularly if there is a strong link to the environment (for a review of Māori environmental beliefs see Chapter 1). It is expected Māori should be more likely to approach CV as a tool for expressing cultural attitudes towards environmental management.

## ***5.2 The Contingent Valuation Method***

Few published CV studies have explored the relationship between economic values and the cultural values of ethnic groups. Studies to date have used the ethnicity measure to investigate cultural differences between ethnic groups and their willingness to pay (Loomis et al., 2002; Loomis et al., 2004). These studies found no statistically significant difference in willingness to pay (WTP) between ethnic groups.

Using an ethnicity measure by itself to predict the behaviour of an ethnic group can be problematic: the measure does not reflect the heterogeneity of an ethnic group nor does it encompass the entirety of a culture’s beliefs and value systems. While ethnicity is a social construction that reflects the cultural experiences and feelings of a particular group (Jenkins, 1999; Spoonley, 1988), cultural experiences are not homogenous but are relative to the individual who experiences them. The ethnicity measure creates a dichotomy between those people who self-identify with an ethnic group but have no cultural experiences and those people who self-identify and have many cultural experiences. Generalising statements about an ethnic group from statistical analyses using the ethnicity measure can be misleading. With this in mind, care is required when interpreting data based on ethnicity measures.

A number of CV studies have been conducted in countries with a history of colonisation (Boadu, 1992; Choe et al., 1996; Hadker et al., 1997; McPhail, 1993; 1994; Raje et al., 2002; Reddy, 1999; Whittington et al., 1992; Whittington et al., 1990). Whittington’s (2002) discussion of CV studies conducted in developing

countries revealed three primary reasons for the poor implementation of these studies: poor administration; inadequate scenario design; and the lack of testing the effects of variations in survey design on WTP results. These reasons were seen by Whittington as symptomatic of implementing cheap “streamlined” CV surveys. Of interest for the current study is that some CV studies have found an over-estimation of WTP values by participants in developing countries. Echeverria, Hanrahan and Solorzano (1995) suggest differences in WTP between residents and foreigners are explained by local pride in national parks. Shultz, Pinazzo and Cifuentes (1998), on the other hand, argue that the differences between foreigners and residents have to do with familiarity with the CV process. Applying this to a New Zealand context and the familiarity concern is ameliorated. Most Māori are familiar with the concept of money and valuing commodities in monetary terms. Participating in research and responding to surveys is an experience not new to most Māori.

Extensive research on CV has raised doubts as to the validity of this non-market valuation approach to environmental valuation. Indeed, economists have recognised the need to include more psychometric measures in CV to explore the motives behind participant decision-making. This invitation has opened up the CV technique to extensive criticism that has focused on the issue of validity. That is, are the WTP results from a CV survey presenting a realistic picture of participant’s preferences for an environmental commodity? A review of the literature has revealed that critics question the validity of CV results for three main reasons arguing that preferences towards an environmental commodity are:

- motivated by ethical reasons,
- formed by information provided in scenarios,
- an act of a citizen rather than a consumer.

During their everyday lives, consumers’ decisions are based on ethical beliefs. Individual decisions are often made to reflect societal values and norms (Sagoff, 1988). The issue of moral satisfaction or “warm glow” was raised by Kahneman and Knetsch (1992). Their study suggested that moral satisfaction is a reflection of



individual tastes and community values. “Scope” issues are prevalent in situations of moral satisfaction; varying the scope of benefits from an environmental commodity can have little impact on WTP. Supporting evidence to this theory was provided by Desvougues et al. (1993), who found that there was no statistically significant difference in WTP for preventing 2000 birds dying from oil pollution compared with 20000 or 200000 birds dying. Differences in WTP for environmental commodities can be predicted from independent assessments of the moral satisfaction associated with these commodities. Studies regarding moral satisfaction should not be mistaken for a measure of the economic value of the public good. Instead, moral satisfaction reflects individual’s attitudes towards an environmental commodity.

Values and norms, whether derived individually or communally, help shape lexicographic preferences – rational preferences that are not represented by a utility function. Lexicographic preferences are characterised by incommensurability in choice behaviour – environmental quality can not be compensated for with changes in income. People who seemingly express their preferences lexicographically have stronger concern for the environment, which is an expression of their attitude towards the environment and not how much they value the environment (Kahneman et al., 1993; Rosenberger, Peterson, Clark, and Brown, 2001). Evidence suggests WTP increases with the strength of lexicographic preferences (Rekola, Pouta, Kuuluvainen, Tahvonen, & Li, 2000; Veisten, Navrud, & Valen, 2006). According to Spash (2002; 1995) motivations for incommensurability of WTP for environmental commodities are ethical positions based on biocentric valuations, social interests, and landowner rights.

Participants in CV surveys are not used to valuing environmental commodities in monetary terms, and find the cognitive process of placing a monetary value on the environmental commodity difficult. One reason is that environmental commodities have multiple attributes, and different types of values are assigned to them (Goodman, Seabrooke, & Jaffry, 1998; Gregory, Lichtenstein, & Slovic, 1993). Preferences are formed during the process of eliciting the WTP value. CV measures are sensitive to the information about a proposed transaction provided to respondents.

Poor specification of a CV scenario or initial survey information will have a likely impact on stated WTP (Ajzen, Brown, & Rosenthal, 1996). Specification of the proposed transaction before elicitation will help form respondent preferences. In cases where respondents perceive themselves to be environmentally friendly, attitude questions help prime this belief, resulting in a lack of sensitivity towards the bid (Pouta, 2004).

Blamey, Common and Quiggin (1995) argued that participants who responded to WTP questions acted as citizens rather than consumers when it came to assessing a trade-off for an environmental commodity. Respondents answer CV questions by expressing social or political judgements rather than preferences for consumption bundles. That is, they are acting as citizens rather than consumers. Curtis and McConnell's (2002) findings support Blamey et al.'s theory: they explain that people respond to WTP not only as citizens but also through altruistic notions that can be explained within the neo-classical economics orthodoxy.

Economists have responded with discourse consistent with the prevailing orthodoxy. Critics of CV are attacked for incorrect methodology or because their conclusions are consistent with economic theory. Economists, including Smith (1992), Carson and Mitchell (1993), refute the claims by Kahneman and Knetsch (1992), arguing that none of their conclusions were correct because of questionable methodology. Likewise, Smith (1992) questioned the interpretation of the results by Kahnemann and Knetsch, believing instead that the results could be interpreted within the traditional economics framework. They argue that participants exhibit behaviour consistent with orthodox economic theory. Moral satisfaction is interpreted within the context of the neo-classical discourse. Altruistic motives explain why self-interested people make decisions that are seen to benefit the group (Curtis & McConnell, 2002). A recent study by Menges et al. (2005) looked at determining the "warm glow" motivations of participants to donate for green electricity. Their data supported the finding that participants exhibit behaviour of impure altruism, benefiting from both the provision of the public good and from the warm glow.

There is a dominance and normativity of “Whiteness” in the cultural construction of survey questions. Critical analysis of this thought is absent in the CV literature but has been tackled by Whiteness theorists Gabriel (1988) and Fiske (1994).

Understanding Whiteness theory is crucial for analysing the methodological construction of contingent valuation surveys. Failure to recognise or reflect on the origin of “non-ethnic” values will result in issues of fairness and equity concerning ethnicity falling by the wayside (Myser, 2003). There is a risk that indigenous participants’ responses could be distorted. Their viewpoint is subsumed within the dominant “majority space” of a Eurocentric paradigm. Barthes (1973) termed the process of non-reflection or taking for granted the way society behaves as exnomination. The methodology of constructing and implementing CV is developed from a Eurocentric ideology but because it is derived from the Eurocentric ideology it is not apparent to most CV researchers; the Eurocentric ideology remains unnamed, anonymous, it merely exists. An example of exnomination occurs in the survey literature. Reese et al. (1986) hypothesised that there would be no interviewer effects for non-ethnicity-related questions, but that Anglos and Mexican-Americans would defer to opposite-ethnicity interviewers on questions related to Mexican-American culture. The hypothesis normalises the supposed non-ethnicity related questions, for example, questions about education. In effect, questions regarding education are portrayed as universal or normal questions. The appropriateness of Eurocentric-based questions when implemented with non-Eurocentric people is not debated, nor is the validity of responses considered. Instead, concerns focus on proper processes when implementing CV in order to minimise bias.

The characteristics of CV questions (complex scenarios that elicit dollar values and usually involve techniques to compensate for missing data) suggest in-person surveys are the method of choice for most CV studies (Mitchell & Carson, 1989). While in-person surveys are the preferred method of choice, they are susceptible to bias. Interviewer bias is defined “where a respondent gives a WTP amount that differs from his or her true WTP amount in an attempt either to please or gain status in the eyes of a particular interviewer” (Mitchell & Carson, 1989, p. 236). Bias can occur when respondents to CV surveys overestimate their WTP for a hypothetical scenario.

Such an overestimation can occur for a number of reasons, including hypothetical bias and social desirability. Economists have defined social desirability or yea-saying as the tendency of respondents in a CV study to agree with questions regardless of content or their true economic preferences (Blamey et al., 1999; Mitchell & Carson, 1989). Social desirability occurs when respondents provide responses they think will please the interviewer or are consistent with societal norms.

There is growing body of CV literature exploring data collection mode effects and the relationship with social desirability or yea-saying. Davis (2004) carried out an assessment of community preferences in improved water supply services in the city of Odessa, Ukraine, using four data collection modes (household survey, a convenience or “intercept” survey, a telephone survey, and a series of focus group discussions). One principal finding from the Davis study is the presence of a social desirability effect in both the household survey and telephone interviews. Similarly, Leggett et al. (2003) found that WTP was 23–29% higher with in-person interviews compared with self-administered surveys. Ethier et al. (2000), however, did not find any statistically significant difference between WTP responses from surveys conducted by mail and telephone for “green” pricing. A recent study by Loureiro and Lotade (2005) investigated the impacts of an interviewer effect on WTP estimates for eco-labelled products grown in countries associated with the origin of one of the interviewers. Their findings indicated that the respondents were more willing to pay for organic coffee when interviewed by an African interviewer compared with an American interviewer. These studies illustrate that in-person interviews are particularly sensitive to social desirability effects and interviewer effects. This is an important issue for a CV researcher, particularly when considering the type of mode to employ. It becomes an even more important consideration, given that CV experts (Arrow et al., 1993; Mitchell & Carson, 1989) all recommend in-person interviews over self-administered or telephone-administered surveys.

Exploration of interviewer effects is a relatively new area in the CV literature. It is, however, a subject that has been extensively studied in the social sciences. Some studies have found that the ethnicity of an interviewer is an important factor in

introducing interviewer bias into the results. The majority of the literature focuses on the effects of White (descendants of the original peoples of Europe, the Middle East, or North Africa (U.S Census Bureau, 2007)) or African-American (descendants of people indigenous to Africa (U.S Census Bureau, 2007)) interviewers on African-American respondents. The general theme emerging from this literature is that with a White interviewer respondents are more likely to bias responses for sensitive questions. Non-sensitive questions result in no interviewer bias (Anderson, Silver, & Abramson, 1988; Campbell, 1981; Cotter, Cohen, & Coulter, 1982; Davis, 1997). Hatchett and Schuman (1975) determined that respondents whose ethnicity is White do not express their true thoughts when they face an interviewer whose ethnicity is African-American. Likewise, Campbell (1981) also found interviewer bias when respondents were asked questions regarding ethnicity. Davis (1997) found that African-American respondents are less likely to reveal their true opinions to White interviewers. In the presence of a White interviewer an African-American respondent is more likely to acquiesce to the perceived dominant role of the White interviewer.

Interviewer effects on other minority groups (not African-American) are few and far between. Weeks and Moore (1981), however, produced one of the very few examples that investigates the interviewer effect on other ethnic groups. Their findings are consistent with the literature from the African-American/White dichotomy. A difference in ethnicity between the interviewer and a participant does not affect survey responses for questions that are non-sensitive to ethnicity. The assumption by authors who support this theory is one of universalism. A relativist approach opposes this assumption and would claim that the so-called non-ethnic questions are in fact questions derived from a Eurocentric paradigm. There is a dominance and normativity of “whiteness” in the cultural construction of survey questions. This is another important issue to consider in designing CV surveys, particularly if comparative analysis between ethnic groups is to be carried out.

### *5.3 Survey Methods*

The New Zealand Government (the Crown) is currently in the process of conferring mana whenua rights (exclusive property rights) to Crown land on the Tāmaki isthmus (Tāmaki Makaurau) as part of the Treaty of Waitangi settlements process. This research acknowledges that the process of Treaty settlements has been contentious from an iwi/hapū perspective, particularly in the case of Tāmaki Makaurau. To abrogate its responsibility in dealing with other claimants, the Crown has chosen to deal with one iwi/hapū, and has told overlapping claimants they should negotiate their concerns directly with Ngāti Whātua o Ōrākei. The Crown's strategy further exacerbates the situation and increases tension among iwi/hapū, many of whom have kinship ties to Ngāti Whātua o Ōrākei. Furthermore, there are conflicting historical accounts regarding Ngāti Whātua o Ōrākei's claim to the entire Tāmaki isthmus (Barton, 2006).

However, historical issues aside, Ngāti Whātua o Ōrākei is currently recognised by the Crown as one of many hapū and iwi that exercises katiekitanga (environmental management) on the Tāmaki isthmus. The decision to work with Ngāti Whātua o Ōrākei is explained earlier in this thesis (p. 53). Ngāti Whātua o Ōrākei researchers were employed to carry out 100 interviews. Participants who identified as members of Ngāti Whātua o Ōrākei and who had whakapapa links to the Ngāti Whātua o Ōrākei researchers were selected. The response rate for the interviews was 75%. Another sample was randomly selected from the Tāmaki Makaurau Māori electoral rolls (Tāmaki Makaurau is a Māori electoral roll option that comprises Auckland City, a large part of Waitakere City, and Manukau City). A survey was mailed to 2000 people on the electoral roll. Only those respondents who indicated in the survey that they owned a motor vehicle were selected for this study. The response rate for the survey was approximately 23%. Attempts were made to minimise non-response rates such as the use of a single follow-up mailing and a prize draw incentive. A low response rate may be due to the reasons mentioned earlier in this thesis (p. 76).

#### ***5.4 Survey Design and Implementation***

The “Improvements to the Road Surface and Roadside Survey” was pre-tested with a wide cross-section of the community. It was important the survey was pre-tested with a diverse range of Māori participants; feedback from these participants was essential to make the survey clear and to provide the information participants want and need to make willingness to pay decisions.

There is a search for universal CV rules to be applied worldwide, largely based on the recommendations of the NOAA (National Oceanic and Atmospheric Administration) panel (Arrow et al, 1993). Any deviation from this norm in terms of research design is susceptible to attack for not conforming to best practice. This inflexible position disregards the view that human value formation with regard to the environment is complex and combines attitudes, ethical views and economic values (Chilton & Hutchinson, 2003; Spash, 2000). These motives/attitudes/ethics are often completely crucial for the social value of the environmental commodity in question. Individual motivations are required if we want to make accurate estimations of the social value of environmental commodities (Johansson-Stenman, 1998). With both approaches in mind the survey design aimed first to follow best practice to minimise bias and second to recognise that some perceived biases may be the result of attitudes or motivations that require a set of attitudinal questions to explore individual motivations.

The survey design followed as closely as possible the guidelines set out by the NOAA expert panel (Arrow et al., 1993; Mitchell & Carson, 1989) and also included an attitudinal scale. A contingent valuation scenario investigated consumer willingness to pay for improvements in a public good – roadside vegetation. This scenario described the ecological benefits from improving roadside biodiversity. The implication was that planting indigenous vegetation would be more expensive than conventional roadside road construction. As a result, this cost might be borne by the participant in the form of increased fuel taxes to pay for the proposed public good. A succinct scenario was chosen for the current survey to minimise respondent fatigue. A photo (see Appendix B – Show card A and Appendix C – Show card B) was also

shown to help respondents visualise the described good and also to hold their attention during a lengthy build-up to the survey (initial interviewer intro, cheap-talk script, consent form, lead-in questions). Pre-tests were carried out to determine the right balance of information within the scenario.

Psychologists Harris et al. (1989) advocate a more direct approach to measure the extent to which the values obtained from CV meaningfully represent an individual's preferences. They argue that focusing on minimising bias in CV does not necessarily lead to valid and reliable WTP values. A researcher would still not know the "true value" an individual puts on a public good. Harris et al. (1989) recommend the use of conventional psychometric approaches to assess the validity and reliability of survey measures. Care needs to be taken with respect to the location of attitudinal questions within CV surveys. Spash (2000) observes that attitudinal questions that precede elicitation questions could effectively load respondents expectations. Indeed, Pouta (2004) found evidence that attitude and belief statements before elicitation questions helped inform participants and led to the formation of preferences for the environmental commodity.

The attitude and belief questions used in my research were purposely placed after the elicitation questions in order to maximise the quality of participant responses. A General Environmental Concern scale (GEC) was included with the survey. The scale consists of 31 items and is designed to measure participants' concern for the environment. This scale was a composite of five previously reported scales (Walton et al., 2004). The majority of questions focused on participants' perceptions of pollution, property rights, and environmental policies. Lexicographic preferences (an incommensurable preference – participants are unwilling to make trade-offs between all goods) can also be measured by using this scale. The higher the rating on the environmental concern index, the more likely it is that someone will have lexicographic preferences.

Within the context of the best practice approach to CV, distortions to WTP values can be caused by the presence of hypothetical bias. The potential for hypothetical bias



arises whenever people are asked to state or select a maximum amount they are willing to pay for a good or service even though they will not actually have to pay for it (Aadland & Caplan, 2003). An ex ante design – Cheap Talk – was developed by Cummings and Taylor (1999) to minimise hypothetical bias. This design makes hypothetical bias an integral part of the contingent value survey, leading to a more truthful response from participants. List (2001) found that for consumers, the cheap-talk design was successful in eliminating hypothetical bias, even after controlling for subject-specific characteristics. However, List also found evidence suggesting that the cheap-talk design may not eliminate bias for consumers who have past experience with the good. The current study used a cheap-talk script for the in-person interviews but not for the mail survey (see Appendix D – Cheap-talk script). Decisions were made not to include the cheap-talk script in the mail survey to minimise respondent fatigue, and also to explore whether interviewer effects are mitigated with the implementation of a cheap-talk script.

The referendum model was used to frame the WTP or bid questions. Mitchell and Carson (1989) prefer the referendum model for public goods as it invokes the correct payment context and the full range of appropriate values. They also recommend the take-it-or-leave-it approach as the elicitation method for mail-out surveys. The main advantages of this approach is that the participant only has to make a decision based on one price, an action similar to the respondent acting in a private market or voting referendum. Starting-point bias was minimised by basing the predetermined prices on a study by Walton, Thomas, and Cenek (2002) that looked at the willingness to pay for road surface improvements. Walton et al. (2002) used the open-ended format to frame the WTP questions. The range of bids for the “Improvements to the Road Surface and Roadside Survey” centred on the average WTP from Walton et al. (2002). Bids ranging from \$1.00 to \$5.50 with increments of \$0.50 were framed for the Survey. Each bid had a discrete randomised sub-sample of participants who were asked if they were willing to pay an extra amount of their weekly petrol bill to achieve all the benefits of the proposed scenario.

A follow-up question to the WTP elicitation question was added to further explore participants' motivations. Were they limited by their budgets or were they protesting against the payment vehicle or the environmental commodity itself? This method has been employed by CV researchers in earlier work (Champ & Bishop, 2001; Clark, Burgess, & Harrison, 2000; Curtis, 2001) and is a recommended approach to identify protesters.

The same survey was used for both the Interview and the Survey. The only differences being the inclusion of a follow-up question in the Interview schedule. There were also methodological differences in the implementation including the use of; cheap-talk scripts, photos, consent forms and introduction scripts for the Interview.

### *5.5 Kaupapa Māori*

A Kaupapa Māori research approach was taken for this survey. Kaupapa Māori research (KMR) is defined as a “development framework and suite of methods” rather than one method. This approach is therefore concerned more with methodology than method (Smith, 1999). KMR does not exclude other methodological approaches and processes from being used. Key working principles (Smith 1999) that have emerged from the Kaupapa Māori research literature include: whakapapa (genealogy); te reo (Māori language); tikanga (protocols); rangātiratanga (leadership); and whānau (family). This set of working principles helps inform the nature of the research. Cram, Lenihan, Smith and Reid (2000) explain:

In this sense Kaupapa Māori is a theory and an analysis of the context of research which involves Māori and of the approaches to research with, by and/or for Māori. A Kaupapa Māori approach does not exclude the use of a wide range of methods but rather signals the interrogation of methods in relation to cultural sensitivity, cross-cultural reliability, useful outcomes for Māori, and other such measures. (p.10)

The primary reason for engaging in a Kaupapa Māori approach is to remove or mitigate barriers between the participants and the researcher. First point of contact is most important in removing those barriers that exist between a researcher and the participant. Trust must be gained. One approach was to develop the survey in conjunction with members of the hapū. Establishing a relationship with key members of the hapū was also a necessary part of the process. Through previous research work Landcare Research had established a relationship with representatives of the Ngāti Whātua o Ōrākei Trust Board, the governance structure for the hapū. A series of hui were staged to get “buy in” from representatives of the hapū. A follow-up hui was held with representatives of the hapū to discuss the implementation of the WTP survey.

Implementation of the survey was carried out by members of the hapū. Barriers can exist in cases even when other Māori who are not part of the hapū try to administer surveys. Each interviewer was trained in implementing the survey and clearly detailed scripts were provided to each interviewer as guidelines (refer to Appendix E – Rules of good interview practice, and Appendix F – Introduction script, and consent form). The CV literature recommends a standardised approach for administering surveys (Whittington, 2002). Flexibility allowed a Kaupapa Māori approach to smooth the way forward when administering to hapū participants. Various protocols that are part of Te Ao Māori were carried out when necessary. The use of these protocols depended in part on the Māori cultural identity of the person or on other factors that make a respondent comfortable. Such protocols include karakia (prayer), mihi (informal greetings), and koha (contributions for time).

To reduce interviewer effects there were clear delineations between the implementation of the Kaupapa Māori process and the CV process. The total survey process involved three steps:

- Initial engagement
- Survey administered
- Final formalities

A dynamic approach to implementing the survey was carried out based on a Kaupapa Māori approach. This approach was required in order to make Māori participants feel comfortable, improve the response rate, and allow for quality answers.

## ***5.6 Results***

### **5.6.1 Respondent Characteristics**

The main differences between the two samples are presented here. One sample was drawn from the hapū, Ngāti Whātua o Ōrākei, and is termed “Interview.” The other sample was selected from the Tāmaki Makaurau Māori Electoral rolls and is described as “Survey.” The differences between the mean scores for each sample group are presented below in Table 8.

Table 8: Key Demographic Differences in the Mean Scores for Interview and Survey

Samples: Excluding those who do not drive

Group Statistics		Interview (N=55)		Survey (N=331)	
		Mean	SD	Mean	SD
General	Age	31.27	10.40	39.24	13.14***
	Income	31220.00	16586	39450.00	20757.00**
	Proportion Female	.44	.50	.57	.50*
Vehicle Use	Proportion Urban	.89	.32	.96	.20*
	Age of Main Vehicle (yr regd)	1995	3.00	1995	3.36
	CC rating of Main Vehicle	2387	881.30	2242	785.70
	Annual Distance Travelled (km)	14991.00	9771.20	14275.00	9040.70
	Proportion use of unleaded 91	.84	.37	.77	.49
	Weekly Petrol bill (\$)	58.02	34.00	47.41	15.88***
	Freq. of Long Dist. Trips (per yr)	6.16	3.46	6.42	3.79
Attitudes	Petrol Tax Appropriateness (¢)	18.75	14.79	19.65	8.83
	Preferred level of Petrol tax (¢)	19.56	13.10	18.37	9.77
	General Environmental Concern	94.93	12.23	96.95	11.23

\* p. < .05 \*\* p.< .01 \*\*\* p.< .001

The Māori population has a relatively younger age structure with a large proportion in the 15 – 44 year group. For instance about 3 in 8 people of Māori ethnicity are aged under 15 years (Statistics New Zealand, 2007). As mentioned earlier (p. 56),

Auckland City has the largest concentration of Māori in the country – 24%. Auckland also has one of the highest proportions of Māori adults aged 25 – 44 – 30% (Te Puni Kokiri, 2001). The Interview sample however is significantly younger than the Survey sample. This may have been a mode effect. Older people are more likely to respond to surveys than younger people (Dillman, 1998).

It was expected that the Survey sample would have higher incomes, given that the mean population is older and that Māori in Auckland tend to earn higher incomes (see p. 57). The Interview sample has a significantly lower average income compared with the Survey sample. Education or labour force status may be factors that explain this difference. However, information on educational qualifications and labour force status was not collected during the interviews.

The majority of the survey sample live in an urban environment (96%). A small proportion of Ngāti Whātua stated they live in a rural area (11%). This finding is inconsistent with the assumption that since Ngāti Whātua o Ōrākei is based in Auckland city, the majority of the hapū must live in the city. As explained earlier (p. 58), this incongruity may lie in the history of Ngāti Whātua o Ōrākei. A key year for Ngāti Whātua o Ōrākei was 1951, which saw the forced relocation of the hapū by the government from their traditional base at Ōkahu Bay to Bastion Point. This was a time of tremendous upheaval for Ngāti Whātua o Ōrākei. While some were relocated to the state homes on Kupe Street and other homes at Bastion Point, others were forced to seek accommodation further afield. As a result, successive generations of Ngāti Whātua live outside the wā kāinga (homelands) but still maintain some linkages with the hapū.

The significant differences for the “Weekly Petrol Bill” variable may have to do with the timing of the survey and the interview: the implementation of the survey and the interview schedule was distinctly different. The survey was sent out in October 2004, at the time petrol tax comprised 36c of the total price (\$1.20) of unleaded 91 compared with 47c of the total price (\$1.45) in March 2006 when the interviews took place. After an initial dip in the latter quarter of 2005, petrol prices steadily increased

during the first quarter in 2006. Such steadily rising prices would have been anathema to those participants already on a tight budget. Rising petrol prices could explain why “Petrol Bill” for the Interview sample is significantly higher than that for the Survey sample. However, after standardising the petrol bill for both samples to petrol prices as of March 2006, the Interview sample spends more on petrol compared with the Survey sample. Explanations for this difference could be due to larger vehicles driven by the Interview sample.

### **5.6.2 WTP for Roadside Improvement**

A logistic regression model was applied to investigate the relationship between willingness to pay and a number of independent variables. The key difference between a logistic regression model and a linear regression model is that the response variable in the logistic model is binary or dichotomous (here “willing to pay” or “not willing to pay”) and the prediction given is of the probability of an individual being willing to pay.

As with the linear regression model, the explanatory variables are combined linearly. An example of a linear model used here is:

*Equation 1: WTP for Roadside Improvement Model 1*

$$\hat{g}(\mathbf{x}) = \beta_0 + \beta_1 \times WTPVEGE\$ + \beta_2 \times AGE + \beta_3 \times GEC + \beta_4 \times INCOME + \beta_5 \times GENDER$$

Here  $\mathbf{x}$  stands for the multiple observations made on the individual. These are: GENDER – a dummy variable of 1 if the participant identified themselves as Male, and 0 Female; WTPVEGE\$ – the different “bid” levels to which respondents were asked to reply either with yes or no; GEC – a general environmental concern scale; INCOME – interval level data of personal income; and AGE – interval level data of a participant’s age.

The logistic regression model (Hosmer & Lemeshow, 2000) links  $g(\mathbf{x})$  to the predicted probability  $\pi(\mathbf{x})$  by the logit transformation, or the log of the odds of an individual being willing to pay. Importantly,  $g(\mathbf{x})$  can range from  $-\infty$  to  $+\infty$  while  $\pi(\mathbf{x})$  ranges between 0 and 1. Although an individual's response is measured as 0 or 1,  $\pi(\mathbf{x})$  for that individual will rarely be exactly 0 or 1, so problems of  $-\infty$  to  $+\infty$  are avoided.

*Equation 2: Transformation of the Logit Model*

$$g(\mathbf{x}) = \ln \frac{\pi(\mathbf{x})}{1 - \pi(\mathbf{x})}$$

Transformation of the logit model results in similar properties as a linear regression model. The intercept,  $\beta_0$ , is the value of the  $g(\mathbf{x})$  if each  $\mathbf{x} = 0$ . As with the linear regression model, this rarely has any interest. The other estimated coefficients can be interpreted as marginal influences of the corresponding explanatory variable on the probability of accepting offered bids, but the influence is not a simple slope. Given  $\mathbf{x}$ , the probability of paying for an environmental improvement can be estimated from the model (Hosmer & Lemeshow, 2000).

### **5.6.3 Exploring the Differences Between the Samples**

A comparative analysis of logit coefficients between the two samples is carried out in this section. The two samples are compared by combining the data from both samples, and comparing a model that ignores sample differences with one that allows for them. A dummy variable (SAMPLE) that reflects Interview/Survey was created along with a number of interaction terms between the dummy variable and a number of other independent variables. The significant interactions are interpreted as indicating significant differences between the two samples for the corresponding independent variables. An example of this model follows:



*Equation 3: WTP for Roadside Improvement Model 2*

$$\text{WTPVEGE} = (\text{WTPVEGE\$} + \text{AGE} + \text{GENDER} + \text{INCOME} + \text{GEC}) * \text{SAMPLE}$$

Logistic regression of the model from Equation 3 was carried out and a sequential analysis of deviance follows in Table 9.

*Table 9: Sequential Analysis of Deviance*

	Df	Deviance	Resid.Df	Resid.Dev	P(>[Chi])
Null	1		389	537.69	
WTPVEGES\$	1	4.2	388	533.49	0.04*
AGE	1	3.92	387	592.58	0.05*
GENDER	1	.26	386	529.31	0.61
INCOME	1	0.05	385	529.27	0.83
GEC	1	7.92	384	521.35	0.005**
SAMPLE	1	2.35	383	519.00	0.13
WTPVEGES\$:SAMPLE	1	1.05	382	517.95	0.31
AGE:SAMPLE	1	3.28	381	514.66	0.07*
GENDER:SAMPLE	1	1.53	380	513.13	0.22
INCOME:SAMPLE	1	3.69	379	509.44	0.05*
GEC:SAMPLE	1	0.64	378	508.80	0.42

\* p. < .05 \*\* p.< .01 \*\*\* p.< .001

The combined samples are shown here to provide moderate evidence that WTP for roadside vegetation is associated with the \$ bid, WTPVEGE\$ (p=.04), and there is no evidence at all that the size of this effect differs between samples (p=0.31). Likewise, the combined sample provides strong evidence that WTP is associated with GEC (p=.005). There is also no evidence to suggest the size of the effect differs between the samples (p=0.42). AGE seems to be a factor in determining WTP for roadside vegetation. The combined sample presents evidence of a weak association between WTP and AGE (p=.05). There is also weak evidence to suggest the size of the effect differs between samples (p=.07).

Factors for which there is no evidence are removed from the model, leading to a revised model, as follows:

*Equation 4: WTP for Roadside Improvement Model 3*

$$\text{WTPVEGE} = \text{WTPVEGE\$} + \text{AGE} + \text{INCOME} + \text{GEC} + \text{SAMPLE} + \text{AGE:SAMPLE} + \text{INCOME:SAMPLE}$$

A stepwise procedure was carried out to check the effect of each variable as other variables were deleted. In this case the measured variables are not strongly correlated. The new fitted model gives the following coefficient estimates in Table 10.

*Table 10: Logistic Regression Model for Roadside Improvement*

Coefficients	Estimate	Std. Error	z value	Pr(> z )	exp(Estimate)
(Intercept)	-5.281	1.5244	-3.5	0.0005***	0.0051
WTPVEGES	-0.143	0.0738	-1.9	0.053*	0.867
AGE	0.062	0.0318	2.0	0.049**	1.064
INCOME	0.031	0.0195	1.6	0.11	1.031
GEC	0.026	0.0095	2.7	0.007***	1.026
SAMPLE	3.279	1.2512	2.6	0.009***	26.544
AGE:SAMPLE	-0.056	0.0329	-1.7	0.09*	0.945
IINCOME:SAMPLE	-0.032	0.0202	-1.6	0.11	0.968

\* p. < .10 \*\* p.< .05 \*\*\* p.< .01

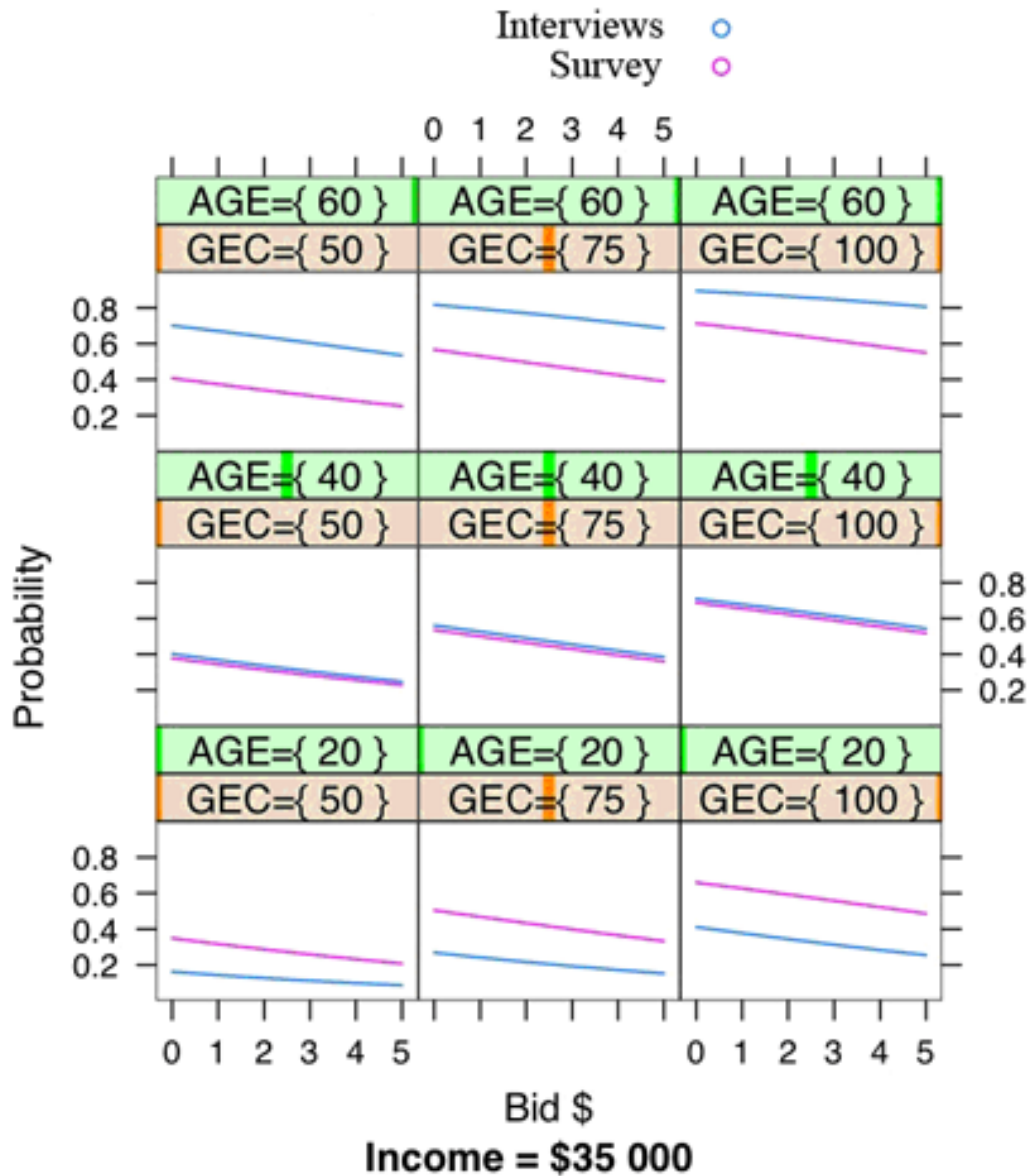
The variable INCOME is retained for the new model although there is minor evidence for it. Prior expectations suggest the odds of accepting a bid are increased as income increases; the positive coefficient in the new model (Equation 4) supports this expectation. The coefficients are interpreted as the log-odds of accepting a WTP bid. The column exp(Estimate) is added to give the multiplier of the odds for each variable. For example, the GEC coefficient of 0.026 means that an increase of one unit on the GEC scale multiplies the odds of accepting the bid by  $\exp(0.0257) = 1.026$ , or an increase of 10 units multiplies them by  $\exp(0.2570) = 1.29$ . The new model provides weak evidence that that likelihood of being WTP for roadside

vegetation is associated with the \$ bid, WTPVEGE\$ ( $p=.053$ ). A negative coefficient suggests that as the bid level increases, the odds of accepting a bid decreases. A strong association between WTP and GEC means that odds of accepting a bid increase as GEC increases ( $p=.007$ ). This result is consistent with prior expectations. Table 10 also provides moderate evidence that as AGE increases the likelihood of paying increases ( $p=.049$ ).

The SAMPLE coefficient is interpreted with the AGE:SAMPLE and INCOME:SAMPLE interaction. For a 20-year-old with an income of \$35,000 the sample difference in log odds is  $3.279 + 20 \times (-0.0562) + 35 \times (-0.0325) = 1.019$ ; this transforms into the odds of accepting a bid being 2.8 times higher for this type of respondent from the Survey than the Interview. In contrast, the effect is reversed as respondents age. For example, for a 40-year-old with an income of \$35,000 the sample difference in log odds is  $3.279 + 40 \times (-0.0562) + 35 \times (-0.0325) = -0.1065$ ; this transforms into the odds of accepting a bid for the Survey being 0.8, or 20% less likely to accept the bid compared to the Interview sample.

Predictions from this model are best shown graphically. The plot below shows the probability of acceptance for a range of bids, for all combinations of low, middle and high ages and GECs. These predictions have high standard errors, but from our model fitting we know there is at least moderate evidence for AGE and GEC differences between the samples, and for the positive slope of the line. However, there is no evidence that the slopes differ between the two samples, the WTPVEGE\$:SAMPLE interaction. This confirms that the association between WTP and the bid variable (WTP\$VEGE) follows standard economic behaviour; this applies to both samples. A negative coefficient implies that as the bid increases, respondents are less likely to be willing to pay for the proposed environmental improvement. The AGE:SAMPLE interaction is shown by the Interview sample being increasingly likely to accept the bid as respondent's age.

Figure 1: Probability of Accepting a Bid Based on AGE, and GEC



In summary, it has been argued that there is weak evidence to suggest that both samples conform to standard economic behaviour with regard to incremental increases in bid level. The higher the bid level, the less likely it is that respondents are willing to pay. There is also strong evidence that GEC increases the likelihood of being willing to pay and that there is no evidence to suggest that GEC differs between the samples. Differences between the samples are explained by AGE. As respondents

age, the Interview sample is more likely to accept the bid compared to the Survey sample.

#### **5.6.4 Reasons Why Respondents Were not WTP**

A follow-up question to the WTP question delved deeper into the reasons why participants made their decision to say no. Response variables included: I support the option but cannot afford it (SUPPORT – CANNOT AFFORD); I support the option but it’s not worth it (SUPPORT – NOT WORTH); I support the option but not through a petrol tax (SUPPORT – PETROL TAX); and I oppose the option all together (OPPOSE). Table 11 presents a summary of these responses for the Interview sample only.

*Table 11: Follow-up Responses to WTP Question*

Response variable	Count	Percentage
SUPPORT – PETROL TAX	12	29%
OPPOSE	7	17%
SUPPORT – NOT WORTH	9	22%
SUPPORT – CANNOT AFFORD	13	32%

Nearly 32% of the Interview sample stated that they simply could not afford the payment level. Also note, 29% of respondents from the Interview support the idea of roadside vegetation but rejected the payment vehicle. This result shows evidence of bias against the CV method. A further 22% supported the notion of improving the roadside but thought it was not worth it at the proposed payment level. The key finding from the follow-up questions is that a large proportion (32%) of Interviewees

supports the notion of roadside vegetation but for reasons of affordability are not WTP for it.

What are the implications of these findings for informing policy? For these data, WTP is clearly not the same as a referendum for the proposed resource management option. Māori seem to have expressed some level of cultural attitudes through the GEC scale and there is a positive association with WTP. However the follow-up questions show that there are those respondents who are supportive of the proposed resource management option, but are constrained by the neo-classical framework to express their perspective. The following section discusses the implications of these findings for resource management in New Zealand.

### *5.7 Discussion*

The data confirm there is strong evidence that Māori who are concerned for the environment are more WTP for roadside improvements in the form of vegetation compared with those who are not. Furthermore there was no difference in this association between two different data collection modes. The expectation is that Māori with strong environmental preferences should be more likely to approach CV as a tool for expressing cultural attitudes towards environmental management because of lexicographic preferences. This section sets out to explore the implications of these findings for the validity of the contingent method when used to measure Māori perspectives of the environment.

The validity of Māori ontological beliefs depends on the positioning within which it is evaluated. For political, moral and ethical reasons it could be argued that Māori ontological beliefs should be assessed within a Māori epistemological context (for an example of a Kaupapa Māori framework see Smith (1997)). However the current thesis recognises the worth of indigenous knowledge is not considered of itself but from the outside, from the perspective of the coloniser (Jackson, 1992). Having made this normative judgement I will discuss the validity of the findings within the domain of welfare economics.



Due to a history of colonisation, Māori have varying degrees of cultural identity. While some Māori exhibit behaviour consistent with traditional values, others have values that are predominantly Eurocentric, and there are also those who are in-between. It was expected that Māori ethical motivations for an environmental commodity would be heterogeneous. The results, however, present a contrary position. Based on the view that some Māori groups (particularly people living in the traditional homelands) have strong ethical motivations towards environmental management, it was expected that the Interview sample would have a greater proportion of people willing to pay for roadside improvement. Since this group have a perceived close affinity with the environment, they ought to overestimate their WTP for an improvement to the environment. It was expected that participants with lexicographic preferences to have stronger concern for the environment, which is an expression of their attitude towards the environment and not how much they value the environment. This was not the case. There was no significant difference in environmental concern between the two samples. Participants from the Survey sample (predominantly made up of Māori living away from their traditional homelands) are just as likely to be willing to pay for improvement to the roadside as the Interview sample. What are the reasons for this? An initial reaction is that urban Māori have a cultural identity comparable to those Māori living within their wā kāinga (traditional homelands). Indeed as Durie (2003) has found, urban Māori do maintain links with their hapū and have a relatively strong cultural identity.

Comparable results could also mean that lexicographic preferences are consistent between the samples. It was expected that Māori with lexicographic preferences for the environment would be more likely to be willing to pay for environmental commodities. Evidence from previous studies suggests WTP increases with the strength of lexicographic preferences (Rekola et al., 2000; Veisten et al., 2006). The logistic regression results show some evidence of lexicographic preferences: participants with a higher (GEC) are more likely to pay for improvements to the roadside. Also, older participants from the Interview sample are more likely to pay for roadside improvement as well. This may be due to either older people having a

stronger sense of kaitekitanga that has influenced the way they have made the willingness to pay decision or it may be based on issues to do with social desirability. These findings are consistent with the view of the literature that people who seemingly express their preferences lexicographically have stronger concern for the environment, which is an expression of their attitude towards the environment and not how much they value the environment (Kahneman et al., 1993; Rosenberger et al., 2001). Furthermore, there is no significant difference between samples for GEC. This finding provides clear evidence that Māori attitudes towards the environment in the form of GEC are consistent between the samples. In essence, participants from both samples are more likely to pay for improvements to the environment based solely on their ethical stance, regardless of the survey mode employed and regardless of their cultural identity.

A prior expectation was that a social desirability bias would be present within the interviews. The results show Māori participants have revealed positive attitudes towards roadside improvement. Strong ethical positions revealed through the GEC scale have influenced Māori decision-making. There is some merit therefore in Blamey et al.'s (1995) argument that respondents answer CV questions by expressing social or political judgements rather than preferences over consumption bundles. A citizen response considers the wider interest of the community. Māori social structures (tribe, sub-tribe and family) would imply that Māori participants of CV respond in a manner inconsistent with maximising individual utility bundles. Māori participants ought to consider the impact of the resource management decision on other members of their whānau, hapū or iwi. Māori preferences should also remain stable when faced with a CV scenario due to the strong moral value basis that underlies their position (Spash, 2000).

Social desirability occurs when respondents provide responses they think will please the interviewer or are consistent with societal norms. It was expected that participants would want the interviewer to believe they favoured environmental management because the participant thinks that is a normative practice in Māori society. The relatively high levels of GEC and the higher probability of older participants to accept

a willingness to pay bid suggest social desirability may have influenced the responses for the Interview sample. Social desirability bias could also be present within the Survey sample. The introductory letter (see Appendix G) and information in the survey may have primed respondents to the fact that first, a survey was being conducted by an environmental organisation, and second, that a Māori researcher was conducting it. These two issues could have helped participants from the Survey sample to form attitudes consistent with what interested the researcher and his organisation. Social desirability affects the reliability of CV results and is an important issue to be considered by policy analysts/resource managers when considering implementation of a CV survey.

The potential for hypothetical bias is present whenever people are asked to state or select a maximum amount they are willing to pay for a good or service even though they will not actually have to pay for it (Aadland & Caplan, 2003). It was expected that Survey respondents would overestimate their WTP for a hypothetical scenario compared with the Interview sample where steps were taken to minimise hypothetical bias. Anecdotal evidence of hypothetical bias would have shown up as differences in the size of the coefficients representing the different bid levels (WTPVEGE\$). The results found no evidence to support the supposition that the size of the association differs between samples. Further exploration of hypothetical bias is constrained by relatively high standard errors in average WTP making comparison unreliable. Regardless, the issue warrants further exploration as prior expectations suggest hypothetical bias is likely to be present within the Survey, particularly if a cheap-talk script to minimise hypothetical bias was only implemented with the Interview sample. By using a cheap-talk script behaviour is constrained within the welfare economics paradigm and perspectives are coaxed into standard economic behaviour. The follow-up questions show that while 32% of individuals expressed an interest in supporting the project, they simply could not afford the bid being offered through the dichotomous choice question. The outcome is that environmental preferences/attitudes are not considered within the WTP framework. The WTP response is value free, reflecting a decision to maximise individual utility. If follow-up questions were not included we could conclude that WTP reflects people's

preferences. This has important implications for environmental policy, particularly if WTP surveys are used as a guide for public support of resource management decisions. WTP surveys are clearly not the same as a referendum for the proposed resource management option. These surveys merely reflect the willingness of a number of individuals to **pay** for environmental improvement.

### ***5.8 Conclusion***

Commensurable preferences can be obtained with fine-tuning of the CV method. In the end is this outcome meaningful for resource management within New Zealand? Most definitely if the goal is to achieve quantification of a non-market environmental commodity. For those Māori who have no qualms about participating in a valuation exercise, CV is one way of expressing their attitude towards environmental improvement. This result challenges the validity of CV to produce true economic measures. If the goal is to persist with quantification then other methodological enhancements such as attitudinal scales and follow-up questions can be meaningful for resource managers. CV surveys should continue to explore the motivations behind respondents' WTP. This is particularly important within the New Zealand resource management context if surveys are being used to present "Māori" views of an environmental commodity. A rejection of the environmental commodity means support of the project is beyond the financial means of a respondent and does not necessarily reflect the ethical view of the respondent.

This issue is of particular concern, however, because the methodology runs the risk of constraining Māori philosophy and ideology within the rigid framework of the willingness to pay model. Furthermore, CV can decontextualise the indigenous perspective, rendering it malleable and conducive to the "mainstream" planning agenda. CV can be seen as having the power to condense Māori ontology to a single "magical" number. Capturing Mātauranga Māori in this way could be viewed as the Holy Grail for some resource managers and policy analysts. The approach continues to support the view of the inherent dominance of Western knowledge. This is

anathema, however, to the indigenous person, who is horrified by the mere thought of placing a dollar value on the life of a kaitieki, a whanaunga, a tipuna.

This reasoning lends weight to the argument that Māori values should be considered legitimate on the basis of their own merit and judged on the basis of their ethical and moral value. Just like WTP values, ethical and moral views present useful information for policy makers. Ethical views are usually based on cultural values and norms and are likely to present a Māori perspective on the proposed resource management option. This is particularly important in New Zealand, given the legislative mandate in the Resource Management Act for resource managers to actively consider Māori values. While there are many types of values for an environmental commodity, they do not necessarily have to be measured or quantified. As the renowned environmental economist Michael Hanemann (1994) concludes, CV is *one* way of consulting the public on the value of a public good. Because of the relative difficulties of implementing CV, it should be utilised alongside existing qualitative practices such as public forum meetings, hui, focus groups and marae consultation. Carrying out a CV should not preclude further qualitative consultation. This is most pertinent for Māori, who place great importance on developing long-term relationships with resource managers and value concerted efforts at consultation during the planning process. The promise of CV as a tool to circumvent face-to-face consultation loses its lustre when compared with ethical and humanistic motivations that present a deeper and more dynamic representation of community values towards the environment.

## 6 Concluding Remarks

Welfare economics is perceived by many as economic science, a branch of economics that employs positivist research methodologies. It is also seen as a behavioural science trying to mimic the research approaches of biophysical sciences, having developed normative theories that are viewed as facts within a very narrow framework, despite some serious challenges to its validity. The level of understanding of the theory by economic philosophers and those who apply the theory is seriously disjointed. Contemporary work by neo-classical theorists has recognised that interpersonal utility cannot be reduced to a positive, value-free science. Mainstream economic theorists now accept that value judgments and theoretical scenarios are the core ingredients for welfare economics. Subjectivity is duly considered. Most practitioners of applied economics however, view some normative judgments as fact based and rarely challenge them on ethical grounds. This means applied economics seems to be trapped in a time-warp and has yet to catch up. The idiom “He hoe kōnukenuke – a crooked paddle” (Mead & Grove, 2001, p. 70) aptly describes the illusory plaudits of objectivity lauded on welfare economics. Far too often critics of welfare economics are dismissed for failing to provide adequate reasoning within the dogma of welfare economics. Welfare economics is rooted in the belief that “everything has its price” or that everything has a trade-off.

From a Mātauranga Māori perspective, natural resources are imbued with mauri, an intangible and intrinsic value. Ensuring the mauri of natural resources are maintained is an integral part in defining who kaitiaki of natural resources are. There is a subtle difference between kaitiaki and Māori as defined by an ethnicity measure. Kaitiaki are people with an active role in the management of natural resources based on Mātauranga Māori values and perspectives. Māori on the other hand is a politically constructed label and a useful generic term to describe the indigenous people of Aotearoa/New Zealand. The primary goal of this thesis was to identify the validity of welfare economics when seeking to measure quantitatively Mātauranga Māori or Māori views of the environment through the contingent valuation method (CV).

Three tests were carried out to test this hypothesis by exploring the following research questions: a) what does cultural identity tell us about people's concern for the environment?; b) do protest bids provide useful insight in to Māori motives for supporting environmental improvement/asset development?; and c) does Māori concern for the environment mean they are more willing to pay for environmental improvement?

Chapter 3 concluded the use of ethnicity markers in quantitative research is a generally a contentious issue. Power dynamics and colonisation play a key role in how ethnicity measures are used. Furthermore, cultural identity is much more complex than an ordinal number; it is a cumulative process, and reflects a history of personal choice and social influences which will be reflected in cultural identity but may not be explained. Surveying or interviewing a sample of Māori may not necessarily provide an informed perspective of Mātauranga Māori. It may provide consistent information on environmental concern which may not be congruent with a Kaupapa Māori philosophy of the environment. Mātauranga Māori of the environment like metaphysics are philosophical concepts that people perceive with varying levels of comprehension.

Following on from the findings in chapter 3, it was expected in Chapter 5 that Māori with strong cultural links (i.e. kaitieki) would be more likely to approach CV as a tool for expressing Mātauranga Māori – cultural attitudes towards environmental improvement. It was expected that lexicographic preferences of Māori participants, particularly kaitieki should be unaffected by any methodological changes to the survey. Since kaitieki have a perceived close affinity with the environment, they would have been expected to over-estimate their WTP for an improvement to the environment compared to those Māori who are not a kaitieki. This was not the case. A sample of urban Māori (politically defined through the electoral roles) was just as likely to be willing to pay for improvement to the roadside as those living close to their wā kāinga. As in Chapter 3, Chapter 5 found that concern for the environment was consistent between each sample. That is, there were no differences in ethical stance/attitudes or motivations between the two samples. But it is this ethical

stance/attitude that is a significant factor for influencing overall Māori willingness to pay for environmental improvement. Because some Māori have used the CV survey as an exercise to express ethical stances/attitudes, it calls in to question the validity of CV to present standard economic measures.

Furthermore the use of follow-up questions to the willingness to pay elicitation questions challenges the validity of CV to represent Māori ontological views of the environment. The results show some participants were willing to support the proposed project but simply could not afford the bid being offered through the dichotomous choice question. By using a cheap-talk script, budget constraints were immediately considered by participants in one sample group, effectively forcing them to reveal their preferences with this constraint in mind. The outcome has been the stripping away of Mātauranga Māori perspectives of the environment. Methodological “tweaking” can have a significant impact on the results that one seeks (i.e. results that are consistent with theoretical expectations).

Other methodological issues such as the choice between WTP and WTA are equally important. A CV practitioner’s perception of consumer property rights has an important influence on how the elicitation question in a CV survey is framed. The CV practitioner determines whether consumers have the right to sell the public good or, if they want to enjoy the good, whether they have the right to buy it. The subjective decision by the CV practitioner has a significant impact on how participants construct preference tradeoffs. In New Zealand the entitlements of iwi/hapū to “public goods” provides a challenge for CV practitioners constructing surveys. CV practitioners need to recognise this challenge and address it through prior consultation with the appropriate iwi/hapū that may be involved in the survey.

A CV practitioners own budget for carrying out a CV survey will determine what data collection mode is used. The data collection mode, whether it is mail surveys, telephone interviews or in-person interviews will influence the validity of results. For example, choices on the part of CV practitioners need to be made with regard to tradeoffs between minimising respondent fatigue (by choosing not to include a cheap-



talk script in a mail survey) and minimising hypothetical bias (by including a cheap-talk script in a mail survey). Ideally, CV should be implemented through in-person interviews with a cautionary note; interviewer effects may also plague this data collection mode.

Furthermore, methodological stream-lining may actually mask underlying protest or protected values, especially if these responses are removed from consideration (Chapter 4). Indirect measures, such as the protest bid, give a useful insight into potential sources of underlying disagreements with the potential development and alteration of natural resources particularly for Māori. The traditional follow-up questions associated with WTP measures, used to detect bias (such as age, income, etc.), are insufficient to measure the nature of the different orientation Māori have towards paying for a proposed resource allocation.

In all three cases quantitative measures were insufficient in measuring and identifying Mātauranga Māori. Some measures such as attitudinal scales went some way to explaining Māori perspectives of the environment but are in no way representative of the totality of Māori ontology for the environment. These measures represent the views of a group of people which may or may not be based on Mātauranga Māori. Further work in quantifying Mātauranga Māori will face the problem of co-opting Māori ontology into positivist models. Any attempts to do so will be bombarded with the subjective ontological positioning of iwi and hapū. Further, the search for a central tendency will lead to biased, misleading and inaccurate results. Asking Māori how much they would be willing to pay to have their values considered is also a categorical mistake. Mātauranga Māori is derived from a Māori epistemology and should be considered or analysed with primary reference to this body of knowledge. Further exploration of resource management from a Mātauranga Māori view needs to delve into the topic of kaitiakitanga, the over-arching philosophy of Māori resource management. Understanding this indigenous based philosophy of environmental management and how it can be used alongside decision-making tools and practices of Western knowledge would be helpful for providing a richer approach to environmental management.

This thesis has found Māori are heterogeneous in how they express their preferences for the environment, and estimating the WTP for the entire population of affected people is problematic. There is a romantic notion that all Māori are environmentalists. This notion is generally expressed in the literature from authors who are fighting to maintain that which is close to being lost. This thesis has found a dichotomy between what we as Māori champion on the marae and what we carry out in our everyday lives. While we may mihi and acknowledge; the whenua, the awa, the maunga, at the same time some Māori will have no problem driving SUVs around town because its ‘safe’, or cut down a forestry block to make way for more intensive dairying. Some Māori don’t have time to care about Papatūānuku because they are too busy trying to put food on the table for their children and others have taken up the challenge of being a kaitieki – managing resources in a sustainable manner. To reiterate, the search for an overall “Māori view” using a survey could prove problematic and misleading. There is work to be done in terms of changing the way that New Zealanders including Māori think with regard to sustainability of the environment. We must change our behaviour before it’s too late and everyone has a role to play. The path way ahead involves education but also we should not disregard the role of incentivisation using tools such as taxes and subsidies. We should also listen to kaitieki, those people who live and breathe the very essence of those natural resources that sustain us, for who better to talk to about managing natural resources than the very same folk who have lived intimately with their local ecology for generations.

These methodological problems bring us to a crossroads. One path advocates for more research particularly in the area of Economic Psychology and Behavioural Economics to determine the mechanism influencing Māori preferences for environmental improvement/asset development. Another path would counsel a more holistic approach for resource management decision-making. Because of the relative difficulties of implementing CV, it should be utilised alongside existing qualitative practices such as public forum meetings, hui, focus groups and marae consultation. Participation of Māori in resource management decisions should go beyond filling out a CV survey or participating in a focus group.

Alternative methods such as Multi-Criteria Decision Analysis (MCA) could be used to include a Mātauranga Māori perspective into resource management decision making. MCA has the benefit of measuring quantitatively a range of criteria (social, economic, and environmental) for a proposed project, where CV by itself struggles. However, MCA should be used alongside the aforementioned qualitative practices and should be used as an aid for decision-makers. There is a temptation for resource managers/policy analysts/local government planners to place more emphasis on quantitative assessment. Quantitative assessment should be used with a cautionary note. The danger is that Māori values are seen from within the framework of western knowledge systems. This is a problem because Quantitative assessment may decontextualise the indigenous perspective, rendering it malleable and conducive to the agenda of power brokers. Understanding the relationships between indigenous peoples and power structures is essential to improving the lot of marginalised or indigenous peoples. Quantitative assessment is helpful for decision makers but equally important for iwi/hapū are the questions; who are the decision makers and what role do iwi/hapū have in natural resource management? Iwi/hapū are not stakeholders whose views should be considered within the context of quantitative tools such as MCA, they are Tangata Whenua, Treaty partners and their role in the **management** of resources should be made explicit.

An example of a more inclusive approach to natural resource management is the co-management of the Waikato river between Tainui and the Crown. In the first instance property rights have been negotiated and identified; and secondly, a management process that takes into account all the varied interests and stakeholders of the Waikato river has also been developed. The way forward with regard to natural resource management for the Crown and its representatives is to firstly determine: are we willing to enter into a power sharing arrangement with iwi/hapū? If the answer is yes, a follow-up question is how are we going to achieve this arrangement? I have argued that developing meaningful relationships between the Crown and iwi/hapū is essential. Once this groundwork has been laid, then the job of the resource manager/policy analyst/local government planner is made much clearer with regard to

the role of iwi/hapū in the resource management process. Additionally, a much more substantial contribution from iwi/hapū can be made to the resource management process.

This study has revealed that caution is required when using welfare economics methodologies such as CV to guide environmental policy decisions. CV is still helpful in resource management decisions so long as it is recognised that there are limitations to the methodology (i.e. the validity of CV to present standard economic values e.g. price, cost, and benefit). Practitioners of CV must also realise that CV design is not value free. Practitioners need to be explicit in their subjective reasoning when designing surveys. Economic analysis is only one important cog in the machinery of resource management policy. Economic efficiency should not be the sole criterion for social decisions. An economist's contribution to such decisions should focus on estimating the "efficiency" and "equity" of the proposed resource allocation, and the likely changes in behaviour and outcomes associated with the allocation. Despite advances in analytical techniques, economic efficiency measures are always deficient, given the difficulty of capturing and anticipating all impacts and valuing them appropriately. Hence it is appropriate that other perspectives be considered. For moral reasons, ethical, social, and cultural considerations should be examined equally alongside economics in environmental decision-making. There is no harm in using underlying moral considerations to guide decision making on resource allocation. There is no fundamental rule of decision-making that requires the mauri of a proposed resource allocation to be measured or quantified. In conjunction with making imputations from a survey, resource managers should also ask people what they want to know. This is most pertinent for Māori, who place great importance on developing long-term relationships with resource managers and who value concerted efforts at consultation during the planning process. It is important to identify key individuals within hapū and iwi for a more informed view of resource management. The promise of CV as a tool to circumvent face-to-face consultation loses its lustre when compared with ethical and humanistic motivations that present a deeper and more dynamic representation of community values towards the environment. This sentiment is reflected in the following whakatauki:

Ka ora pea i a koe, ka ora koe i au

Perhaps I survive because of you, and you survive because of me (Mead & Grove, 2001, p. 173)

The survival of the community is essential to the survival of all individual members of the community. Economists must ultimately take responsibility for the “value” free outcome that has been prescribed. The distributional concerns that result from the prescribed policy will impact on the day-to-day survival of communities. As a practitioner of economics and as a member of a community, accountability to the people you serve should be of utmost importance.

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## 8 Appendices

*Appendix A – Improvements to the Road Surface and Roadside Survey*



## The Survey

There are no right or wrong answers to this survey, what we want to know is how YOU feel about roads. Feel free to write any additional comments directly on the survey or on an additional sheet of paper.

**1. What size engine does the vehicle have that YOU drive most often?**

- I don't drive
- Under 1400cc
- 1401cc–1600cc
- 1601cc–2000cc
- 2001cc–2400cc
- 2401cc–4000cc
- 4001cc or more

*If your answer to question 1 was "I don't drive," go to question 18, otherwise go to question 2.*

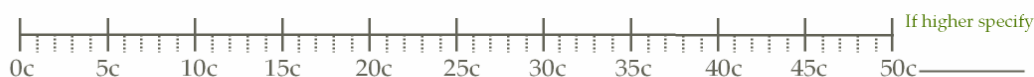
**2. Estimate how far you travel each year in the vehicle that YOU drive most often?**

- |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Travel distance per year | Between 1–5,000 km       | Between 5–10,000 km      | Between 10–15,000 km     | Between 15–20,000 km     | Between 20–25,000 km     | Between 25–30,000 km     | Between 30–35,000 km     | More than 35,000 km      |

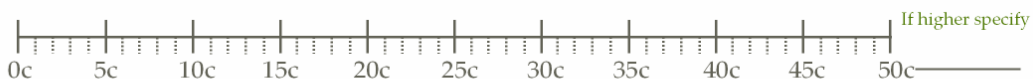
**3. Estimate how many times you will travel to a place outside of Auckland in the next 12 months (for example Hamilton, Whangarei or Whangamata).**

- |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 0 Times                  | 1 Time                   | 2-3 Times                | 4-5 Times                | 6-7 Times                | 8-9 Times                | 9-10 Times               | 11-12 Times              | More than 12 times       |

**4. Currently petrol attracts a tax of about 47 cents per litre. How much do you think you should pay? (Place an X on the line)**



**5. How much petrol tax, if any, should go to subsidising public transport? (Place an X on the line)**





12. Most of the time you spend on the road is for\_\_\_\_\_?

- Private Use (travel out of work time:include commuting to work)
- Work Use (travel during work time)

13. Is a percentage of your private fuel consumption paid for by your work or business? For example a fuel card, company car or company perk.

- Yes       No

14. What percentage of your private fuel consumption is paid for by your work or business? (Place an X on the line)



15. If the Government were to tax everyone \$100 per year to improve the road network how do you think they should apportion the money between the options below?

Benefit	Allocate	Example										
Improve safety		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Benefit</th> <th style="width: 30%;">Allocate</th> </tr> </thead> <tbody> <tr> <td>Improve safety</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Decrease environmental impacts of travel</td> <td style="text-align: center;">40</td> </tr> <tr> <td>Decrease the travel costs associated with cars</td> <td style="text-align: center;">30</td> </tr> <tr> <td>TOTAL</td> <td style="text-align: center;">100</td> </tr> </tbody> </table>	Benefit	Allocate	Improve safety	30	Decrease environmental impacts of travel	40	Decrease the travel costs associated with cars	30	TOTAL	100
Benefit	Allocate											
Improve safety	30											
Decrease environmental impacts of travel	40											
Decrease the travel costs associated with cars	30											
TOTAL	100											
Decrease environmental impacts of travel												
Decrease the travel costs associated with cars												
TOTAL	\$100											

16. If new road surfaces were to be used, and you did have to pay more for these improved road surfaces, in what form would you most prefer the new roads to be funded? (Please choose one)

- Increased petrol prices                       Increased Sales Tax on imported new cars
- Increased general tax
- Levy on registration of vehicles    Other (specify).....

17. If native vegetation were planted along roadsides, and you did have to pay more for this improved vegetation, in what form would you most prefer the new roadside vegetation to be funded? (Please choose one)

- Increased petrol prices                       Increased Sales Tax on imported new cars
- Increased general tax
- Levy on registration of vehicles    Other (specify).....



<b>Scale of Environmental Concern</b> (Circle One number for each question)	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Not Sure/ Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
18. The government will have to introduce strong measures to halt pollution.	1	2	3	4	5
19. I'd be willing to make personal sacrifices for the sake of slowing down pollution, even though the immediate results may not seem significant.	1	2	3	4	5
20. Pollution is <u>not</u> personally affecting my life.	1	2	3	4	5
21. The benefits of modern consumer products are more important than the pollution that results from their production and use.	1	2	3	4	5
22. People have the right to change nature whenever they want to.	1	2	3	4	5
23. I would contribute money to environmental organisations.	1	2	3	4	5
24. Laws to protect the environment limit my choices and personal freedom.	1	2	3	4	5
25. A clean environment provides me with better opportunities for recreation.	1	2	3	4	5
26. The effects of pollution on public health are worse than we realise.	1	2	3	4	5
27. I would participate in a demonstration against companies that are harming the environment.	1	2	3	4	5
28. I would sign a petition in support of tougher environmental laws.	1	2	3	4	5
29. I would take a job with a company I knew was harming the environment.	1	2	3	4	5
30. Pollution laws have become more strict in recent years.	1	2	3	4	5
31. We should think about our jobs first, and pollution second.	1	2	3	4	5
32. Anti-pollution laws should be enforced more strongly.	1	2	3	4	5
33. If an industry cannot control its pollution, it should be shut down.	1	2	3	4	5
34. Pollution control measures have created unfair burdens on industry.	1	2	3	4	5
35. Managers of polluting industries should be punished by fines.	1	2	3	4	5
36. Managers of polluting industries should be punished by imprisonment.	1	2	3	4	5
37. There has been too much emphasis on conserving natural resources, and not enough on utilising them.	1	2	3	4	5
38. Where natural resources are privately owned, society should have no control over what the owner does with them.	1	2	3	4	5
39. We must take much stronger measures to conserve our nation's resources.	1	2	3	4	5
40. Cultural and historical resources such as archaeological and pa sites should be protected from development	1	2	3	4	5
41. Polluted water can always be cleaned up.	1	2	3	4	5
42. Natural resources must be preserved for the future, even if people must do without it.	1	2	3	4	5
43. The currently active anti-pollution organisations are really more interested in disrupting society than they are in fighting pollution.	1	2	3	4	5

## About You

This next set of questions will help us in evaluating the representativeness of our sample. Your answers are strictly confidential and will only be used for the analysis of the study. You will not be identified in any way.

**44. What type of area do you currently live in?**

- Urban  Rural

**45. How many cars in your household? (Exclude motorcycles, buses, heavy vehicles, campervans, etc)**

- 0  1  2  3  4  5

*If your answer to question 45 was "0," go to question 48, otherwise go to question 46.*

**46. What is the first year of registration for your main vehicle?**

- 1992 or earlier  1993-1995  1996-1998  1999-2001  2002-2005

**47. What sort of fuel does your main vehicle take?**

- Unleaded 91  Premium 96  Diesel  CNG  LPG

**48. Please indicate your gender**

- Male  Female

**49. Please indicate your age**

- Under 16  36-45  66-75  
 16-25  46-55  76-85  
 26-35  56-65  86 or more

**50. Which ethnic group do you belong to? (Mark the space or spaces which apply to you)**

- New Zealand European  Tongan  Other (such as Dutch, Japanese, Tokelauan)  
 Maori  Niuean Please state:  
 Samoan  Chinese  
 Cook Island Maori  Indian \_\_\_\_\_

**If you selected "Maori" for Question 50, please answer questions 51-61, Otherwise, go to question 62 on Page 8.**

## Maori Identity

This last set of questions investigates the diverse make-up of Maori society. These questions will assist Landcare Research and Opus Central Laboratories in developing policies that avoid stereotypes and reflect real-world situations. There are no right or wrong answers to this section, your answers will remain strictly confidential and will only be used for the analysis of the study. You will not be identified in any way.

51. **How many generations of your Maori ancestry can you name?** *(Please choose one)*  
 0     1     2     3     4     5 or more
52. **Over the past 12 months, how many times did you go to a marae?** *(Please choose one)*  
 0     1     2     3     4     5 or more
53. **In terms of your relationship with your whanau, would you say that your whanau plays** *(Please choose one)*  
 a very large part in your life     a very small part in your life  
 a large part in your life     no part in your life  
 a small part in your life
54. **Do you have an interest in Maori land i.e. as an owner/part owner or beneficiary?** *(Please choose one)*  
 Yes     No     Not sure/don't know
55. **How much contact do you have with other Maori at work, at sport, at church, at school, socially and at home?** *(Please choose one)*  
 mostly Maori     no Maori  
 some Maori     not applicable  
 very few Maori
56. **Which of the following best describes your level of te reo Maori** *(Please choose one)*  
 You have no ability with te reo Maori  
 You know some Maori at a very basic level  
 You have a good understanding but do not speak Maori  
 You are a learner whose knowledge is basic  
 You have been learning Maori for some time and have an advanced knowledge  
 You are fluent in Maori, having learned it as a second language  
 You are a native speaker
57. **How important are Maori values (e.g. Manaakitanga, Whanaungatanga, Kaitiakitanga, Rangatiratanga) for how you live your life?** *(Please choose one)*  
 very important     not important  
 important     not applicable  
 somewhat important
58. **Do you have an interest in hunting, gathering or collecting kai?** *(Please choose one)*  
 Yes     No     Not sure/don't know
59. **If you answered no to question 58 please select the option that applies the most to you** *(Please choose one)*  
 I'm not interested in hunting, gathering or collecting kai  
 I don't have time  
 Its cheaper at the supermarket  
 The resource is nearly depleted
60. **Which one of the following best describes who you gather, hunt or collect for:** *(Please choose one)*  
 Yourself  
 Your whanau  
 Extended whanau  
 Friends and neighbours  
 The hapu
61. **How important is restoring indigenous plants to areas (e.g for weaving or rongoa)** *(Please choose one)*  
 very important     not important  
 important     not applicable  
 somewhat important

**PTO for last question and comments.**

62. Please indicate your personal annual income (before tax)

- |   |                                      |  |
|---|--------------------------------------|--|
| <input type="checkbox"/> Under \$16,000 | <input type="checkbox"/> \$46-55,000 | <input type="checkbox"/> \$86-95,000       |
| <input type="checkbox"/> \$16-25,000    | <input type="checkbox"/> \$56-65,000 | <input type="checkbox"/> \$96-105,000      |
| <input type="checkbox"/> \$26-35,000    | <input type="checkbox"/> \$66-75,000 | <input type="checkbox"/> \$106,000 or more |
| <input type="checkbox"/> \$36-45,000    | <input type="checkbox"/> \$76-85,000 |  |

Thank you for your participation! If you have any additional thoughts on the road management questions for this survey, Please write them below.

## Comments

Contact Details  
Shaun Awatere  
Telephone: 078583700  
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*Appendix B – Show Card A*

**SHOW CARD A**



*Appendix C – Show Card B*

**SHOW CARD B**





*Appendix D – Cheap Talk Script*

## **Cheap Talk Script**

This is a hypothetical referendum where you will be asked to vote for a proposal. Before we have our vote, I want to talk to you about a problem that we have in studies like this one. As I told you a minute ago, this is a hypothetical referendum, not a real one. No one will actually pay money at the end of the vote. But I also ask you to respond to the vote as though the result of your vote could involve a real cash payment. And that's the problem, in most studies of this kind, people seem to have a hard time doing this. They vote differently in a hypothetical referendum, where they don't really have to pay money, than they do in a real referendum, where they really could have to pay money.

We call this a “hypothetical bias”. “Hypothetical bias” is the difference that we continually see in the way people respond to hypothetical referenda as compared to real referenda. How can we get people to think about their vote in a hypothetical referendum like they think in a real referendum, where if enough people vote “yes”, they'll really have to pay money? How do we get them to think about what it means to really dig into their pocket and pay money, if in fact they really aren't going to have to do it?

The only way that we know to go about this is to simply ask you: in the vote that we're going to take in a few minutes, please think about what you're voting on. Think about whether or not you would really and truly be ready to dig into your pocket and pay the money that is in question. Vote just exactly as you would vote if you were really going to face the consequences of your vote: which is to pay money if the proposal passes. Please keep this in mind in our referendum.

*Appendix E – Rules of Good Interview Practice*

No.	Advice	Comment
1	<i>Read every question exactly as written in the questionnaire – do not improvise</i>	Research on the art of asking questions shows that the precise wording of questions may significantly affect a respondent's answers. If each enumerator develops her own way of asking questions, one can never be sure that the same question is being asked. We need to make sure that each respondent is answering the same question. Reading the question exactly also makes the interview shorter.
2	<i>Read the question slowly enough so that the respondent can understand</i>	An enumerator has seen each question hundreds of times before. It's natural for the enumerator to want to go quickly over a question that he knows so well, but it's the first time for the respondent. The enumerator thus needs to speak slowly
3	<i>Wait for the respondent to answer</i>	Some enumerators will read the question once, then look up and repeat the question, and sometimes even start a lengthy explanation, before letting the respondent answer! Ask once very clearly, and let the respondent think.
4	<i>If the respondent can't answer, repeat the question</i>	The respondent may not have been paying attention the first time. If, after the second reading the respondent still can't answer, go to the next question.
5	<i>Remain absolutely neutral about the respondent's answers</i>	Never express surprise, approval, disapproval, judgment, or doubt about a response. Don't let your facial expression change. Just record the answer. For example, if a respondent says that they would be willing to pay a very large amount for a good or service, the enumerator should not say "wow!" If a respondent gives an answer that is factually wrong, the enumerator should not reveal that he knows the answer is incorrect.
6	<i>Do not act embarrassed about a respondent's answers to sensitive questions</i>	This will increase the embarrassment of the respondent, not reduce it. Be very matter of fact.
7	<i>Never suggest an answer unless the instructions say to read the answers to the respondent</i>	For example, if the respondent is having difficulty estimating the most he will pay for a good or service, do not prompt him with suggestions like "...would you pay more than \$X? More than \$X? Less than \$X?"
8	<i>Don't repeat the respondents answers</i>	This is repetitive and wastes time.

*Appendix F – Introduction Script and Consent Form*

Tena Koe

We need your help to understand public perceptions of road designs and construction.

The survey should take about 60 minutes.

If you complete this survey we will enter you into a prize draw.

**First Prize: 1 prize of \$100 worth of petrol vouchers,  
Second Prize: 4 prizes of \$50 worth of petrol vouchers, and  
Third Prize: 5 prizes of \$20 worth of petrol vouchers.**

This survey is voluntary; you do not need to answer all the questions. Apart from identifying you for the purposes of the prize draw we are only interested in your opinion, not your personal details—I will record on a separate piece of paper your details so that you can enter the draw and your answers to the survey remain anonymous.

PAUSE – Let the respondent decide whether they want to opt in or not

*If yes then read*

**About the Survey**

Landcare Research in collaboration with Opus Central Laboratories is reviewing road construction practices. Your views on this topic are very important to Opus Central Laboratories as they decide how to build roads in the future. Your answers to this survey will be used as inputs for road construction.

This survey concerns sealed roads that are constructed differently from those normally found in New Zealand. These new types of road can be more expensive but have benefits to road users such as decreased noise, better braking performance in wet conditions, and a smoother ride.

This survey is also concerned with planting native vegetation along roadsides. Planting this type of vegetation along roadsides is also more expensive but has benefits to road users including; improving the quality of roadside scenery, stabilising the roadside against erosion, and providing support for native vegetation, birds and animals.

*Provide respondent with a Consent to Participate in Research form*

**Consent To Participate In Research**

**Project Title:** Incorporating Māori Values into the Resource Management Process

**Researcher:** Shaun Awatere

Manaaki Whenua – Landcare Research

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered. I understand that I may withdraw myself or any information I have provided at any time before the interviewing for the project is finished. I will not have to give any reasons if I want to withdraw. I understand that the information I provide will be treated confidentially and stored for up to five years before being destroyed.

I know that I will not be identified in any reporting of the results and that a summary of the findings from the study will be provided to me. I also give permission to record the interview.

I agree to take part in this research.

Signed:.....

Name:.....

(Please print clearly)

Date:.....

*Appendix G – Introduction Letter*



Dear Participant,

We need your help to understand public perceptions of road characteristics.

You have been randomly selected from the Electoral Rolls ([www.elections.org.nz](http://www.elections.org.nz)). This work is funded through the Foundation for Science, Research and Technology ([www.frst.govt.nz](http://www.frst.govt.nz)).

The survey should take about 15 minutes.

If you complete this survey we will enter you into a prize draw.

**First Prize: 5 prizes of \$100 worth of petrol vouchers,  
Second Prize: 6 prizes of \$50 worth of petrol vouchers, and  
Third Prize: 10 prizes of \$20 worth of petrol vouchers.**

This survey is voluntary; you do not need to answer all the questions. Apart from identifying you for the purposes of the prize draw we are only interested in your opinion, not your personal details—enclosed is a separate card for your details so that you can enter the draw and your answers to the survey remain anonymous. We will separate the cards from the surveys so that we can't match them up—your answers will be anonymous.

Please fill in the survey and return it in the enclosed freepost envelope by the 30<sup>th</sup> of September. Alternatively you can complete the survey online at [www.landcare.co.nz](http://www.landcare.co.nz). We will notify you if you win one of the prizes. Please contact me if you have any questions or concerns.

Regards

Shaun Awatere  
Landcare Research