# Understanding the value of transport investment in historic and cultural heritage December 2016

Florian Eppink, Shaun Awatere and Bob Frame
Landcare Research – Manaaki Whenua

**NZ Transport Agency research report 601**
Contracted research organisation – Landcare Research – Manaaki Whenua

ISBN 978-0-9941397-8-8 (electronic)
ISSN 1173-3764 (electronic)

NZ Transport Agency
Private Bag 6995, Wellington 6141, New Zealand
Telephone 64 4 894 5400; facsimile 64 4 894 6100
research@nzta.govt.nz
www.nzta.govt.nz

Eppink, FV, S Awatere and B Frame (2016) Understanding the value of transport investment in historic and cultural heritage. *NZ Transport Agency research report 601*. 112pp.

Landcare Research – Manaaki Whenua was contracted by the NZ Transport Agency in 2014 to carry out this research.



**Keywords:** cultural heritage, economic benefits, historic heritage, integrated assessment, Māori values, mātauranga Māori

# An important note for the reader

The NZ Transport Agency is a Crown entity established under the Land Transport Management Act 2003. The objective of the Transport Agency is to undertake its functions in a way that contributes to an efficient, effective and safe land transport system in the public interest. Each year, the NZ Transport Agency funds innovative and relevant research that contributes to this objective.

The views expressed in research reports are the outcomes of the independent research, and should not be regarded as being the opinion or responsibility of the NZ Transport Agency. The material contained in the reports should not be construed in any way as policy adopted by the NZ Transport Agency or indeed any agency of the NZ Government. The reports may, however, be used by NZ Government agencies as a reference in the development of policy.

While research reports are believed to be correct at the time of their preparation, the NZ Transport Agency and agents involved in their preparation and publication do not accept any liability for use of the research. People using the research, whether directly or indirectly, should apply and rely on their own skill and judgement. They should not rely on the contents of the research reports in isolation from other sources of advice and information. If necessary, they should seek appropriate legal or other expert advice.

# Acknowledgements

The authors thank Karolyn Buhring for initialising this project and Ann Neill for taking over her role as project owner, supporter and discussant.

Elizabeth Cox (Bay Heritage Consultants) helped us during the project. Sylvia Allan (Allan Planning & Research) was invaluable in translating research results into practical recommendations.

We thank the Steering Group members for their inputs and support: Mike Curran, Helen McCracken, Ralph Johnson, Te Kenehi Teira, Pam Bain, Dean Whiting, Sven Schroeder, Vanessa Tanner, Chris Mallows, Myfanwy Eaves, Carl Chenery, Graeme Belliss, Barry Wright, Lynley Hutton, Clare Collett, Nikki Bilborough, David Greig and Amos Kamo. We also thank Tipa Compain and his team for sharing their experiences and ideas with us.

We appreciate the insightful comments and suggestions on the final draft of this report sent to us by the external reviewers, Lena Henry (University of Auckland) and David Throsby (Macquarie University).

# Contents

# Executive summary

The latest Government Policy Statement on Land Transport (July 2015) seeks a land transport system that supports economic growth and productivity, road safety and value for money. The transport system must be in the public interest by supporting economic, social, cultural and environmental well-being. Consequently, there is an obligation on road controlling authorities (RCAs) to mitigate the impacts of projects on heritage sites, but without placing an unreasonable funding burden on the economy. These obligations exist throughout the life cycle of projects, including development, delivery and, where applicable, the ongoing ownership of a heritage place.

Each RCA has its own approach to the assessment and management of historic and cultural heritage values. The NZ Transport Agency (the Transport Agency) has implemented a number of tools for historic and cultural heritage to complement its business case logic for state highway projects that are consistent with its environmental plan and standard. The Transport Agency's assessment of changes in heritage and heritage management is also informed by guidelines produced by Heritage New Zealand Pouhere Taonga and the International Council on Monuments and Sites New Zealand Charter.

While the risks and opportunities for historic and cultural heritage as a result of transport activities are commonly expressed through the impacts on heritage value and significance, the economic implications of such expressions are less well understood, acknowledged and quantified. This creates a number of potential economic risks for RCAs.

First, a project could be stopped by a 'fatal flaw' when tangata whenua or local stakeholders perceive a significant loss of heritage that was not identified during the planning preparation. These groups are increasingly likely to make submissions in such cases, which can delay projects and lead to significant write-off of project development costs and land acquisition.

Second, designation requirements can be formulated in such a way that a minimal heritage conservation effort suffices. This may create heritage sites and structures that cannot be used, with low economic, social or cultural value and likely to deteriorate slowly over time. In such situations, RCAs are ultimately left with an asset that is unlikely to ever create value for New Zealand.

Third, there is a risk of unexpected discovery of archaeological remains, which can be costly in terms of finding solutions, documenting the find, and through delays to the project. Understanding the importance of the find to affected parties can help clarify and justify the costs associated with it. In the long run, future projects may benefit from smoother relations with tangata whenua and stakeholders if RCAs can show they acknowledge the importance of handling an unexpected discovery with due care.

To provide RCAs with an approach to address these concerns, the Transport Agency contracted Landcare Research to develop a method to better assess the benefits of heritage conservation investments. Adding an economic perspective to heritage conservation decisions has the potential to improve the value for money delivered by heritage investments and to achieve better outcomes for New Zealand's heritage stock.

We reviewed the literature about how the values of historic and cultural heritage are assessed and expressed in heritage and economic literature. We found a significant overlap in concepts and terminologies from heritage conservation experts and cultural and environmental economists. When articulating heritage values, heritage experts in New Zealand prefer narratives developed by experts. Economic rationales, in contrast, often lean on numeric and monetary quantification. An over-reliance on monetary valuation can be misplaced, particularly for concepts like culture and historical awareness, and a

survey of monetary valuation studies of heritage sites indicates that monetary valuation techniques have been applied to a very limited range of values generated by heritage sites.

We also present an overview of heritage as it stems from mātauranga Māori. The aim of this overview is not to provide a summary, synthesis, or any kind of standardisation of mātauranga Māori. It is intended to prepare planners for developing partnerships with tangata whenua by giving a more in-depth overview of the world view of tangata whenua and the concepts that make up the heritage of iwi or hapū. While we provide examples of how some iwi have chosen to express their values in the past, RCAs need to engage and develop a way forward that is appropriate for the context of each organisation and project.

Based on these insights, we propose a Heritage Economic Benefits Framework (HEBF) and tool for identifying and expressing the economic benefits of engaging in heritage conservation and minimising some of the project risks related to the loss of heritage. The framework and tool provide suggestions for expressing heritage values, so that these values can potentially be included in multi-criteria assessments of transport project options, and be used to identify and prioritise heritage impacts consistently across projects.

Both the framework and the tool facilitate the comparison of conservation costs, which are often known, and the benefits of conservation. They strengthen economic rationality when deciding on the appropriate level of heritage investment. Where heritage can generate economic benefits, such as from future rental income, refurbishment of vacant buildings, or regeneration of urban areas, the tool can help identify such benefits.

A key recommendation is to engage strategically with tangata whenua and stakeholders, and to consider their views on heritage impacts from the earliest stages. Moving forward, the HEBF tool provides a classification of heritage values and benefits that can be used consistently to identify and prioritise heritage impacts.

It will likely take some time to develop experience with the HEBF and tool. A retrospective assessment of heritage conservation actions in transport projects from various RCAs could be considered to provide a starting point for that learning. With use, the HEBF and tool will contribute to fostering a better understanding of the benefits and need for heritage conservation, and of the opportunities created by maintaining or creating high-quality heritage.

# Abstract

The 2015 Government Policy Statement on Land Transport focuses on economic growth, productivity, road safety, and value for money. The transport system must also support economic, social, cultural and environmental well-being. This means that road controlling authorities (RCAs) must mitigate the impacts of their projects on heritage sites without placing an unreasonable funding burden on the economy.

RCAs such as the Transport Agency have their own approaches for assessing and managing historic and cultural heritage. No consistent national guidelines for heritage conservation actions exist, however, which creates risks and opportunities during project development, delivery and ongoing ownership of heritage.

The requirements for heritage conservation follow from designation processes, but do not necessarily strengthen the heritage and cultural values of structures and environments. An economic perspective of such values can improve the value for money of heritage investments, and support New Zealand's heritage stock.

We review the literature on how heritage values are assessed and expressed in heritage and economic literature, and provide an overview of heritage within mātauranga Māori. From this review, we develop a framework for consistent assessment of the economic values of historic and cultural heritage, including meaningful options for their quantification and monetisation.

# 1 Introduction

## 1.1 Project background

Conservation of historic heritage is part of the planning and delivery process for infrastructure projects undertaken by the New Zealand Transport Agency (the Transport Agency) and other road controlling authorities (RCAs). The consideration of heritage values is part of the decision framework for new transport projects. RCAs own heritage structures that are part of the state highway network, and also manage heritage assets acquired during project development. Heritage conservation by RCAs requires investment, and there is a need to better understand heritage values and benefits to improve decision-making processes.

RCAs run three significant economic risks related to impacts of infrastructure projects on heritage:

1 An inadequate identification of impacts might stop projects entirely, in which case all the resources spent on the project in terms of time, effort and property acquired, are lost.

2 The RCA could either over-invest or under-invest in the maintenance of heritage sites acquired for projects, leading to preventable losses when the sites are sold on.

3 An unexpected discovery, eg archaeological or cultural remains, during the implementation of a project could cause significant delays and unforeseen cost.

There is a reputational risk if RCAs are perceived to undervalue heritage and not apply a precautionary approach in its impacts on New Zealand's heritage stock, be it archaeological, historical, environmental or related to Māori values. Such a perception may hinder the implementation of future projects.

It is also important to remember that when planning and executing its projects, functional and operational entities within an RCA may have different needs from heritage conservation. During the implementation of a project, heritage conservation may be seen as a cost that is ideally minimised. When that leads to unusable heritage sites or structure once the project has been completed, this creates a new problem and further cost elsewhere in the RCA. Better communication and understanding of the possible benefits created by heritage conservation investments can balance these outcomes.

In March 2014, the Transport Agency invited proposals to develop an improved understanding of the social and economic benefits that result from maintaining and improving historic heritage assets. To this end, the Transport Agency asked for the following to be delivered in consultation with other government organisations and key stakeholders:

- a review of existing heritage investment as part of key transport projects
- a review of existing investment on heritage assets managed by RCAs
- a comparison of findings with practices in other government organisations
- an analysis of wider social and economic benefits that might be gained.

The key deliverables of the project were:

- a review and assessment of the relevant national and international literature
- research to complement existing relevant research reports by the Transport Agency
- a comprehensive research report
- an implementation plan.

The implementation plan is the Heritage Economic Benefits Framework (HEBF) in appendix B, which describes the steps of the HEBF tool in more detail and places them within RCA planning and implementation processes (eg the Transport Agency's business case logic). These steps contribute to the risk assessment and evaluation of the costs and benefits of the conservation, change or loss of heritage affected by transport projects.

## 1.2 Policy context for heritage and transport infrastructure

### 1.2.1 National policy

RCAs have responsibilities towards historic heritage through a number of statutes and national policies (see figure 1.1 for an illustration from the Transport Agency). The Land Transport Management Act 2003 (LTMA) has the stated purpose in section 3 of contributing to an effective, efficient and safe land transport system in the public interest. Section 4 explicitly commits the government 'to maintain and improve opportunities for Māori to contribute to land transport decision-making processes'. Section 19A identifies the Transport Agency as the organisation responsible for developing and implementing a National Land Transport Programme. The National Land Transport Programme and regional land transport plans developed by approved organisations must adhere to the vision and conditions set out in the GPS.

The latest GPS, July 2015, relates to government expenditure on transport, and states (art. 54) that a land transport system must be:

- effective – move people and freight where they need to go in a timely manner
- efficient – deliver the right infrastructure and services to the right level at the best cost
- safe – reduce harm from land transport
- in the public interest – support economic, social, cultural and environmental well-being as long as these aims are in line with the LTMA.

Other relevant statutes establish a more explicit connection between roading projects and the conservation of historic heritage. The Resource Management Act 1991 (RMA) has the purpose of promoting sustainable management and requires that all activities avoid, remedy and mitigate adverse effects on the environment. The environment is defined widely to include people and communities and all natural and physical resources, amenity values and the social, economic, aesthetic and cultural conditions which are interrelated with them.

The RMA captures historic heritage as a Matter of National Importance in section 6(f), and historic heritage must be protected from 'inappropriate subdivision, use, and development'. Section 2 of the RMA defines historic heritage as:

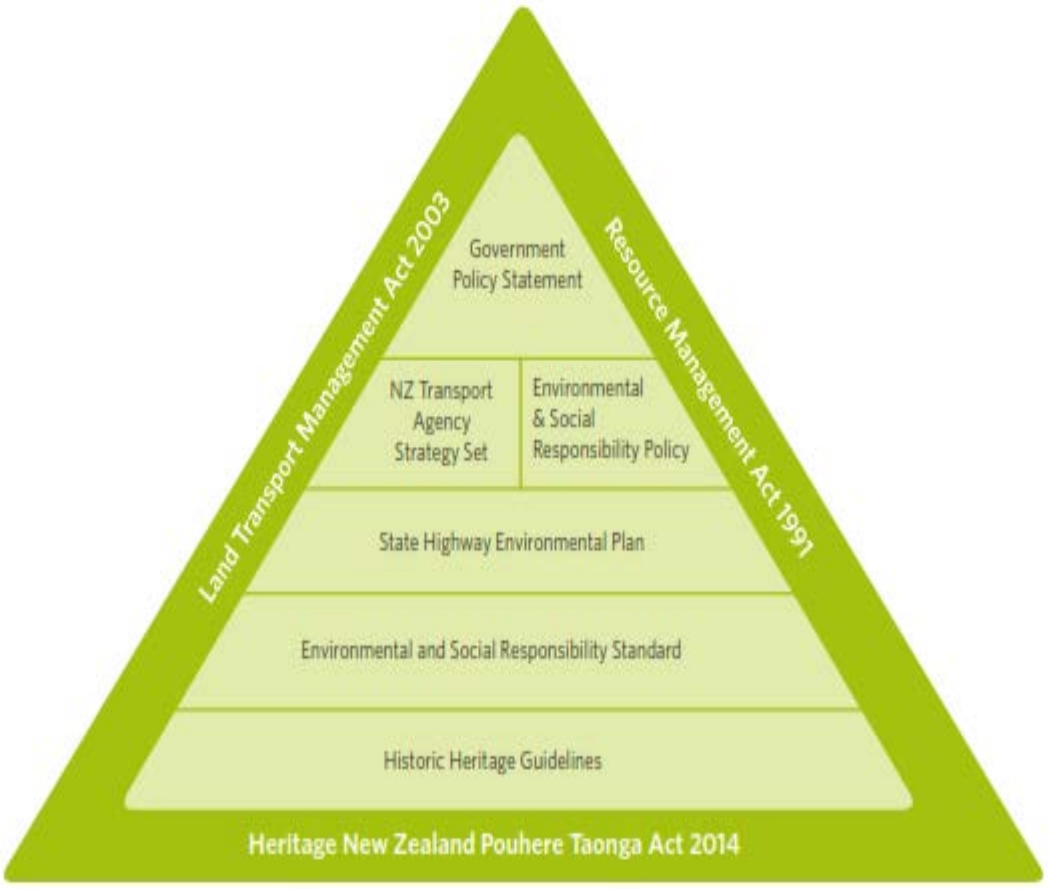
- 'those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, deriving from any of the following qualities:
  - archaeological
  - architectural
  - cultural
  - historic

- scientific
- technological
- including historic sites, structures, places, and areas
- archaeological sites
- sites of significance to Māori, including wāhi tapū
- surroundings associated with the natural and physical resources.'

Sections 6(e) and 6(g) of the RMA respectively aim to protect 'the relation of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapū and other taonga (treasures)' and 'protected customary rights'.

The RMA applies to all resources, and sets up regional and district plans which establish the circumstances in which approvals are needed to modify aspects of the environment. The plans may set levels of protection for some identified heritage resources, through requiring designations or consents for their modification or removal, but not all such resources are explicitly protected. However, when a designation or consent is needed to modify the environment, all environmental effects, including effects on historic heritage, whether they have or have not been identified in a plan, often need to be taken into account.

**Figure 1.1 Illustration of how regulatory contexts influence heritage assessment and management in the NZ Transport Agency**




*Source*: NZ Transport Agency (2015b)

The Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) promotes the identification, protection, preservation and conservation of the historical and cultural heritage of New Zealand. Its principles in section 4(b) state that the identification and conservation of historic and cultural heritage:

- take account of all relevant cultural values, knowledge, and disciplines
- take account of material of cultural heritage value and involve the least possible alteration of it
- safeguard the options of present and future generations
- be fully researched, documented and recorded, where culturally appropriate

and, in section 4(c), that there is value in central government agencies, local authorities, tangata whenua, and other stakeholders collaborating to identify and conserve cultural and historic heritage.

The HNZPTA directly protects archaeological sites (as defined in it) by prohibiting their modification or destruction without having first acquired an authority to do so. An application for such an authority must provide an assessment of 'the archaeological, Māori and other relevant values of the archaeological site (...)' and the expected impact of the modification. It does not protect other heritage items directly (other than by covenants or ownership) but provides for identification of key items or places which may then be protected under the RMA.

The current policies influencing the approach of RCAs to transport planning and investment, ie the LTMA and the GPS, therefore provide only modest encouragement for the RCAs to limit adverse effects on historic or cultural heritage that may arise from roading projects. The focus is primarily on achieving effective and safe transport networks that provide value for money and do not place undue financial burden on the economy.

However, the RMA and the HNZPTA limit the actions of RCAs when adverse effects on historic and cultural heritage occur or are likely to occur. Moreover, if historic and cultural heritage values are excluded from the planning process for roading projects, there may be sub-optimal outcomes for society as a whole. Striking the right balance therefore depends on the RCAs' understanding of the values and benefits of historic and cultural heritage. As discussed below, the Transport Agency and other RCAs have started to explore how to do just that.

### 1.2.2 Ministry of Culture and Heritage and Heritage New Zealand Pouhere Taonga heritage management guides

Several documents provide assistance in achieving the purpose of the RMA and HNZPTA. The level of assistance can vary from the technical and operational level to more general ideas about the place of heritage in policy and planning.

In 2004 the Ministry of Culture and Heritage – Manatū Taonga (MCH) published a report that aims to ensure the benefits and values of historic heritage are considered when making decisions about the management of heritage sites (MCH 2004). The report applies both to sites and places owned by government departments that may be subject to alteration or disposal, as well as to activities undertaken adjacent to places of historic heritage value, even if these places are not owned by government departments. The report takes a 'best practice' approach so that government departments and agencies show leadership in protection and conservation of historic heritage.

Essential messages from this report are that heritage sites and sites with importance to iwi and hapū should be identified, and that the heritage values of such sites should be conserved within the limits set by legal and financial constraints. The report acknowledges the central difficulty that while heritage sites provide society with a number of benefits, including an awareness of the past and respect for Māori

history, their conservation can be complicated by factors that are 'more real' than such intangible effects. The Ministry has recently published a report on the economics of heritage values, which will be discussed below.

To help planners work within the RMA, Heritage New Zealand – Pouhere Taonga (HNZPT)[1] provides suggestions for the management of the whole range of historic heritage through its Sustainable Management of Historic Heritage Guidance series.[2] This includes:

- historic places and areas
- wāhi tapū, wāhi tūpuna, wāhi tapū areas, and wāhi tūpuna areas
- archaeological sites.

The recommendations largely follow the legal requirements for acquiring an authority to modify or destroy historic heritage, and include possible benefits that heritage sites might provide (discussed further in the next chapter). Furthermore, HNZPT proposes the use of (predictive) spatial 'alert' layers, such as the New Zealand Heritage List – Rārangi Kōrero, as well as consultation with iwi and hapū in the early stages of development planning. The report endorses the use of a combination of identification (presence of heritage sites) and (economic) value assessment (describing relevant heritage benefits). The publications in the *Sustainable management of historic heritage guidance series* (NZHPT 2007a) extend to RMA-related responsibilities.

New Zealand has a unique planning system in which heritage protection and conservation responsibilities are shared by communities and local and central government. In the absence of one centralised agency developing new strategies for heritage conservation, New Zealand's heritage conservation organisations have recently started to think about how to articulate the benefits of historic heritage, particularly in a policy climate that emphasises efficiency and cost-benefit analysis (CBA). Conservation of historic heritage is continually in competition for public (and private) funds with other worthy objectives. Heritage provides a wide range of benefits that justify a share of those funds, but there is a question as to how large that share should be. With an apparent lack of methods to articulate the benefits of investing in heritage conservation in a way that enables a comparison with other goals (such as better education or reduced transport times), the basis for investment in the conservation of historic heritage may be uncertain.

### 1.2.3 NZ Transport Agency documents on heritage conservation

In allocating its funds, the Transport Agency, just like other RCAs, must internally resolve the issues outlined above. The *Planning policy manual* (NZ Transport Agency 2007), which is currently under revision, states that the Transport Agency plans the future development of the state highway system, executes capital projects to extend and improve state highways, and maintains and operates the existing state highway network. The Transport Agency's website also describes 'meeting the needs of communities both today in and the future' as part of its remit and the Memorandum of Understanding between the Transport Agency and HNZPT emphasises that commitment.[3]

Each one of these core tasks can involve a conflict between the safety and cost-effectiveness of a roading project and the conservation of historic and cultural heritage. One of the Transport Agency's main tools

[1] Heritage New Zealand Pouhere Taonga (HNZPT) became the new name of the NZ Historic Places Trust following a law change in 2014.

[2] www.heritage.org.nz/resources/sustainable-management-guides (accessed 13 August 2015)

[3] www.nzta.govt.nz/resources/memorandum-of-understanding (accessed 2 February 2015)

for identifying conflicts early is the *State highway environmental and social responsibility screen* (ESR screen) (NZ Transport Agency 2014a). The purpose of the ESR screen is 'to identify opportunities, inform the risk management process and ensure the environmental and social matters of a highway project have been addressed'. The ESR screen is an element of the business case logic the Transport Agency uses to prioritise and develop roading projects. For comparison with the internal project development and delivery processes in other RCAs, figure 1.2 shows the business case logic used by the Transport Agency.

The ESR screen is essentially a list of questions that help identify project impacts on social and community needs (eg open space or options for cycling), the experience and ecology of natural environments, human health (eg emissions or noise pollution), culture and heritage (relating to, eg wāhi tapū, historic buildings, archaeological sites, and vegetation), and urban design (integration with urban networks and modes of transport or public open space). The Transport Agency has a risk map resource to help answer some of the screen's questions, although it may not include data on crucial local context.

**Figure 1.2 NZ Transport Agency state highway project lifecycle and milestones**

| | | |
|---|---|---|
| **STRATEGIC OR PROGRAMME BUSINESS CASE** | | Demonstrate how the proposed outcomes give effect to the Transport Agency Environmental and Social Responsibility Policy |
| **BUSINESS CASE** | Indicative | Undertake Environmental & Social Responsibility Screen<br>Prepare Public Engagement Plan |
| | Detailed | Update Environmental & Social Responsibility Screen<br>Undertake any preliminary technical assessment of cultural and historic effects (if screen indicates further information is required to understand potential cultural and historic effects for one or more of the options).<br>Scope Pre-project Monitoring Requirements (if needed)<br>Prepare Consenting Strategy |
| **PRE-IMPLEMENTATION** | Consenting | Update Consenting Strategy<br>Prepare technical assessment of cultural and historic effects to support AEE<br>Develop Designation and/or Resource Consent Conditions<br>Draft any cultural and historic input into environmental management plan (or prepare standalone social impact heritage management plan HMP where required) |
| | Procurement | Outline cultural and historic requirements for the project |
| **IMPLEMENTATION** | Design & Construction | Finalise input into ESMP or HMP<br>Undertake cultural and historic effects monitoring as per ESMP or HMP |

Source: NZ Transport Agency (2015b)

To assess impacts of transport projects on landscapes, Meurk et al (2012) developed a Natural Environment and Cultural Asset Management System (NECAMS). NECAMS focuses on changing the cultural and environmental experience of driving on a road by, eg improving the roadside vegetation or

maintaining the aural and visual cues in and from the landscape beyond the immediate highway corridor (ie carriageway and shoulders).

A number of general recommendations follow from the NECAMS report, such as maintaining geomorphological features, tangata whenua presence and colonial relics; recognising the connectedness of the road and its surroundings; acknowledging the fact that restoring such connectedness of existing roads may take a long time during which some benefits can appreciate (rather than depreciate); and the need for collaborative learning together with stakeholders.

Furthermore, the NECAMS report emphasises the risk that an overreliance on quantified benefits poses, particularly to Māori values and frames of reference that exist with equal validity but outside pākehā methods of decision making. The integration of historic and cultural heritage values into high-level planning procedures for transport projects is currently still in an early stage.

The benefits of roading projects in the *Economic evaluation manual* (EEM) (NZ Transport Agency 2013b) include social costs and benefits, such as road safety, driving comfort, health effects and accessibility (eg travel time), and wider regional and national economic benefits from an improved highway network. Furthermore, the EEM suggests other externalities exist, but they are presented as a group and are not specified further. The EEM does, however, signal the importance of 'special areas': sites of cultural, spiritual, historic, aesthetic and amenity value. The list and examples are closely aligned with the definitions in the RMA. The EEM suggests that such areas should be identified and described, based on expert evaluation and community consultation.

To promote specific consideration of cultural and historic heritage, the Transport Agency has developed the *Historic heritage impact assessment guide for state highway projects* (NZ Transport Agency 2015b). It describes what sites of cultural and historic significance are, including buildings, wāhi tapū and cultural landscapes, and identifies during which roading project activities they might be discovered. The guide indicates that the significance of heritage sites to Māori is to be determined by local iwi or hapū.

The guide also presents potential values from other historic heritage sites. These are discussed in more detail in a later section. It also proposes that the extent to which such values apply should be elicited through consultation with 'local historical societies and appropriate community groups', and recommends starting this elicitation process during the strategic planning phase, rather than in later stages when favoured project options have already been identified (see figure 1.2).

NZ Transport Agency (2015b) then outlines the legal requirements and practical procedures for applying the screen to cultural and historic heritage sites, whether they are colonial relics, wāhi tapū and other sites with Māori significance, or archaeological sites and landscapes. The purpose is to assist decision making and identify the impacts of infrastructure projects on heritage values and the potential to avoid or mitigate adverse effects. Measures for avoidance or mitigation can significantly alter the design or otherwise affect the cost of highway projects.

In the EEM, the Transport Agency warns against spending time on expectedly small impacts, and there may be a certain attraction in thinking that effects that cannot be quantified are small. In the case of cultural and historic heritage, however, using that logic as the basis for assessing value would be wrong: cultural heritage sites are unique in one way or another, and their loss is irreversible – if not in practical, then in financial terms. With near irreversibility and uniqueness of cultural and historic heritage sites, impacts that seem small or unquantifiable should still be assessed carefully to avoid high costs in the future.

## 1.3 Structure and aim of the research report

This report aims to improve insight into value for money as it pertains to heritage conservation actions by RCAs. For this purpose, it brings the various elements described above together, by exploring how an economic perspective can be brought to heritage assessments. Given the significant challenge of this task, the report has been given the following logical structure to develop its recommendations.

Since the report spans economics and heritage conservation, which use different languages, chapter 2 presents the terminology used throughout the report. Chapter 3 reviews how heritage values have been defined by heritage experts and economists as well as earlier work to integrate the two disciplines. Chapter 4 presents the methods heritage experts and economists have used to express and quantify heritage values, with special attention given to the potential and limitations of monetary estimation of heritage values.

Chapter 5 introduces the role of RCAs in heritage conservation in light of the Treaty of Waitangi. Mindful of the different world views of Māori and New Zealanders who are not of Māori descent, the report discusses Māori knowledge and its use in infrastructure planning.

In chapter 6, the report presents the insights gained in the previous chapters and develops its recommendations. This chapter explains key elements of the HEBF tool that accompanies this research report, and which RCA planners and their contractors can use to assess heritage impacts of their projects.

With the recommendations in chapter 6, this report aims to help RCAs incorporate heritage values better in their development of transport projects. Applying the recommendations to future projects would allow RCAs to understand more clearly their decisions on investments to mitigate impacts on heritage values.

The HEBF tool itself is presented in guidance form in appendix B. Annex BA of appendix B provides a quick reference for heritage in Māori contexts. Economic valuation techniques are briefly described in annex BB of appendix B. Two case studies give retrospective illustrations of the HEBF tool in appendices C and D.

# 2 Discussion of value concepts

## 2.1 Terminology in this report

The authors, collaborators and the Transport Agency agreed to use the terminology presented in this section after some discussion. The research brief was to assess the social and economic benefits of heritage, but the use of 'benefit' and 'value' in economics is different from its use in the world of heritage conservation, as explained in the next section. The Transport Agency itself, moreover, uses the word 'benefits' as an underpinning concept for its definition of value for money. Priority was given, however, to the higher familiarity of some of the intended audiences with the use below.

While this report strives to be consistent throughout, some inconsistency could not be avoided in section 4.3, which discusses monetisation techniques from economics.

Historic heritage is defined in the RMA as consisting of physical, tangible sites and areas that can provide multiple benefits and values (discussed further below), including those that derive from inherent historic and cultural qualities. This report refers to *heritage*, *heritage sites* and *heritage areas*.

Historic heritage includes both tangible and intangible values. Sources like the RMA, ICOMOS New Zealand (2010), UNESCO (2003) and NZHPT (2009, p8) provide further discussions of heritage values. These discussions tend to be very inclusive and comprise cultural, historic, tangible and intangible heritage.

Cultural values are closely intertwined with historic heritage. In New Zealand, this is particularly the case for Māori people. Chapter 5 discusses Māori frameworks for evaluating heritage values separately, to reflect the status of tangata whenua as equal partners in the Treaty of Waitangi.

When this reports mentions tangible values or economic benefits of heritage, it means those values that can be expressed in monetary, ie dollar terms, without too much debate.

Intangible values of heritage are less amenable to monetisation, but could be expressed in monetary terms.

The term 'intrinsic values' comprises, according to the Merriam-Webster dictionary, values 'belonging to the essential nature of a thing; occurring as a natural part of something'. Consequently, intrinsic values are distinct from tangible and intangible values, which are anthropocentric.

## 2.2 Values and benefits in economics

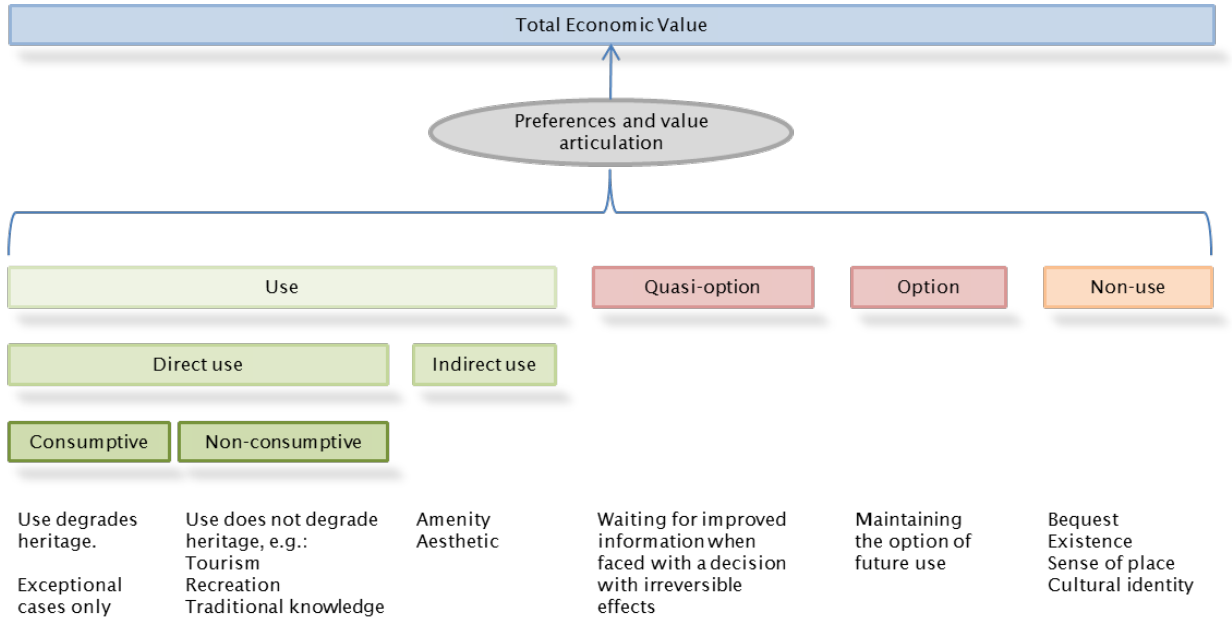
The above use of the terms 'value' and 'benefit' reflects how non-economists have tended to use these economic concepts as synonyms. Although economic texts can also use the terms interchangeably, economists are aware of the underlying theory and important differences between the two concepts. The economic definitions described below are more consistent with their use as concepts underpinning value for money, as defined in the Transport Agency's *Procurement manual*.

To explain the distinction, it is useful to look at what economists study. Economics is generally defined as the study of 'the allocation of scarce resources under unlimited wants'. Wants and needs lead to actions to satisfy them, and due to limits on money, time, energy, etc, every action taken implies a set of actions not taken. A family may decide to go for a walk instead of watching a movie; one heritage site is fully restored when another only gets a support for its façade. It is impossible to achieve all wishes and needs, meaning that actors and decision makers necessarily forgo the benefits of options they do not pursue.

Economics is, in short, a specific way of looking at decision making. The welfare-maximising actor of classic economic models assesses their available options based on how options contribute to satisfying their needs (eg both taking a walk and watching a movie contribute to the family's need for relaxation); how much they like these contributions (eg they may prefer physical exercise to experiencing a story); and the costs of the options (eg an hour on a Saturday may be different from an hour on a weekday; movie tickets cost money).

Graphical representations of total economic value (TEV) rarely include the step of expressing preferences for contributions and add the word 'value' to descriptions of how natural resources contribute to human welfare (use value, amenity value, etc). To avoid any confusion, figure 2.1 incorporates these considerations.

**Figure 2.1 Composition of the total economic value**




Where TEV leaves many underlying aspects of 'value' implicit, the ecosystem services framework presents a different and more detailed way of looking at the components of TEV.[4] It illustrates the difference between benefit and value more explicitly. Ecosystem services, particularly those relevant to historic heritage, are discussed in more detail in section 3.5.

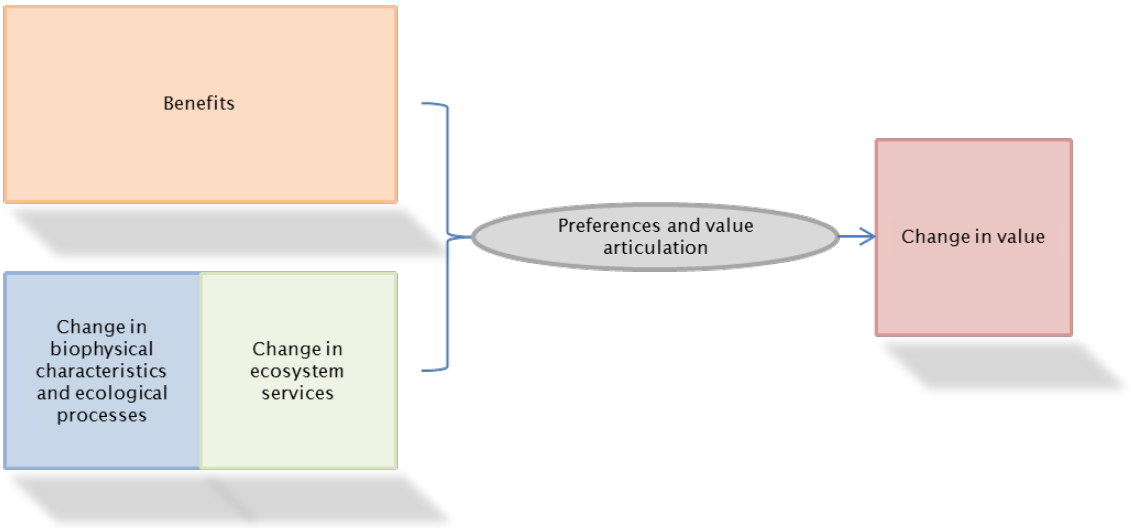
Figure 2.2 shows how a change in ecological parameters leads to a change in value. Changes in biophysical parameters (eg an exogenous nutrient input) or processes cause changes in an ecosystem service (eg the provision of clear water). Clear water is beneficial for many reasons: drinking water needs to be clean; clean water supports higher diversity and densities of aquatic species; and water-based recreation is safer and more enjoyable if the water is clean. These descriptors of how clean water contributes to human welfare are 'benefits' in the ecosystem services framework (TEEB 2010a).

The value is an expression of preferences for benefits, and the supply and demand of ecosystem services. The perceived value of drinking water probably increases as freshwater disappears, but it also increases

[4] Daily (1997) is often credited with introducing the concept of ecosystem services to a broad audience. The concept is promoted as a policy-making framework both by MEA (2003; 2005) and TEEB (2008; 2010a; 2010b).

with the temperature on a given day. The values of aquatic species and recreation are likely to vary for every person who is asked this question; even if every person asked agrees that both aquatic species and water-based recreation are important human welfare, some will think recreation is more important than fish and invertebrates and value recreation more highly. These persons may change their priorities as species become more or less abundant.

**Figure 2.2 From ecological change to changes in value**




Finally, there is the issue of value articulation. The price of water in many countries is not very high, and many producers can take or pollute water at a small financial cost. If asked to indicate the importance of water on a simple scale, however, most people would value water very highly indeed. Prices are nothing but a way of articulating value, and may be inaccurate reflections of value.

The use of prices is common to most cultures and many goods, but can be inappropriate for cultures that do not. In Vanuatu, boar's tusks were used before the introduction of money and are still highly regarded gifts. In Fijian society, sperm whale teeth have a similar role. For tangata whenua, sites or species can be taonga, and have valuable properties relating to mauri, kaitiaki and mātauranga Māori. For many iwi and hapū, money has no bearing on these concepts. Cultural context is therefore just as much a determinant of how value should be articulated as is the availability of techniques to do so.

## 2.3 Intrinsic and intangible value and economic rationalisation

Intangible and intrinsic values are commonly used interchangeably in heritage conservation and a source of discussion (eg Holden 2005; Gibson 2008). It is also important to note that they are distinctly different concepts of value. By definition, intrinsic value is not derived from human interpretation. It is therefore difficult to reconcile intrinsic value and economics-based decision making. Since the intrinsic value of a thing yields no benefits to humans, a decision to respect its intrinsic value and not degrade it, regardless of the anthropocentric benefits or costs of (not) doing so, is more in the realm of ethics than economics. Arguing that heritage has intrinsic value and should be protected is a perfectly acceptable argument, but it is a poor fit with economic theory.

In the terminology of this report, intangible values occupy a position between intrinsic value and economic benefits. Intangible values are derived from an anthropocentric perspective, but quantifying or estimating prices for these may be difficult.

Methods exist to approximate the prices of intangible values, but each has strengths and weaknesses that one should be aware of (for discussions from environmental economics see de Groot et al 2002; Boyd and Banzhaf 2007; Fisher and Turner 2008; Fisher et al 2009). Navrud and Ready (2002) and Nijkamp (2012) provide more detailed, yet accessible, explanations and applications of these techniques in the context of valuing the benefits of historic and cultural heritage.

One argument for quantifying or even monetising intangible benefits can be found in article 54 of the 2015 GPS, which expresses the need for 'best-cost' delivery of a transport network that also supports social, cultural and environmental well-being. By quantifying intangible benefits, more transparency can be brought to bear on decisions about 'best-cost' project delivery.

When RCAs acquire and then own heritage sites, the intangible and cultural values of these sites often have *public good* characteristics. In economics, a public good is a good or service where one person's enjoyment of it does not diminish another's use of it, and where individuals cannot be stopped from enjoying the good. A defence force is a classic example, and heritage and heritage sites can have public good characteristics as well.

When goods or services are shared by multiple people but are not public goods, this can give rise to *externalities:* one party affects the well-being of another party without appropriate compensation taking place between the two. Communal pastures, where multiple herds are grazed on a limited land area, are the classic example: only through cooperative grazing can every herd get a fair share.

When the RCAs incur costs to retain and improve a heritage site with intangible values with public good characteristics, but from which they cannot expect a revenue stream, an externality is created (eg Rama 2012). By quantifying the improvement in the intangible values, RCAs could, in theory, demand a 'fair' compensation from those who benefit from its investment. Section 4.3 is based on a review of literature that monetises intangible values of heritage (see appendix A).

Externalities generated by (a lack of) heritage investment are different from the *indirect effects* in the economy that heritage investments may have: the carpenter restoring the building will spend some of his additional income in local stores; the improved urban landscape attracts tourists and commercial investment; property values can rise; the tax base increases, etc.

Rypkema (2005) is a well-known advocate of using economics to argue for heritage conservation (see also Rypkema et al 2011). This approach (Rypkema 2015a; 2015b) builds on a combination of intrinsic and intangible values of primarily urban heritage areas, as well as the use of 'economic impact' studies to quantify and show the indirect effects as heritage conservation investments trickle down in the local economy (see also Dümcke and Gnedovsky 2013). These studies are discussed in more detail in section 4.4.

It should be noted that many of Rypkema's publications revolve around heritage conservation investments in urban and regional development contexts. Consequently, his recommendations and approach should be carefully assessed for their relevance to transport projects and the heritage sites and areas they affect.

## 2.4 Conflicts in world view regarding cost-benefit analysis

Many intangible values of heritage stem from an awareness and association with the past for Māori and non-Māori alike. Mātauranga Māori, which is based on ancestral connections and traditional narratives, is a particularly strong expression of that awareness. The challenge for any valuation approach of indigenous

knowledge lies 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* (p83).

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 and Henderson 2000). Māori epistemology and ontological thought recognise the interrelatedness of knowledge to the lives and experiences of human beings and their communities (Deloria et al 1999). Whakapapa, the interrelationship between all forms of existence is important for understanding Māori preferences for the environment.

There is a tendency among planners and decision makers to emphasise quantitative assessments, and in particular prices for CBA. The danger, however, is that Māori values are viewed and assimilated by the framework of welfare economics – a Western knowledge system. For this reason, Māori are wary of providing their knowledge to those involved in resource management including researchers, policy analysts, planners or developers. Once the knowledge is captured, there may be little concern on the part of public institutions to continue the relationship with indigenous people. 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.

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 kaitiaki 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.

There is considerable interest within New Zealand to quantify Māori values to assess public goods. This reasoning is based to a degree on the anthropocentric approach to public policy. A lack of methodological guidance within the RMA (Matunga 2000) also reinforces adherence to mainstream planning practices that emphasises economic valuation. 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.

There are three principal references to economics in the RMA, in sections 5(20), 7(b), and 32. Part 2, section 6 identifies values that are matters of national importance. These values are to be considered when determining resource allocation. The challenge for the RCAs is to determine the values for these matters of importance including section 6(e) – the relationship of Māori with their ancestral resources for each project.

## 2.5 RCAs and historic heritage conservation

When expanding and improving the state highway network, the actions of RCAs are likely to impact on heritage sites and areas. When these impacts are negative, they require mitigation to reduce losses of intrinsic and intangible values. Conservation investments can also create and promote the values and benefits of heritage areas, sites and items.

The cost of mitigation efforts does not contribute directly to RCAs' legal obligation to deliver an effective and safe transport network. RCAs are, however, also tasked to deliver a transport network that supports social, cultural and environmental well-being without placing an unreasonable funding burden on the economy. The extent to which they are willing to commit to this latter task affects the determinants of the 'right level' and 'best cost' of the national transport infrastructure to deliver value for money.

On the one hand, a strong case can be made that RCAs should consider the costs to mitigate heritage impacts as part of their business models. The modification of heritage sites and areas and the disturbance of archaeological remains affect the well-being of local residents as well as visitors. Another perspective on these costs is that they are an investment in better planning and implementation processes for future projects, which may benefit from being seen to do 'the right thing': by mitigating the impacts, RCAs help maintain New Zealand heritage. In this sense, mitigating heritage impacts helps RCAs build their 'social licence to operate'.

On the other hand, it must be acknowledged that heritage conservation is not a core task of RCAs. Similarly, there are limits to what can be expected from them in supporting heritage beyond stimulating values and economic benefits of heritage through better transport opportunities. Providing ways to find an appropriate balance between the need or wish for heritage conservation and a finite budget for transport projects was a core aim of this research project.

When only a part of the costs of heritage conservation can be recouped after a project has been concluded, RCAs have to make decisions about what constitutes 'value-for-money' delivery of transport projects in light of supporting social, cultural and environmental well-being. For a heritage site with primarily tangible values and associated economic benefits, this question is answered more easily than when a project impacts on intangible, intrinsic or cultural values.

The HEBF presented in appendix B provides RCAs with a transparent structure for thinking about and documenting various benefits and values from heritage conservation. Although cultural and scientific limits on monetising heritage values remain, the HEBF can help RCAs identify, negotiate and to some extent quantify various risks to transport projects that arise from heritage impacts.

# 3 Heritage value classifications

This chapter compares frameworks for the evaluation of heritage used by heritage experts and economists interested in heritage. The purpose of this comparison is to identify commonalities, and to see if different terminologies may actually encompass similar concepts. If that is the case, then communication across disciplines and developing an integrated framework may be easier. Māori perspectives on the economic benefits of heritage and culturally appropriate expressions of value are presented separately in chapter 5.

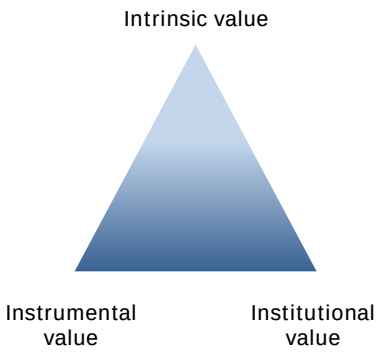
## 3.1 Cultural value triangle

Over the last two decades, much work has focussed on how to assess heritage and express its economic benefits and intangible and intrinsic values. Moore (1995) developed the Public Value Framework, which aims to direct government assets towards producing a good and just society. The Public Value Framework distinguishes between ends and means, and focuses on outcomes that satisfy clients (Ernst & Young 2014). In the context of heritage conservation, an essential part of applying the Public Value Framework is to find out why people value heritage or specific heritage sites, and to develop appropriate indicators of success of heritage conservation policies.

Holden (2005) and Hewison and Holden (2006) adapted the Public Value Framework to a heritage context by arguing that the 'cultural value' of heritage is made up of three components: intrinsic, institutional and instrumental sources of value, ie economic benefits (see figure 3.1). These terms have more recently been described as follows (Hewison and Holden 2014):

- intrinsic – essential, intangible values that are difficult or impossible to measure
- institutional – the public trust and legitimacy created or destroyed by the manner in which cultural organisations interact with their public and communities – in essence a form of public value
- instrumental – measurable but ancillary effects of cultural activity such as economic and social outcomes.

**Figure 3.1 Cultural value triangle**




Where the concept of intrinsic value relates to an ethically motivated preference for heritage conservation, or important values cannot be quantified for some reason, economic analysis cannot contribute further insights. Cultural values, as defined in this report, may also be intrinsic. When methods are found to evaluate values that are difficult but not impossible to measure, this suggests these values can be expressed or quantified by some (numeric or monetary) indicator. This change from intrinsic to intangible

value alters the discourse to (perhaps) enable trade-offs where intangible values are allowed to decrease for an increase in other relevant considerations.

Institutional value relates to the perception of a heritage organisation as it interacts with the public and communities. Chapter 5 on frameworks for iwi and hapū, for instance, demonstrates the importance of good, culturally appropriate and timely interactions with the collective of iwi and hapū with mana whenua when considering the impacts of infrastructure projects on Māori heritage values. Institutional values are not directly useful for developing a framework to assess the economic benefits heritage, but are a consideration for the public's perception of RCAs as partners in developing sustainable transport solutions.

Hewison and Holden (2014) define instrumental values as aspects of cultural activity that are 'measurable but ancillary'. This phrasing suggests that instrumental values, ie economic benefits, are not essential to heritage conservation considerations. For an RCA like the Transport Agency, however, these economic benefits are essential to identifying value-for-money delivery of projects; they allow RCAs to explore the recoverability of conservation investments, and enable the explicit consideration of (some) public good aspects and indirect economic effects from conservation.

To consider economic benefits of heritage conservation as 'ancillary' puts limitations on the arguments for heritage conservation. Clearly specifying the economic benefits of heritage sites can contribute to the case for their conservation. This is especially relevant when national policies, such as the 2015 GPS, emphasise efficiency and least-cost approaches, which are largely based on financial indicators (see also Bogaards 2008; Auckland Council Chief Economist Unit 2013).

On the other hand, a RCA could systematically consider the impacts on intrinsic, cultural and intangible values of its projects. Just as cost alone is not a reliable indicator of value for money, money is not necessarily a reliable indicator of the benefits derived from heritage investments. First, because doing so allows it to better understand the conditions for proceeding with partial or full investments in heritage sites. Second, these values may prove to be more important risks to ongoing and future infrastructure projects than the losses in economic benefits an RCA may incur. Finally, even if heritage conservation investments may not be 'least-cost' options for infrastructure projects as judged by financial indicators, these values do contribute to the goal of supporting social, cultural and environmental well-being.

## 3.2 Tangible and intangible heritage values

The challenge for heritage conservation is to clarify how the values of heritage sites and areas weigh up against the cost of maintaining or improving them. A framework for identifying the economic benefits of heritage sites and expressing their other values should be based on existing documents for heritage practitioners. There are many ways in which values have been identified by heritage experts.

Internationally, and in New Zealand, there is no accepted 'best practice' model for assessing or expressing heritage values (Donaghey 2006). The most widely used method is to construct narratives about the heritage values of sites or areas. These narratives are often given (a non-monetary) expression of heritage values, using a particular set of criteria and thresholds. In this section, the focus is on reviewing the narratives and criteria.

In New Zealand, the most accepted set of heritage values is set out in section 66 of the HNZPTA. When identifying a heritage item, site or area and assessing its values, the Board of HNZPT considers whether the site has one or more of the following values or significance:

- aesthetic
- architectural

- archaeological
- cultural
- historical
- scientific
- social
- spiritual
- technological
- traditional.

Section 66 of the HNZPTA also sets out criteria to take into account when determining whether a place has heritage values and its status. In summary, these include representativeness or rarity, associative values, education and information, tangata whenua importance, community recognition, technical qualities, symbolic or commemorative values and historic contextual values.

Another example is that used in the Burra Charter (the Australian ICOMOS Charter for Places of Cultural Significance). The Burra Charter, as with other ICOMOS-based publications, deals primarily with the management of items after they have been identified as having (intangible and intrinsic) value. The Burra Charter was developed originally by the Australian ICOMOS in 1979 and has been revised several times since. Although originally developed for an Australian context, the Burra Charter has been influential in heritage thinking around the world because it moved away from a simple emphasis on material culture towards the meaning of places. The 2013 revision of that charter provides the following list of five benefits (associations or 'values') (ICOMOS Australia 2013a):

| | |
|---|---|
| *aesthetic* | how we respond to visual and non-visual aspects |
| *historic* | encompasses all aspects of history |
| *scientific* | information content of a place and its ability to reveal more about an aspect of the past |
| *social* | associations that a place has for a particular community or cultural group (...) |
| *spiritual* | intangible values and meanings embodied in or evoked by a place that give it importance in the spiritual identity or the traditional knowledge, art and practices of a cultural group. |

The system developed in the Burra Charter is used widely to assess the value of heritage in a national, regional or local context, and has been 'operationalised' by the application of its thinking into conservation plans throughout the world. In the Practice Note that accompanies the Burra Charter, ICOMOS Australia (2013b) defines heritage values as set out above.

English Heritage (2008) assesses heritage using the following four values:

| | |
|---|---|
| *aesthetic* | the ways in which people draw sensory and intellectual stimulation from a place |
| *communal* | the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory |
| *evidential* | the potential of a place to yield evidence about past human activity |
| *historical* | the ways in which past people, events and aspects of life can be connected through a place to the present. |

The Transport Agency has recently published a template for the assessment of impacts on the heritage values of archaeological sites and built heritage places/areas (NZ Transport Agency 2015b). This template to be used by heritage professionals lists the following criteria:

| | |
|---|---|
| *archaeological information* | information about human history or current archaeological research |
| *architecture* | design, form, scale, materials, style, period, ornamentation |
| *technology and engineering* | innovative method, illustration of technique, or unusual materials |
| *scientific* | scientific information about the region |
| *rarity* | place, area or features are unique or significant in historical themes |
| *representativeness* | exemplary for design, type, features, use, technology or time period |
| *integrity* | retains significant features from period, or important later additions |
| *vulnerability* | risk of deterioration or destruction and land use development |
| *context or group* | site is part of a setting, where the whole amplifies heritage values of the site |
| *people* | association with important individuals or organisations |
| *events* | association with important event |
| *patterns* | association with important historical processes or themes |
| *identity* | site or area is focus of the community, provides continuity |
| *public esteem* | site or area is held in high esteem (visually, culturally, historically and politically) |
| *commemorative* | site or area has significance to (descendants of) people who use(d) it (visually, culturally, historically) |
| *education* | potential to contribute to public understanding and awareness of New Zealand |
| *tangata whenua* | importance to tangata whenua for traditional, spiritual, cultural or historical reasons |
| *statutory recognition* | recognition in (inter-)national legislation (World Heritage, HNZPTA, claim settlement, special legislation). |

The Amended Pigeon Bay criteria have been adopted in New Zealand as a framework for assessing the intrinsic and intangible values from landscapes in the context of sections 6(b), 7(c) and 7(f) of the RMA (Hughes 2010). These include:

- natural science
- legibility
- aesthetic
- transient
- tangata whenua
- shared and recognised values
- historic.

The various classifications presented above contain roughly similar intangible and intrinsic values, even when they were developed for landscape, rather than historical heritage assessments.

In the more detailed classifications, such as the scheme promoted by the NZ Transport Agency (2015b), there is potential overlap between values. From the sources above, it is apparent that this is not seen as a problem in by heritage experts.

Allowing definition of values to overlap causes double-counting, however, which is not acceptable in economics because it leads to exaggerated values. This is perhaps best shown algebraically: if values A and B have a combined value of Y but some other value X is encompassed by the definition of both A and B, then adding A and B leads to an estimated value of Y + 2X. The real value is Y + X, however. As Hughes (2010) states, exaggerated values distort decision making. Just as CBAs should not simply halve costs to make projects more appealing, benefits should not simply be doubled.

This leads to the conclusion that, from an economist's perspective, definitions of heritage values should be mutually exclusive. Experience from environmental economics suggests, however, that this ideal is rarely achieved in practice, particularly when dealing with hard-to-define concepts. The practical solution in such situations is to be as clear as possible about intended values and to be aware of potentially overlapping values. Chapter 6 describes key elements of a framework to support such awareness. Appendix B gives a step-wise implementation plan.

## 3.3 Cultural capital

To bridge the gap in thinking between economics and heritage conservation, Throsby (2012) developed the idea of cultural capital. While Throsby acknowledges the building blocks of economic concepts of value (ie economic benefits in the terminology of this report), he also argues that the special nature of historic heritage is more complex than a real or construed market price. Throsby argues that the cultural, spiritual, social and symbolic values of historic heritage are unique. An economic evaluation might capture some or even many of these as economic benefits, but not all (Mason 1999; Avrami et al 2000; Throsby 2001; de la Torre 2002; Mourato and Mazzanti 2002; O'Brien 2010).

Therefore, Throsby (2012) distinguishes between economic benefits and cultural values (ie cultural, intrinsic and intangible values in the terminology of this report). Heritage sites and areas may generate economic benefits or intangible values that, at least in theory, can be captured by the monetary valuation techniques described (Nijkamp 2012). These methods are described in annex BB of appendix B. Not all values can be captured by the methods used to assess economic benefits, primarily the intrinsic and cultural values. Trying to estimate the monetary benefit of the community spirit engendered by a building that was central in, for example, the success of a civil rights movement in the US would be problematic.

Throsby suggests that various ranking techniques are more appropriate to identify and weight such values. In the terminology of this research report, this would be the case for intangible values. Throsby furthermore acknowledges that it is difficult to decide on the relative weight that should be given to economic benefits and intrinsic and intangible values when endeavouring to combine them (weighting is an expression of preferences; see also chapter 2). The outcome of such a weighted assessment will depend on societal preferences and is perhaps best investigated through open discourse.

According to Throsby (2012), a starting point would be to formulate the components that make up cultural value, such as:

*aesthetic value* fundamental beauty of the site

*symbolic value* the site conveys community identity through, eg an historical event that occurred there

| | |
|---|---|
| *spiritual value* | the site instils awe or delight in visitors and (local) community alike |
| *social value* | the site contributes to social cohesion, eg by reminding the community of shared values |
| *historic value* | the site provides a connectedness with the past |
| *authenticity value* | the site is unique |
| *scientific value* | the site has scientific or educational content. |

Such an approach, where open discourse is based on a list of potential values, is reminiscent of the rich narrative (section 4.2) and ecosystem services approaches (described in section 3.5).

In New Zealand, the Treaty of Waitangi requires that iwi and hapū with mana whenua affected by infrastructure projects are free to present the impacts on their well-being in a manner that is appropriate for them. While the Treaty requires that the world view of iwi and hapū with mana whenua must be respected, there is potential legal overlap between Māori and non-Māori heritage. HNZPT can consider places of significance to Māori using heritage values as described above (or as a heritage area, which is a collection of such places), or they can be assessed as wāhi tipuna (wāhi tūpuna: places important to Māori for ancestral significance and associated cultural and traditional values); wāhi tapū (places sacred to Māori in the traditional, spiritual, religious, ritual or mythological sense, such as maunga tapū, urupā, funerary sites, and punawai) or wāhi tapū areas (areas that contain one or more wāhi tapū).

The decision about which type of listing they receive depends completely on the wishes of tangata whenua connected to them; and sometimes a place may be listed twice, for example, once as a historic place and once as a wāhi tapū. Chapter 5 presents mātauranga Māori frameworks for viewing the heritage effects of infrastructure projects.

## 3.4 Ministry for Culture and Heritage framework

In 2013, MCH published the final report of a study to clarify the concept of value within a cultural context (Allan et al 2013). This report is a prominent first step towards deeper integration of economics and heritage and culture. The MCH report takes a wider approach that goes beyond historic and archaeological sites and areas to include all aspects of culture.

MCH develops a framework for establishing the intrinsic and intangible values and economic benefits of heritage sites and areas. It builds on the idea of TEV (shown in figure 2.1) from environmental economics (eg Turner et al 2003). The MCH report distinguishes between various sources of value in the context of culture and heritage. These are shown in table 3.1. There are a number of commonalities between TEV and the MCH report. Market use value, non-market use value, non-use value and option value correspond to direct use value, indirect use value, non-use value, and option value in the TEV framework.

**Table 3.1 Comparison of MCH framework and total economic value**

| MCH report category | Description | TEV category |
|---|---|---|
| Market use | A cultural good was purchased in the market | Direct use |
| Non-market use | A cultural good was not purchased in the market | Indirect use |
| Non-use | Knowing that a certain cultural good is available for other 'current use or for future generations' | Non-use |
| Option | Support for a certain activity or heritage site that makes it possible for that activity or site to be available in future should some future generation value that activity or site | Non-use |
| Non-monetary return to producers | The difference between what producers could earn in another occupation and the (lower) earnings they receive as producers of cultural goods | - |
| Instrumental (externalities) | The values (including economic benefits) that accrue to the wider society as a result of cultural activities | - |

The MCH framework includes two categories that are not present in TEV: *non-monetary return to producers* and *instrumental value (externality)*.

The non-monetary return to producers is presented as the pleasure people experience from working in the culture and heritage sector that makes them willing to forgo higher wages in other jobs, or to do volunteer work in their spare time. For some individuals, this might be an intangible or even an intrinsic value. While it is theoretically possible to estimate this as an economic benefit, this is technically challenging to do well. It is not commonly included in applied economic assessments.

The other non-TEV category introduced in the MCH framework consists of instrumental values (externalities). It is not entirely clear whether Allan et al (2013) are thinking of public goods, externalities, or indirect economic effects of heritage conservation investments.

## 3.5 Cultural ecosystem services

There are several competing classifications of cultural ecosystem services (shown in table 3.2). The classification from TEEB (2010a; b) is a development of the innovative MEA (2005) framework. The European Environment Agency and the United Nations Statistical Division use feedback to continuously refine the Common International Classification of Ecosystem Services (CICES). The World Resources Institute (WRI 2008) has developed an approach to operationalise ecosystem services for business and decision makers, and has been trialled with several New Zealand organisations by Landcare Research.

The ecosystem services framework provides a more detailed suite of intrinsic and intangible values and economic benefits to improve the effectiveness, equity, or sustainability of decision making (TEEB 2011; 2012; 2013). It should be noted that the ecosystem services framework extends beyond providing a list of values and benefits, and emphasises inclusive policy making; understanding the complex social contexts of ecosystem management is at least as important as monetising its costs and benefits.

As pointed out by Daniel et al (2012), the intangible and intrinsic values and economic benefits of historic heritage are not very well integrated into the ecosystem services framework. Of the three frameworks in table 3.2, only the CICES classification specifies many cultural ecosystem services that are familiar from the heritage value classifications summarised in section 3.2 and the cultural capital approach from section 3.3.

**Table 3.2 Indicative comparison of cultural ecosystem services in three frameworks**

| TEEB | CICES | WRI |
|---|---|---|
| Recreation and mental and physical health | Physical use | Recreation and ecotourism |
| Tourism | Entertainment | - |
| - | Scientific | - |
| - | Educational | - |
| Aesthetic appreciation and inspiration for culture art and design | Aesthetic | Aesthetic |
| - | Experiential use | - |
| Spiritual experience and sense of place | Symbolic | Spiritual and religious |
| - | Sacred and/or religious | - |
| - | Existence | - |
| - | Bequest | - |
| - | Heritage, cultural | - |

The TEEB and WRI classifications, on the other hand, are slightly more specific about potential economic benefits generated by heritage sites and areas. Consideration of (potential) economic benefits aligns with the suggestion by Rypkema (2005) and Rypkema et al (2011) to consider adaptive re-use of heritage sites and areas. Exploring economic benefits, moreover, provides RCAs with the most practical entry point to recoup costs incurred for heritage conservation.

## 3.6 Synthesis of heritage value frameworks

The previous sections suggest that various classifications for heritage values are in many ways similar, and that work to align economics and heritage assessments is progressing. Synthesising evidence from the previous sections, this section develops a list of tangible and intangible values that should be considered when assessing impacts on historic heritage.

Table 3.3 compares the intrinsic and intangible heritage values from the various classifications used by heritage organisations and compares them with a number of classifications from cultural ecosystem services. A challenge in comparing the entries in table 3.3 is that the various frameworks use similar or identical words to refer to slightly different values, different words to indicate similar values, and sometimes present indicators or characteristics that classify combined values separately.

These different terminologies create risks when evaluating heritage values. A first risk is that, across infrastructure projects, RCAs are confronted with assessments of heritage sites or areas that use different terms or give different meaning to similar terms. This makes it more difficult for the RCA to compare the merits of one proposed heritage conservation investment with those in other projects. Given that heritage values can be difficult to quantify, let alone be integrated in CBAs, transparency and consistency in conservation investments are all the more important.

A second risk of the current mixed use of terminology and concepts is that values can be double counted. For instance, it may be difficult to distinguish the exact values and any economic benefits that are associated with the commemorative, symbolic, or identity characteristics of a heritage site. Without clearly defined boundaries between values, these expressions can capture overlapping elements and potentially

exaggerate the actual value of heritage sites. As Hughes (2010) argues, this is undesirable for decision making that aims to build an understanding of economic value.

For these reasons, table 3.4 provides a synthesised list of heritage values and benefits, along with definitions. This list of heritage values and benefits supports their identification and, where possible and appropriate, quantification (eg Throsby 2012).

The first entries in table 3.4 are intangible and intrinsic values, ie those values that are not or are partially amenable to being quantified or monetised. Where relevant, options for doing so are presented in section 4.3. The 'amenity' value captures the aesthetics of a heritage site or area. 'Spiritual/cultural' value is present when individuals or communities attach a deeper (eg ethical, philosophical or religious) meaning to a heritage site or area. The 'bequest' value applies to heritage sites or areas that should be preserved for posterity. It is likely that sites with high bequest values are already listed as category 1 sites. A heritage site or area has 'historic education' value when it has the potential to educate and raise awareness about aspects of New Zealand's culture and history. A 'commemorative' value stems from a site's association with historic events, processes or people that provides groups with a sense of identity and continuity. Finally, the 'associative' value is present when the degradation or loss of a heritage site diminishes intrinsic and intangible values of a wider heritage area.

**Table 3.3 Indicative comparison of values and benefits in various heritage assessment frameworks**

| ICOMOS AU | English heritage | HNZPTA | NZ Transport Agency | Cultural capital | CICES | TEEB | WRI |
|---|---|---|---|---|---|---|---|
| Aesthetic | Aesthetic | Aesthetic | Aesthetic | Aesthetic | Aesthetic | Aesthetic appreciation and inspiration | Aesthetic |
| – | – | – | – | – | Physical use | Tourism | Recreation and ecotourism |
| – | – | – | – | – | Entertainment | Recreation and mental and physical health | |
| – | – | Architectural | Architectural | – | – | – | – |
| Historic | Historical | Historical | People | Historic | – | – | – |
| – | – | Archaeological | Events | – | – | – | – |
| – | – | – | Patterns | Symbolic | – | – | – |
| Scientific | Evidential | Scientific | Scientific | Scientific | Scientific | – | – |
| – | – | Technological | Technological | – | – | – | – |
| – | – | – | Education | – | Educational | – | – |
| Social | Communal | Social | Identity | Social | – | – | – |
| – | – | – | Public esteem | – | – | – | – |
| – | – | – | Statutory recognition | – | Symbolic | – | – |
| – | – | – | Commemorative | – | – | – | – |
| Spiritual | Communal | Spiritual | Tangata whenua | Spiritual | Sacred and/or religious use | Spiritual experience and sense of place | Spiritual and religious |
| – | – | Cultural | – | – | Experiential | – | |
| – | – | Traditional | – | – | – | – | – |
| – | – | – | Rarity | Authenticity | – | – | – |
| – | – | – | Vulnerability | – | – | – | – |
| – | – | – | Integrity | – | – | – | – |
| – | – | – | Context | – | – | – | – |

| ICOMOS AU | English heritage | HNZPTA | NZ Transport Agency | Cultural capital | CICES | TEEB | WRI |
|---|---|---|---|---|---|---|---|
| – | – | – | Representativeness | – | – | – | – |
| – | – | – | – | – | Existence | – | – |
| – | – | – | – | – | Bequest | – | – |

**Table 3.4 Synthesised list of heritage values and benefits**

| Heritage value/benefit | Explanation |
|---|---|
| Amenity | The place/space/area is visually attractive and pleasant |
| Spiritual/cultural | Deeper experience of the place that transcends amenity association and is distinct from a commemorative association |
| Bequest | The place is archaeologically or architecturally unique, or represents a historic technological development that is not found elsewhere, and needs to be preserved for future generations |
| Historic education | The place has the potential to be used for formal and informal educational purposes related to history, architecture, science, engineering, technology, or design |
| Commemorative | The place is connected with an event, idea or person that defines the (local, regional or national) community beyond historic educational purposes |
| Associative | The place is an essential element of history and culture in wider heritage area |
| Recreation | Unpaid, intentional use of the place |
| Tourism | Paid, intentional use of the place |
| Functional | Paid, intentional use of the place that is not tourism |
| Other economic | Effects on the wider economy of heritage improvements and/or costs associated with demolition/disposal |

The final entries in table 3.4 are more likely to be economic benefits (as shown in section 4.3). The 'recreation' benefit is different from the amenity value in that recreation is intentional. Someone passing by a beautiful site can experience an amenity value, but not a recreational benefit.

The next two benefits, 'tourism' and 'functional', allow an RCA to investigate its ability to capture some of the increase in heritage economic value from a conservation investment it chooses to make. A tourist destination that is difficult to get to might be made more accessible as part of a project, and a steady stream of fees would enable an RCA to recoup some of the investment cost. Renovating a heritage building can increase its attractiveness to businesses and other tenants (Rypkema 2015a).

The final economic benefit is 'other economic' and can indicate a situation where improving a heritage site can attract additional investment or stimulate the economy via indirect effects (eg Rypkema 2005; 2015a; 2015b). These wider effects on local economies may not always be relevant, but could occur when larger heritage areas are involved. Another instance may be if a heritage site (bridge) or area is the primary access route to a tourist destination. In such cases, the RCA could discuss improvement options with tourist operations that would benefit.

There may be further 'other economic' benefits with relevance to transport projects. For instance, to demolish a building and remove the rubble may involve significant cost, which could be avoided by heritage conservation. Disposing of heritage sites can involve a payment to the new owner as an advance for maintenance costs.

Although the heritage associations have been defined to prevent double-counting as much as possible, there is still potential for unintentional double-counting. The bequest, historic education and commemorative associations may be difficult to distinguish for stakeholders, for instance. People asked about their tourism benefits may include amenity value in their answers. Care should be taken that stakeholders understand the difference and can discuss them with as much precision as possible.

# 4 Expressing intangible values and economic benefits

This chapter reviews the literature of approaches for assessing intrinsic and intangible values and economic benefits from historic heritage identified in the previous chapter. The chapter discusses heritage practice in New Zealand, approaches used by transport infrastructure organisations across the world, and techniques for assessing economic benefits and non-monetary values in (environmental) economics. The structure of this chapter reflects the different publications and operational traditions, and is itself diverse in its presentation.

## 4.1 Non-monetary expressions of intangible values

### 4.1.1 Narratives, thresholds and ranking

In New Zealand, the method of developing narratives about a heritage site or area is the most accepted model. Where necessary, a number of different professionals can write the narrative collaboratively. Experts in history, archaeology, and Māori heritage may work together, or separate narratives may be written by suitable professionals and considered together.

Within the narrative approach, the idea of thresholds is sometimes used to provide a more nuanced level of value judgement. Again, the most well-known of these is in the HNZPTA; the assessment of a historic place (historic place only, it does not apply to historic areas or wāhi tapū, wāhi tapū areas or wāhi tua) is that if the place is of 'special or outstanding historical or cultural heritage significance or value', it will then be classified as a category 1 historic place. If the historic place is simply of 'historical or cultural heritage significance or value', ie not special or outstanding, it would then be classified as a category 2 historic place.

Similar thresholds are often used in the Australian context, and also in the World Heritage sphere. For example, UNESCO uses what it calls four 'important considerations': the *protection*, *management*, *authenticity* and *integrity* of places.

HNZPT advises caution in the use of ranking or threshold systems (NZHPT 2007b). For example, it urges those preparing district plans to avoid complicated thresholds and to be completely transparent when ranking is used. Alternatively, heritage sites can be classified as either of 'national significance' as the top threshold, or of a lower tier of 'regional or local significance' (ie maintain a 'rank' of only two). It also suggests that separate categories should be maintained for places of significance to Māori, as well as for historic areas and historic landscapes, but that these should not be ranked.

Assessing places of significance to Māori, and any suggestion of ranking, is difficult since Pākehā and Māori concepts of heritage are quite different. The former emphasise fabric and place, the latter, as described by the Māori Heritage Council, characterise heritage as 'a living spirituality, a living mana that transcends generations ... Māori heritage is considered in an holistic way – it is not merely the physical places that are held in high esteem by their communities (as important as these are), but also the knowledge, stories, and experiences that one can have in engaging with those places' (NZHPT 2009, p8).

The Māori Heritage Council has identified the registration (called 'listing' in the HNZPTA) of places of significance to Māori by HNZPT as one of its most important tasks, which must be completed with the full cooperation of iwi and hapū, and a way that recognises the mana of Māori communities over taonga (NZHPT 2009, p8). This is discussed further in section 5.3.

### 4.1.2 Numeric scores

A narrative does not provide a result that enables an easy comparison of different sites, values, or benefits. A quantitative scoring approach could be one way around this problem. In New Zealand, most heritage professionals are not comfortable with the concept of giving a place a numeric score. Most experts avoid this method, not only for its inappropriateness in terms of Māori culture, but also because of its uncertain use as part of decision-making processes.

Throsby (2012) suggests that it should be possible to create a scoring system with numerical scales to express (in our terminology, intangible) heritage values. Schroeder and Dobbie, Department of Conservation, pers comm (19 February 2015) present the Historic Values Scoring System (HVSS), developed specifically for use by the Department of Conservation (DOC). This quantitative scoring framework helps DOC compare the (intangible and intrinsic) heritage values of the many heritage sites it owns. The HVSS is part of a larger initiative to help DOC optimise its heritage conservation investments by quantitatively expressing heritage values consistently across sites.

The HVSS requires users to score characteristics, which relate to five categories – structure, rarity, integrity, history, social and wildcard – of heritage sites compared to an ideal state. Characteristics that are close to ideal are scored 'excellent' and characteristics are further away from the ideal are scored 'good', 'fair' or 'poor'. These scores are translated into points. Each category has an identical maximum number of points so that no single category can dominate an assessment (ie the weighting is similar for all categories).

Schroeder and Dobbie (pers comm 19 February 2015) acknowledge that the HVSS cannot be entirely objective or work well for every heritage site. Therefore the HVSS requires that the scores awarded are annotated with sufficient detail to explain and justify them. Providing this level of transparency would be good practice in general. If a numeric scoring approach is to be used, HNZPT emphasises the need for a rigorous and transparent research process.

HNZPT does not, however, promote the use of numeric scoring to assess the heritage values of a place (NZHPT 2007b). Numeric scoring processes have two problematic characteristics. The first is that scores, when combined with weights, can skew conservation priorities towards certain outcomes. If the appearance of structures is more heavily weighted than the technological improvements represented by them, for instance, the values of industrial or archaeological sites may be underrepresented.

The second problematic characteristic is that numeric scoring systems can generate artificial perceptions of thresholds and objectivity. If, for instance, a site gets 49 points when the rules state that 50 is needed for protection or conservation or funding, then a strict interpretation of the numeric score means the site will not be funded. When such a small difference from the threshold implies continued degradation or even demolition of a site, re-evaluation of the heritage values of that site would be more appropriate.

### 4.1.3 Rich narrative

Internationally, there is a concern that much narrative, written by a single or a range of experts, does not acknowledge the plurality of understandings of heritage within communities. ICOMOS Australia (2013, Article 12) and ICOMOS New Zealand (2010, Article 15) acknowledge that communities that associate heritage sites with values and benefits should be involved in their management and conservation. English Heritage (1997; 2008) has begun in recent years to emphasise the need for diverse understandings of heritage, and instructs heritage professionals to ensure they engage with owners, communities and specialists in order to identify a wide range of heritage values and benefits, including those that might

evolve in the future, so that potential values and benefits can be protected now (this is essentially an argument for protecting 'option value' in the TEV framework; see section 2.2).

There is a growing understanding that all understandings of cultural, historic and social values are imposed by the context of the time and place from which they are viewed. In essence, this perspective allows more room for an instrumentalist approach to heritage conservation (see section 3.1).

Gibson and Pendlebury (2009) clarify the need for a plurality of meanings (or values) through the example of Stonehenge. People today have conflicting ideas about why and how Stonehenge is important, as did those who have tried to define its significance over past centuries. The significance is explained by reasoning that is linked to the purposes and needs of the time (Grabow, Department of Conservation, pers comm, 19 February 2016). A New Zealand example might be the changing view of Modernist architecture, which has altered significantly in recent decades (Kelly 2000).

These critiques emphasise the need to provide a rich narrative to capture, as comprehensively as possible, all the values of a heritage site using a range of methods. In fact, heritage practice has been modified in recent years to encourage wider engagement, and the accepted narrative of place can develop from dialogue including powerful and articulate local voices, rather than being simply an external elite imposition. The challenge for heritage management is how to enable these dialogues and then to reflect them in practice (Gibson and Pendlebury 2009). Such narratives, as O'Brien (2010) has argued, 'help us to understand the meaning behind economic value and are thus an essential part of any decision over resource allocation'.

Advocacy for a plurality of understandings of heritage and the reasons for its significance have encouraged a move to capture and recognise non-expert views, to overcome the tradition of 'experts' being the sole arbiter of what is of value. In the United Kingdom, 'citizen juries' and similar ideas have come into vogue (eg Mattinson 2006). The National Trust (2006) has tested a citizen jury model when attempting to assess the values of three of its properties to local communities, in an attempt to 'take a genuine interest in what citizens think'.

Within New Zealand, some concern has been expressed about the way in which heritage values are currently assessed. Authors such as Donaghey (2006) are concerned with the lack of understanding of the social value of heritage sites, ie the value of heritage to today's communities, due to the absence of a community role in the process of heritage assessment. She argues that it is necessary to create an approach 'privileging holistic values wherein places of natural, cultural and historic worth share a mutual relevance and living traditions are incorporated'.

Donaghey further suggests an improved programme of community engagement (both Māori and non-Māori), actively taking part in the process of the assessment of heritage, and providing a better connect between experts and non-professionals. She also advocates the need for a landscape-based approach, incorporating natural, cultural, and historic values, which she thinks has the potential to respond to both Māori and Pākehā interpretations of the environment.

Likewise, Stephenson (2005; 2008) argues that an assessment of the heritage values of landscapes cannot be captured by experts working on their own. She argues for a holistic approach to the understanding and assessment of landscape and merging of multiple understandings, including both 'insider' and 'outsider' views (insiders being those who live within the landscape, outsiders being tourists, planners and 'experts').

Engaging with local communities to identify and assess the values of heritage sites can be time-consuming and needs strong leadership. It may, however, offer a way forward in providing a holistic, community-based approach that can be applied to heritage sites, areas and landscapes.

## 4.2 Road controlling agencies and heritage conservation

Documentation about transport projects from the UK, Canada and New Zealand suggest there is little consistency in the way heritage impacts are assessed across projects (Transport South Australia 1999; Highways Agency et al 2007; NZ Transport Agency and Wellington Tunnels Alliance 2011; Archaeological Services 2012; NZ Transport Agency 2013a; Department for Transport and Highways Agency 2015).

A general conclusion can be drawn that numerical approaches are rarely used. Narrative assessments of intangible values are more common, and their implementation ranges from brief summaries to detailed descriptions. Assessments of the economic benefits of historic heritage were not encountered. Transparent comparisons of heritage conservation costs between different conservation options were also not found. Instead, it appears that heritage experts determine a preferred conservation option after their assessment of heritage values. Furthermore, details about how these judgements about heritage values were reached are rarely provided. In one case, a site was awarded heritage value in the face of low public awareness of it. A public consultation did not appear to have taken place.

A qualitative approach is in line with the notion that numerical ranking of historic and cultural heritage is not appropriate, but that does not explain the apparent lack of consistency or transparency of heritage assessments. While this statement should not be taken to insinuate that these assessments were in any way inadequate, the important decision making conclusion pertains to *comparability, consistency and transparency* of heritage conservation actions across projects. Without the ability to compare decisions and outcomes between projects, an economic evaluation leading to an operational notion of 'value for money' of heritage conservation investments cannot be conducted.

## 4.3 Review of monetisation studies

### 4.3.1 Introduction

This section presents an overview of the literature on the monetisation of the economic benefits of heritage sites and areas. A list of all the studies used for this review is provided in appendix A. The purpose is to identify whether, based on the literature, specific types of heritage can be associated with economic benefits, and which techniques for monetisation tend to be used.

This synthesis will assist with conclusions about the extent to which heritage conservation decisions can be based on economic benefits and monetary information. As such, this literature review and its synthesis can contribute to the quantification of heritage values and become part of the overall assessment framework that is developed in chapter 6 and appendix B.

The literature database was compiled through a search of the Web of Science database using combinations of the search terms 'cultural', 'heritage' and 'valuation'. This narrow search ensured that only studies with the stated goal of valuing historic heritage were included. It returned a number of publications with citations then used to identify further publications. Previous literature surveys such as Noonan (2003) and Provins et al (2008) were particularly helpful in this regard. In addition, colleagues were asked to provide their work in this field, as well as any references they might be aware of. An internet search supported these efforts.

The review includes a separate search of environmental, and particularly landscape, monetisation studies from New Zealand. The reasons for this separate search are that the search of the international literature yields an overwhelming number of monetisation studies of landscapes in general, but only a small number of studies that specifically look at heritage-based perceptions of landscapes.

Since the RMA specifically mentions the surroundings of a natural or physical heritage resource (see section 1.2) and landscape-scale impacts are likely with infrastructure projects, studies from the Lincoln University's Ecosystem Services Database were included. This provides a reasonable cover of monetisation studies conducted in New Zealand between 1990 and 2014 that identify a range of intrinsic and intangible values, including cultural values, as well as economic benefits. The downside is that many studies in this database have not been published in academic journals. The literature found in this database was also used to find further publications.

To synthesise such diverse publications, RMA terminology was used to distinguish between monetisation studies applied to historic built structures, natural environments, archaeological sites and traditional knowledge (as a representation of heritage of significance to Māori).

An important difference between the RMA definitions and this review relates to the distinction between historic and archaeological sites. This review follows practice in the collected studies rather than the legal distinction between archaeological and historic heritage as it applies in New Zealand. Archaeology in this review refers to, eg rock art and structures that date back thousands of years (as in other parts of the world), whereas valuation studies about historic sites in this review largely relate to buildings from the 19th or early 20th centuries.

The terminology used to identify the intangible values and economic benefits associated with heritage sites is primarily determined by the studies collected for the review, which tend to draw heavily on the TEV and ecosystem services frameworks presented in section 2.2. Given the lack of collaboration between heritage practitioners and economists in these monetisation studies, the terminology is different from that used in heritage conservation. As discussed in section 3.6, however, there are also similarities that enable synthesis.

Individual studies do not always clearly describe the intangible value or economic benefit for which willingness to pay (WTP) or any other approximation of 'price' was estimated. Several studies use their own terminology. In such cases, studies were allocated to the best-fitting category already in the database. The benefit 'TEV' is used for studies that provide no insight into the intangible value or economic benefit that was being monetised.

Complications such as these are an unavoidable part of a literature synthesis about intangible values of public goods like the environment and heritage. Regardless, the signals from the literature review are strong enough and the terminology similar enough, that the conclusions can be applied to the list of heritage values and economic benefits in table 3.4.

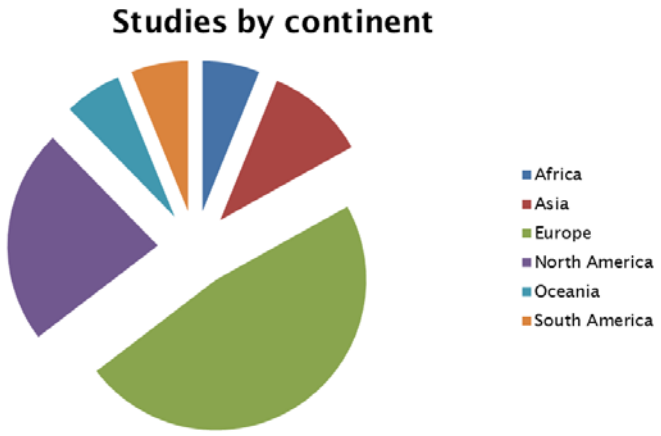
Finally, it is emphasised that a heritage site is rarely one thing with one value or benefit. Instead, the significance of heritage sites often consists of multiple 'layers'. A landscape can equally have layers of significance that derive from the natural environment itself; from any buildings located within it that have historic or other significance; and may show the presence of archaeological sites that may or may not have significance to tangata whenua. The HEBF presented in chapter 6 and appendix B reflects this, and this review contributes to one aspect of the HEBF.

### 4.3.2 General description of the database

#### 4.3.2.1 Heritage (international)

The search produced 64 studies, which included 51 monetisation studies from academic (international, peer-reviewed) publications, five studies published as a book chapter, and eight studies described in reports (ie any other type of publication). A cross-check of these monetisation studies was performed to ensure there were no double entries from reports or book chapters that were also published in academic journals.

**Figure 4.1 Share of monetisation studies in the literature review by continent**

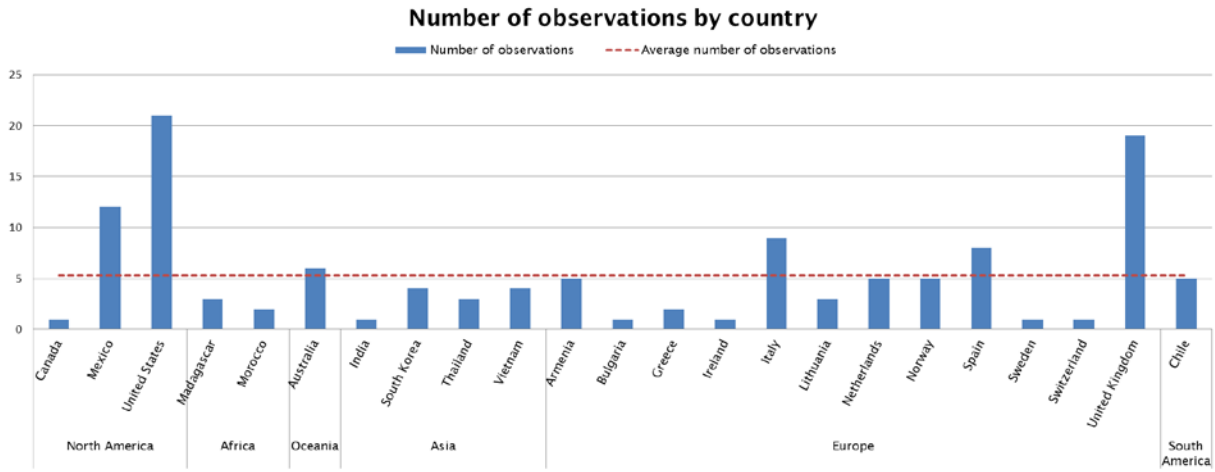



It is often the case that a single monetisation study estimates WTP for various intangible values and economic benefits of a heritage site or area. Each value estimate was entered as a separate observation in the literature database, yielding a total of 122 entries in the database. This implies an average of 1.8 value estimates per study, although the study by Beltrán and Rojas (1996) alone contributes 12 observations. In that study, the authors estimated the WTP for three archaeological sites in Mexico, relating to different intangible values and economic benefits and under different policy scenarios.

Figure 4.1 shows the continents where monetisation studies of cultural and heritage assets have been conducted. The largest share (31 studies or 47%) of the studies was conducted in Europe, and 15 studies come from North America (23%). In Asia, seven monetisation studies were undertaken (11%) and four studies (6%) come from Africa, Oceania and South America each. This result shows there has been little investigation of the economic benefits of heritage sites and areas in New Zealand, or in the Pacific region in general.

In figure 4.2, the number of observations in the literature review is split by country. The figure shows that studies from only five countries provide an above-average number of observations: the US, Australia, Italy, Spain and the United Kingdom. Given the limited breadth of the literature about monetising tangible heritage values, research possibilities, preferences and traditions from these countries have a relatively strong influence on the conclusions about best-practice in monetisation of tangible heritage values.

**Figure 4.2 Number of observations by country. The red dotted line shows the average number of observations per country**



Only a few attempts to monetise heritage values are related to indigenous peoples' cultures. Only five studies in the database consider the culture of indigenous people, or aspects of traditional knowledge. As these aspects may have particular relevance in New Zealand, these studies are explained here.

Rolfe and Windle (2003) consider Aboriginal archaeological (rock art) sites in Central Queensland, Australia. The reasoning behind this attempt comes from plentiful examples where Australia's indigenous people have negotiated to give companies and other groups access to their lands. In this case, three focus groups with Aboriginal participants were asked about the bequest value they attach to healthy vegetation, length and health of waterways, protection of Aboriginal sites, and unallocated water in the Fitzroy Basin.

In a study conducted in Chile, Barrena et al (2014) focus on the value of a culturally significant plant, the Chiloé potato. This plant is grown by small and medium-sized farms with traditional practices. The study finds that cultural heritage value attached to this traditional form of agriculture extends beyond the local farmers. In fact, people from Chile's capital, Santiago, indicated they attach just as much importance to preserving the heritage of the agricultural system around the Chiloé potato as the people from Chiloé island. Nahuelhual et al (2014) assess and spatially map the value of local farmers' knowledge about farming on Chiloé Island.

In the north of Sweden, the indigenous Sami people have the exclusive legal right to reindeer herding. This activity contributes to Sweden's economic output, but also holds significant cultural value for the Sami. Bostedt and Lundgren (2010) estimate the monetary value of this cultural benefit, and find that over half the respondents think the reindeer herding provides additional intrinsic or intangible values such as 'living countryside', 'biodiversity' and 'cultural heritage'.

Finally, there are three studies about the local management of the marine area Velondriake in Madagascar. Here, the Vezo people have subsisted on traditional fishing activities for generations. This way of life is an important element of identity of the Vezo. Van Beukering (pers comm 2014) asked the Vezo about the bequest value they have for their traditions, by eliciting a response to the number of generations their culture might continue, and the strength of community cohesion. The study by Oleson et al (2015) finds that the Vezo attach a higher value to maintaining these characteristics of their society than to achieving short-term changes in income.

#### 4.3.2.2 New Zealand natural heritage

The database for natural landscapes in New Zealand contains 28 studies, 10 of which have been published in academic journals. The remaining 18 studies were published as reports or conference-related publications. The studies contain 61 value observations, with each study producing an average of 2.2 value observations. One study on recreational fishing, by Lindsay and Damania (2000), alone contributes 12 observations and thus has a marked impact on this review.

### 4.3.3 Brief overview of techniques for monetary valuation

To provide some background, this section summarises the various techniques that economists use to estimate the monetary values of goods and services for which no market prices exist. Navrud and Ready (2002) provide more detailed, yet accessible, explanations and applications of these techniques in the context of valuing the benefits of historic and cultural heritage.

Market price-based techniques use prices for goods that are traded in markets to estimate the monetary value of the natural resources that are produce the goods. This technique can only be used if a market for goods derived from natural resources exists. Paintings, theatre performances and other forms of art, which are not the focus of this report, are often traded in well-functioning markets.

The net factor income technique and the production function technique estimate the monetary value of benefits from natural resources by assessing their contribution to goods and services that are traded in markets. These approaches are similar to economic impact assessment, economic footprint analysis, and the social return on investment techniques employed to assess the benefits of conservation expenditures and cultural events (eg Rypkema et al 2011; BOP Consulting 2012).

The replacement cost technique and the restoration cost technique equate the monetary value of benefits from environmental resources with the cost of replacing environmental resources with human-made structures that provide the same benefits; or the cost of restoring a degraded place or location to an improved or pristine state. Replacement and restoration are concepts that readily transfer to heritage.

A related technique with relevance to heritage is the public pricing technique. This uses public expenditures (eg taxes or subsidies) as a measure of the monetary value of benefits.

The damage cost avoided technique, which looks at the damage protection or mitigation benefits provided by environmental resources, can be used when project engineering options have different impacts on heritage. An example could be where boring holes instead of drilling in the supports of a viaduct can reduce vibrations and damage to heritage sites or items.

The hedonic pricing technique can be used to estimate a monetary value for heritage assets if there are goods or services whose price is related to the asset. This approach can be used to estimate the monetary value of monumental buildings or areas by looking at housing prices in the vicinity.

The travel cost technique derives the monetary value of a site by considering the costs people incur to get there. These costs relate to, eg fuel and time spent to travel from their homes to the site. By analysing the relation between the number of visitors for different travel distances and cost levels, it is possible to estimate the monetary value of a site.

There is a suite of techniques, collectively known as stated preference techniques, which rely on asking people directly about their preferences for (hypothetical) changes to an environmental resource or heritage site. Often preferences are framed as respondents' WTP for improvements to the building, or – less often – as their willingness to accept (WTA) negative changes to it. Generally, studies find that WTA estimates are higher than WTP estimates (Sayman and Onculer 2005), so the framing of the question can have significant consequences for monetary value estimates.

Stated preference surveys can be framed in terms of a financial contribution respondents think they would make (contingent valuation), a preferred option they would choose from several alternatives (multiple methods, including choice experiments or conjoint analysis), or as a change in behaviour they would implement (stated behaviour).

The advantage of stated preference surveys is that they can be applied to virtually any type of heritage, heritage impact, or heritage value. An important criticism is that such surveys are hypothetical and, since responses have no consequences, do not necessarily reflect people's real preferences.

Finally, there is a technique called benefit or value transfer, in which estimated monetised intangible values from other heritage are applied to the heritage site of interest. Applications may be more or less technically refined, but the accuracy of any value transfer study depends on the availability of studies of similar heritage from similar social, economic and cultural settings. Alternatively, a thorough statistical analysis can be conducted if many estimates of intangible heritage values.

Each of these valuation techniques has its merits, drawbacks and relevance in terms of evaluating the economic benefits of heritage. It is beyond the scope of this report to explore such issues in detail. The

expertise required to conduct monetary valuation studies can quickly become very advanced, however, and many techniques rely on significant data sets.

As a result, economists simply do not use certain techniques very often. Studies that use some of the more advanced techniques can be complete research projects. This affects the analysis and outcomes of the following sections as well as the recommendations at the end of this research report. While it will often be possible to use multiple techniques for any given heritage impact, the time and expense of using more advanced techniques may well be disproportionate.

### 4.3.4 Matrix of heritage types, intangible values, economic benefits, and monetisation techniques

#### 4.3.4.1 Heritage (international)

Table 4.1 is a matrix that shows the most frequently applied monetisation technique for each combination of heritage type and intangible value or economic benefit identified from the literature review.

The colours in the matrix signify an additional dimension; namely the strength of the evidence base for each combination. Some combinations of heritage type and monetisation technique are more common than others. For combinations with more than five observations in the literature database, the colour is green and the evidence base is considered robust. Combinations with three or four observations are coloured orange (somewhat robust), and combinations with two or less observations are red (not robust).

**Table 4.1 Most commonly- used monetisation technique by heritage type – value/benefit combinations in the international literature**

| | Aesthetic | Bequest | Existence | Option | Sense of place | TEV | Tourism |
|---|---|---|---|---|---|---|---|
| Archaeological | Contingent valuation | Contingent valuation | Choice experiment | Contingent valuation | Benefit transfer | Contingent valuation | Contingent Valuation |
| Built (historic) | Hedonic pricing | Contingent valuation | Contingent valuation | Contingent valuation | Hedonic pricing | Choice experiment | Contingent valuation |
| Natural | Benefit transfer | Choice experiment | Contingent valuation | Benefit transfer | Contingent valuation | Benefit transfer | Contingent Valuation |
| Traditional knowledge | Benefit transfer | Contingent valuation | Choice experiment | Benefit transfer | Contingent valuation | Benefit transfer | Benefit transfer |

The threshold levels have been set low, in part due to the overall lack of monetisation studies of heritage sites. The cells coloured green in table 4.1, however, collectively represent 97 (80%) of the 122 observations in the literature database. The number of observations represented by each of these cells is between 8 and 26, ie well above the threshold level for robust evidence. The distinction between orange and red cells is more subjective, but the green cells present relatively strong evidence of best practice in monetisation studies.

What is clear from table 4.1 is that the evidence base for best-practice in monetisation studies is small in relation to traditional knowledge and cultural landscapes. The literature search yielded very few studies that estimate a monetary value for aspects of the cultures of indigenous people, which is consistent with the findings of other literature reviews (eg Vihervaara et al 2010) and in line with the arguments made in sections 2.2 and 2.4.

With respect to archaeological and particularly (historic) built heritage, the evidence base is stronger. It is common to monetise aesthetic, bequest, existence, and sense of place values and tourism benefits of built (historic) heritage. Monetisation studies of archaeological heritage consider primarily bequest value and tourism benefits.

As a rule, the common method used to monetise the intangible values of historic heritage is the contingent valuation method (CVM). The two exceptions to this rule are the aesthetic and sense-of-place benefits of (historic) built assets, for which the hedonic pricing method (HPM) tends to be used. For sense-of-place benefits, HPM is only marginally more frequently used than CVM techniques and both methods are appropriate. Similarly, the best-practice monetisation method for the tourism benefits of archaeological and built heritage assets is CVM, but the travel cost method (TCM) is almost equally common. In these cases, the selected monetisation method can be determined by available data and research cost.

#### 4.3.4.2 New Zealand natural heritage

The review of international literature provided only a small evidence base for the monetisation of intangible values and economic benefits of (heritage) landscapes. The results from a similar analysis of the literature on landscapes in New Zealand are shown in table 4.2.

The range of intangible values and economic benefits used in monetisation studies of New Zealand landscapes, including rivers, is more diverse than that for archaeological and built heritage. There is a strong presence of fishing-related values/benefits. By implication, rivers and lakes appear to be important components of the landscape when it comes to the heritage values of New Zealand's landscapes.

Table 4.2 gives the most frequently applied monetisation technique for each combination of heritage type and intangible value or economic benefit identified from the literature review. The colours in the matrix signify the strength of the evidence base for each combination (green being strongest and red weakest).

**Table 4.2 Most commonly- used monetary valuation technique for heritage type – value/benefit combinations in the literature on New Zealand landscapes**

| New Zealand landscapes | |
|---|---|
| Aesthetic | Contingent valuation |
| Bequest | Choice experimentation |
| Food (fishing) | Contingent valuation |
| Esistence | Contingent valuation |
| Indirect use | Benefit transfer |
| Option | Contingent valuation |
| Preservation | Benefit transfer |
| Recreation (fishing) | Contingent valuation |
| Recreation | Benefit transfer |
| TEV | Choice experiment |
| Freshwater use | Production function |

Strong evidence about best-practice monetisation exists for the intangible values associated with the New Zealand landscape include aesthetic and bequest values. The benefit of food (fishing) is linked to fishing for consumption, and was identified for multiple fish species in Lindsay and Damania (2000). This is distinct from the broader benefit of 'recreation (fishing)' which was found in several studies. Recreation is

used to describe a mix of recreational activities that take place in landscapes. Freshwater use is an economic benefit that relates to the value of water for agricultural and industrial purposes.

Aesthetic and bequest values, as well as TEV, are commonly estimated using CVM and choice experiment (CE) methods. The database shows that the techniques can be freely interchanged, as both are used almost as frequently for each type of benefit.

The value of fish caught for consumption is generally estimated using CVM, but it should be noted that this result comes from one study (Lindsay and Damania 2000), which also used CVM to assess fishing as a recreational benefit. However, using a market price methodology to quantify the benefit of fish as food may have been an equally valid – and possibly more efficient – approach to take.

Freshwater use is an economic benefit that is more related to economic producers rather than the general public. For example, farms require water for irrigation, livestock and cleaning. In such cases, water is a necessary input to farm production. The production function technique is an appropriate method to estimate the value of this benefit. Understanding and modelling production processes can be a time-consuming and costly approach, however.

The two types of recreational benefit, fishing-related and general, are commonly assessed using CVM and benefit transfer (BT). The wide use of BT is unexpected for several reasons (see section 4.5), and it should be noted that CE has been used equally often (in such cases the algorithm used to analyse the database ranks options alphabetically). Another valuation technique often used in this context is TCM, similar to the tourism benefits of archaeological and historic built heritage.

## 4.4 Monetising other economic benefits

The previous section looked at monetisation techniques for intangible values and certain economic benefits of heritage sites and areas. As reflected in section 3.6, cultural economists have pointed out that historic heritage can have wider economic impacts.

Rypkema (2005) is a well-known advocate of 'economic impact' studies (see also Dümcke and Gnedovsky 2013). These studies analyse how an investment in heritage conservation (or the outlay for a cultural event) trickles through the local economy to generate jobs and profits. Rypkema et al (2011) argue that monetising the other economic benefits of heritage conservation is well-known and commonly accepted; relatively easy to apply; and directly comparable with benefits of other industries (p17).

While the first and last points may be true, the middle argument deserves some discussion. As Rypkema et al (2011) point out on the same page, this type of analysis is 'calculated using sophisticated econometric modelling systems' (p17). These models may be widely used, but using them well is only possible with extensive experience with the data and model, and is likely to be time and resource consuming. In practice, there is a tendency to use cheap and straightforward approximations of these complex models.

The results of low-quality studies should be viewed with extra care. As Allan et al (2013) explain, crucial parameters for economic impact studies are difficult to estimate. They depend on variables like the state of the economic cycle on which the economic parameters are estimated and the size and openness of the modelled economy. Economic causality may be another confounding factor; while one may argue with investors that heritage restoration makes sense, would the investors even be interested in the heritage area if they did not think the economy of the area showed signs of improving?

These considerations are not presented to argue that economic impact studies have no place in heritage conservation. It is important to realise, however, that proving conclusively that heritage conservation

causes X economic benefits is not at all easy. Easy approaches exist, but these are easily manipulated to produce (un)desirable outcomes and should be viewed with due caution.

As a final thought on this matter, it is up to a RCA to set the effort it will expend on preserving or improving historic heritage. Where not doing so limits options for adaptive re-use or creating other revenue sources to earn back some of the investment, it is in the interest of the RCA to consider these options. If a lack of conservation investment imperils safe access to, for example, a regional economy that is strongly dependent on tourism, the economic benefits of heritage investment can be identified without an economic impact model. The extent to which the RCA should strengthen local economies through heritage investments not directly related to mitigating negative heritage impacts of its projects, is a matter of debate.

Other economic benefits, which express the costs foregone by not engaging in heritage conservation, would appear to have more direct relevance to transport projects. These include the cost of demolishing a building and removing the rubble. Payments to a new owner as an advance for future maintenance costs when disposing of heritage sites are another example.

## 4.5 Monetisation using benefit transfer

The methods identified in section 4.3.3 mostly produce new monetary value estimates. Economists refer to them as primary studies. Due to the development of surveys, models or datasets, however, primary studies tend to require significant time and human resources to conduct.

A technique known as benefit transfer can reduce the time and cost of producing price estimates by applying existing estimates from so-called study sites to new sites of interest (policy sites). Benefit transfer can be simple when study and policy sites are very similar. Advanced statistical techniques are necessary when there are large differences between study and policy sites.

As a rule, benefit transfer will introduce errors in the value estimate of the policy site. There are three main reasons for this: study and policy sites are never completely alike, the technique relies on statistical analysis which implies errors, and primary valuation studies may, individually, be wrong or, collectively, display bias (for example, many studies from regions with good access or high levels of heritage interest).[5]

These criticisms notwithstanding, benefit transfer can satisfy a policy need for quick and inexpensive indications of economic benefit (Brander 2013). Tuan et al (2009) compare results from CVM studies with estimates from benefit transfer applications and find differences of almost 130%. In the culture and heritage sector, the effects of bias in benefit transfer may be particularly strong, because the culture and heritage context of an historic asset is likely to be unique. Riganti and Nijkamp (2007), nevertheless, are cautiously optimistic that benefit transfer can be applied to cultural and historic heritage.

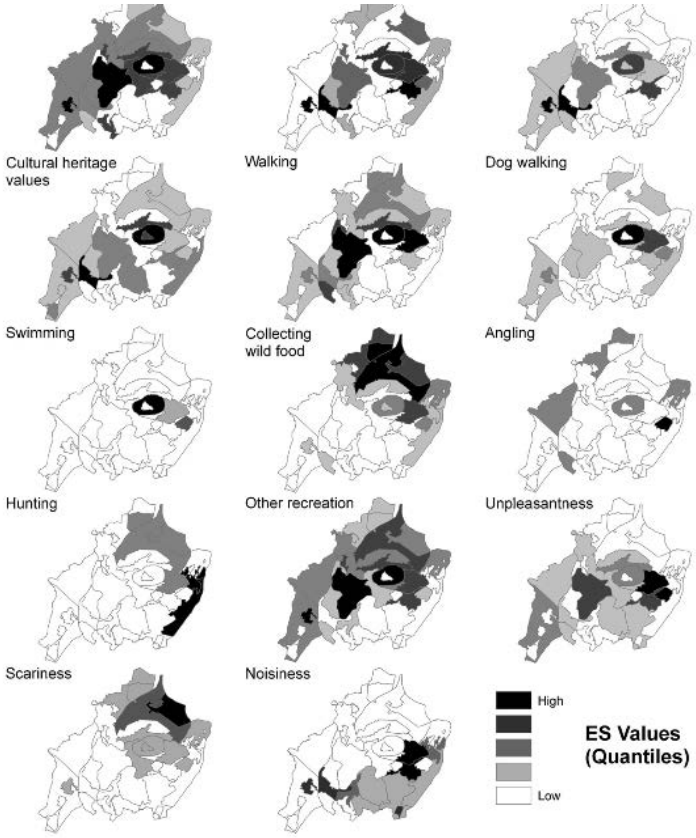
The literature review conducted for this report suggests, however, that there are currently not enough primary valuation studies for a robust benefit transfer exercise in the context of heritage.

[5] Some economists in New Zealand consider benefit transfer to be a fundamentally flawed technique, and argue that only primary studies can be relied on. While the use of benefit transfer does come with some problems, the implication that primary studies produce better results is not correct per se. All monetary valuation techniques have their advantages and drawbacks.

## 4.6 Non-monetary assessment

Environmental economists, particularly those interested in ecosystem services, have long acknowledged that not all intangible values of natural resources can or should be monetised (eg MEA 2005; Sagoff 2008; EPA-SAB 2009; TEEB 2010a). Stated preference surveys, for instance, allow monetisation of intangible values in principle, but there are concerns: respondents may not, for instance, express their preferences accurately when faced with hypothetical situations that have no actual consequences, or may not even be able to do so for things they may not regularly think about, like intangible heritage values (eg Arrow et al 1993).

**Figure 4.3 A map of intangible values in a landscape**




Source: Plieninger et al (2012)

Moreover, several authors have argued that the pervasive focus on monetary values leads to shifts in preferences and loss of non-monetisable yet valuable resources like heritage or the environment (Luck et al 2012; Muradian et al 2013). Overemphasising the monetisation of intangible values carries risks for conservation because, once the concept of monetisation is embedded in policy thinking, discussions about the conservation of natural resources and heritage sites will disregard non-monetary arguments (even more). Decisions based on CBA, moreover, may be affected by external influences such as technological advances or market shifts (McCauley 2006).

Rather than attempt to square this circle, many ecosystem service researchers have been moving away from monetisation of intrinsic, cultural, and intangible values. The absence of a rigorous economic

theoretical framework for expressing non-monetary has meant, however, that researchers use a wide variety of approaches to articulate the intangible values of heritage (Hernández-Morcillo et al 2013).

It should be noted that the use of a multi-criteria assessment (MCA) rather than CBA does not fundamentally solve the problem. The weighting factors used in MCA essentially play the same role as prices in expressing which values or benefits are more important than others. The MCA approach favoured by, for instance, the Transport Agency reduces the different costs, values and benefits to a single score for each option, which may be an oversimplification of the significant complexity of the effects of projects.

Recent research tries to simply present information in ways that are useful to start and inform policy discussions. A simple approach is the use of flower, amoeba or spider plots of different important variables (see, for instance, Foley et al 2005). In a recent update to that method, Foley et al (2011) include goals in the diagrams and so provide insight into whether intended outcomes are being achieved under various options.

Some researchers propose using spatially explicit maps of intrinsic, cultural and intangible values (see figure 4.3); maps of economic benefits are also possible. There are various types of maps, including presence/absence of values, scaled indications Plieninger et al (2013), heat maps (Alessa et al 2008; van Riper et al 2012; Crossman et al 2013), and more complex styles (eg Szücs et al 2015). Regardless of the mapping style, presenting value and benefit information may be useful for heritage areas and landscapes.

## 4.7 Summary

This chapter has presented literature from the heritage world, guidelines for transport organisations and monetisation studies from the economic literature. The resulting picture is one where transport organisations seem to have adopted practice from heritage conservation, and to approach heritage by looking at intrinsic values. For infrastructure planners and decision makers who are not also heritage experts, however, this approach is in apparent conflict with a desire for transparent decisions that help deliver appropriate outcomes, including a least-cost delivery of transport projects.

In heritage literature, there is an increasing acceptance of the need to understand community and stakeholder perceptions of heritage values, as expressed by rich narrative approaches. This movement creates a shift towards intangible values of heritage sites. The review of monetisation studies in the economic literature has provided an understanding of the extent to which intangible values of historic heritage can be monetised.

Navrud and Ready (2002) presented a first review of the monetisation of the values of cultural and historic heritage, and this review provided further evidence that monetisation techniques from environmental economics can be applied in some heritage contexts. However, one area where monetisation techniques have little traction is around cultural values and traditional knowledge. This finding means that impacts on the heritage values of tangata whenua should not be monetised.

Intangible values commonly associated with archaeological and built heritage relate to aesthetics, bequest and existence value. There is evidence that these values can be monetised, along with tourism benefits. New Zealand's landscapes generate a wider range of intangible values, including various types of recreation, fishing and freshwater use, as well as bequest and aesthetic values. For landscapes, moreover, often an estimate of TEV is made.

To estimate the monetary value of these various benefits, stated preference methods such as CVM and CE are often used for bequest and existence values. The intangible aesthetic value of landscapes is often monetised using CVM and CE as well, but for the intangible aesthetic value of built heritage, HPM tends to

be employed. CVM and CE are used most frequently to monetise heritage-related recreation and tourism benefits. TCM and BT have also been applied for that purpose. When monetising benefits of freshwater to economic producers, a production function approach tends to be used.

These findings broadly correspond to reviews of common valuation techniques applied to the natural environment (eg Brouwer et al 2013). Since the valuation of environmental and cultural and heritage assets are similar in many ways (Nijkamp 2012), this provides some credibility that, despite the limitations of the evidence base, these findings can be used by RCAs.

# 5 Mātauranga Māori

This chapter presents Māori world views and illustrates its holistic approach to history, landscapes, knowledge and culture. Māori heritage values are holistic and can include principles, intrinsic, tangible and intangible values. Each iwi/hapū may have its own tradition in this respect, which makes a uniform discussion of 'Māori heritage values' problematic. Developing a generally applicable framework for RCAs to employ in their planning and investment decisions is even more daunting. This chapter provides an introduction to Māori world views and values, examples of valuation approaches that iwi and hapū have developed and used in other contexts. The chapter provides the understanding that transport planners need for building partnerships and recognising tangata whenua rights.

## 5.1 Mātauranga Māori is holistic

Indigenous knowledge or traditional knowledge is local knowledge unique to a given culture or society. The terms generally refer to knowledge systems embedded in the cultural traditions of regional, indigenous, or local communities. Indigenous knowledge is intertwined with the people, their history, culture, and ecosystems and is the basis for local-level decision making, for example, in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren 1991). Indigenous knowledge is dynamic and includes contemporary and traditional knowledge.

Mātauranga Māori or Māori knowledge systems are specific to indigenous Māori people, and the term has its origins in Aotearoa New Zealand. The term has many definitions that cover belief systems, epistemologies, values, and knowledge both in a traditional and contemporary sense. Mātauranga Māori can be defined as the knowledge, comprehension or understanding of everything visible and invisible existing in the universe (Best 1942; Buck 1950; Marsden and King 1975; Mead and Grove 2001; Mead 2003; Ngā Kaitūhono 2012).

The Wai 262 claim (Waitangi Tribunal 2011) is a claim about mātauranga Māori and defined mātauranga Māori as 'the unique Māori way of viewing the world, encompassing both traditional knowledge and culture'. Through this claim, the claimants were seeking to preserve their culture and identity, and the relationships that the culture and identity are derived from. Mātauranga Māori, which involves observing, experiencing, studying and understanding the world from an indigenous cultural perspective, is often equated with 'wisdom'.

Mātauranga Māori encompasses the physical through to the meta-physical, including but not limited to: whakaaroaro (empiricism or logic), tikanga (ethics), whakaponotanga (epistemology), kaitiakitanga (resource management) and wairuatanga (spirituality) and is a dynamic and evolving knowledge system (Mead 2003). Similar to western knowledge, mātauranga Māori has both qualitative and quantitative aspects.

The Māori Heritage Council (NZHPT 2009) recognises this dynamism as well through its categories of Māori heritage that encompass wāhi tapū (sacred sites) that reflect more traditional connections to place and other categories like historical interest that include contemporary association to place like schools, churches, landscapes, and mahinga kai.

As the status of mātauranga Māori is recognised in the Treaty of Waitangi and other legislation, its multifaceted nature also needs to be reflected in decisions that determine the future of Aotearoa.

## 5.2 Elements that shape mātauranga Māori

Māori beliefs, custom, and values are derived from a mixture of cosmogony, cosmology, mythology, religion, and anthropology (Best 1942; Buck 1950; Marsden and King 1975; Henare 1988, 2001; Barlow 1991; Mead 2003). Within this complex and evolutionary belief system are stories of the origin of the universe and of Māori people – the sources of knowledge and wisdom that have fashioned the concepts and relationship Māori have with the environment today (Marsden 1989; Henare 2001).

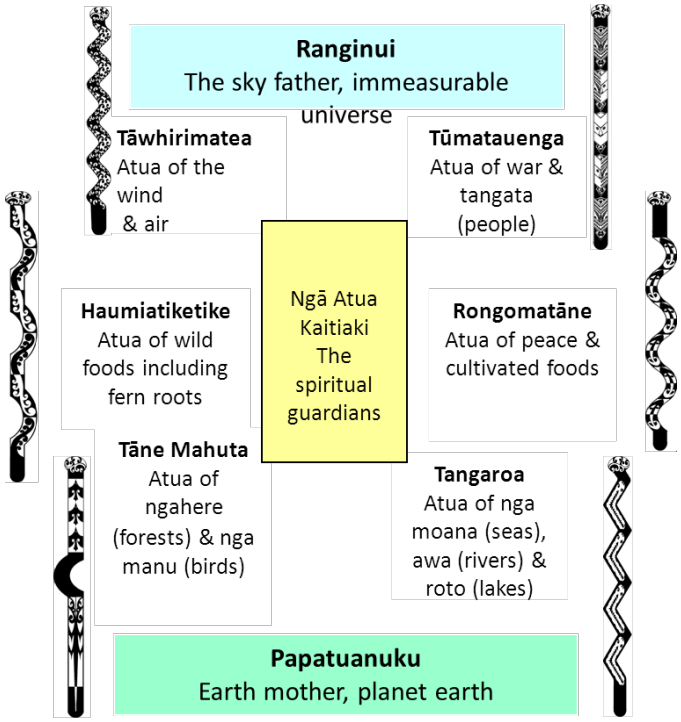
Through their values, Māori make sense of, experience, and interpret their environment (Marsden 1989). Values form the basis for Te Ao Māori (the Māori world view), and provide the concepts, principles, and information to establish significance and to prioritise, eg natural resources, soils, significant cultural sites, significant biodiversity habitats and species, and iconic cultural flora and fauna species. Important examples of Māori values are:

| | |
|---|---|
| *tikanga* | customary practice, values, protocols |
| *whakapapa* | ancestral lineage, genealogical connections, relationships, links to ecosystems |
| *rangatiratanga* | self-determination |
| *mana whenua* | authority over land and resources |
| *whānaungatanga* | family connections |
| *kaitiakitanga* | environmental guardianship |
| *manaakitanga* | acts of giving and caring for |
| *whakakotahitanga* | consensus, respect for individual differences and participatory inclusion for decision making |
| *arohatanga* | the notion of care, respect, love, compassion |
| *wairuatanga* | a spiritual dimension |
| *whānau ora* | a connection between the physical well-being of our natural environment and the physical well-being of our people. |
| *ki uta ki tai* | a whole-of-landscape approach, understanding and managing inter-connected resources and ecosystems from the mountains to the sea |
| *taonga tuku iho* | highly valued taonga passed on from one generation to the next in a caring and respectful manner |
| *te ao tūroa* | inter-generational concept of resource sustainability |
| *mauri* | an internal energy or life force derived from whakapapa, an essential essenceor element sustaining all forms of life. Mauri provides life and energy to all living things, and is the binding force that links the physical to the spiritualworlds (eg wairua). It denotes a health and spirit that permeates through all living and non-living things. All plants, animals, water, and soil possess mauri. Damage or contamination to the environment is therefore damage to or loss of mauri. |
| *ritenga* | the area of customs, protocols, and laws that regulate actions and behavior related to the physical environment and people. Ritenga includes concepts such as tapū (sacred), rāhui (restricted), and noa (relaxed or unrestricted access) to people, communities and natural resources. |

Traditionally, Māori realised that shifts in the *mauri* of any part of the environment, for example through use or degradation, would cause shifts in the mauri of immediately related components. The process used by Māori to guide resource use reflected this belief in the interrelationship of all parts of the environment. All activities and relationships were bound and governed by mythology, tapū and elaborate systems of ritenga.

*Whakapapa* (Roberts et al 2004; Hudson and Ahuriri-Driscoll 2006) follows a sequence beginning with the nothingness, the void, the darkness, to Io-matua-kore (a supreme god), then emerging light, through to the creation of the tangible world, the creation of two primeval parents, Ranginui – the sky father, and Papa-tū-ā-nuku – the earth mother, the birth of their children, such as the wind, the forest and plants, the sea, the rivers, the animals, through to the creation of mankind.

**Figure 5.1 Atua (departmental gods) and their domains**




The two primeval parents, once inseparable, had many children, often termed departmental Ātua (Māori gods), each with supernatural powers (figure 5.1). In a plan carried out by the children to create light and flourish, the parents were prised apart. The separation of the parents led to Ranginui (sky father) forming the sky, resulting in the rain as he continued to weep for his separated wife Papa-tū-ā-nuku (earth mother), and Papa-tū-ā-nuku forming the land to provide sustained nourishment for all her children. As part of this ancestry, a large number of responsibilities and obligations were conferred on Māori to sustain and maintain the well-being of people, communities, and natural resources.

Tikanga is doing something the correct or right way. It is often described as customary protocols, values and traditions that establish behavioural or procedural guidelines for daily life and interaction in Māori culture. Tikanga is based on mātauranga Māori, experience and learning handed down through generations. It is based on logic and common sense associated with a Māori worldview and it is this Māori worldview and belief system that shapes tikanga. It is often specific to iwi/hapū/marae and is integral to developing kawa (protocols and procedures).

Tapū signifies the sacred. It is the state or condition of a person or object, placed under the patronage of the Atua (Barlow 1991; Mead 2003). Accordingly, tapū is the status befitting all elements of the natural

world in recognition of the mauri that exist in them. Recognition of tapū involves an appreciation of and respect for another life force and other life in general (James 1993). Shirres (1982) proposed that tapū is 'being with the potentiality for power... and ...the mana of spiritual powers [the gods]'. All things and people have the potential to be tapū or to exert influence over other things or people.

The restrictions associated with tapū are extensions of the influence used to protect people, places or objects that are or may come into contact with tapū. Tikanga dictated that certain objects and materials used in the transmission of water remained separate from other objects or materials. Those objects used with food were kept separate from other objects, and were not used for other purposes (Awatere et al. 2000). These restrictions were dynamic and could change with time and environment as needed. Tapū placed restrictions on iwi to ensure they developed and maintained the growth of the iwi in the future. The diverse meanings behind tapū are derived from the context in which it is applied (Barlow 1991; Mead 2003; Shirres 1994).

When tapū is applied to diverse places of significance to iwi/hapū, these places are deemed wāhi tapū. The literal translation of wāhi tapū is 'sacred place'. Wāhi tapū are areas that provide physical and emotional links to the ancestors. They signify ahi kaa (the right of occupation and use, literally 'keeping the fires burning') and are sources of identity for some iwi/hapū (Tau et al 1990; Garven et al 1997). There were various types of wāhi tapū: some included burial grounds, others were places for ritual cleansing after battle, others were spiritual qualities linked to medicinal or therapeutic use, or were incidents from the past.

The Māori Heritage Council (NZHPT 2009) identifies a number of types of wāhi tapū as: pā, ko ngā kāinga, ko ētahi ko te pā tūwatawata – villages, raised and fortified, urupā – burial grounds, ngā waka – canoe landing sites, puna – springs, pōhatu – rocks, ana – caves, toka-tū-moana – rocks standing in waterways, maunga – mountains, wāhi horoi tūpāpaku – places where corpses were cleaned and rākau tapū – sacred trees. Hapū and iwi may have varying concepts of wāhi tapū. Only hapū or iwi can determine their particular wāhi tapū, and acknowledge their existence or be considered kaitiaki of them. Furthermore, the NZHPT (2009) recognises the decision-making authority of iwi/hapū with respect to their taonga and have policies in place to support the active and aspirational kaitiakitanga responsibilities of iwi/hapū.

The HNZPTA explicitly adds the conservation of wāhi tūpuna, which can be translated as 'ancestral site', to the system of heritage listings in the Historic Places Act 1993. In the HNZPTA (section 6), a wāhi tūpuna is defined as 'a place important to Māori for its ancestral significance and associated cultural and traditional values (...)'. This concept of Māori heritage encompasses more than wāhi tapū alone, and supports the conservation of sites and areas that are not sacred, but which nonetheless have heritage value to iwi/hapū. Section 66 of the HNZPTA clarifies that the criteria for a site being listed as wāhi tūpuna include: strong traditional associations with one or more significant ancestors; being an integral part of the identity or cultural well-being of the iwi/hapū; being a distinct and cohesive place or area.

Noa is the opposite of tapū. The term reflects the status of people, places or objects free from the restrictions of tapū. When resource growth reached a sustainable level for harvesting, restrictions on the access and use of natural resources such as rāhui were relaxed and replaced with noa (eg Harmsworth et al 2002). Tapū and noa are complementary – one cannot exist without the other. Māori resource management endeavours to achieve a balance between people and the environment through the recognition of ritenga such as tapū, rāhui, and noa (Te Wai-Puanga-Aqua-Rigel 1993; Harmsworth et al. 2002). Water such as waimāori was a common resource used to remove tapū from people and objects. Waimāori is used to remove tapū since it has become ordinary or normal water.

The conclusion is that Māori values are more than (quantifiable) information that feeds into decisions; they govern responsibilities, the relationship tangata whenua have with the environment, and the way iwi/hapū make decisions. These values are dynamic, locally specific, and based on long-standing interactions –

through time and space – between people and their surrounding environment. Consequently, there is no (numerical) scale that is both simple and meaningful, on which the range of these values can be placed.

Including the aspirations of iwi and hapū with mana whenua in planning decisions requires strategic partnerships, in which the role of MCA and CBA methods may be limited. This is not an argument against economic analysis or tools based on quantifiable information, but rather a recognition that, while these can play a role in helping to empower and support communities, other values are also needed for decision making in the spirit of the Treaty of Waitangi.

## 5.3 Culturally appropriate indicators

It is important to develop monitoring programmes that provide a balance in cultural perspectives and take into account mātauranga Māori and western knowledge for different parts of the ecosystem or environment. Since the 1990s a number of cultural monitoring frameworks have been developed to help Māori articulate perceptions of environmental change, environmental health, Māori well-being and culturally appropriate outcomes.

Several iwi/hapū are trialling, testing, and refining cultural monitoring approaches and indicators. A significant benefit of mātauranga Māori-based indicators is the ease with which kaitiaki can connect with them because of their relatedness to an ideology with which kaitiaki are familiar.

It should be clear these approaches are (partially) unique to iwi/hapū and cannot simply be transferred from one transport project to the next. This report can therefore only offer examples, rather than a prescription.

### 5.3.1 Indicators using Atua domains

Tiakina Te Taiao, a kaitiaki group from the Motueka catchment, developed indicators for their planning processes along Ngā Atua domains (see figure 5.1). Each indicator and descriptor represents an ecosystem from Tangaroa (estuarine and river ecosystems) to Tane Mahuta (terrestrial ecosystems) (Harmsworth et al 2011). A Ngā Atua Domains framework for developing indicators has also been adapted by Te Uri o Hau for monitoring the mauri of the Kaipara Harbour (Te Uri o Hau Environs Holdings Trust 2012). Examples of indicators based on the Atua domains are provided in table 5.1.

**Table 5.1 Examples of indicators aligned with Atua domains**

| | |
|---|---|
| **Tangaroa**<br>• Water clarity<br>• Water flow<br>• Water quality<br>• Shape and form of river, riverbank condition,<br>• sediment<br>• Insects<br>• Fish<br>**Tāne Mahuta**<br>• Riparian vegetation<br>• Catchment vegetation<br>• Bird life (species)<br>• Ngahere/taonga<br>• Pests | **Haumia tiketike**<br>• Mahinga kai<br>• Rongoa<br>**Tūmatauenga**<br>• Human activity, use of river<br>• Access<br>• Cultural sites<br>**Tāwhirimātea**<br>• Smell<br>**Mauri/Wairua**<br>• Feeling, taste, well-being |

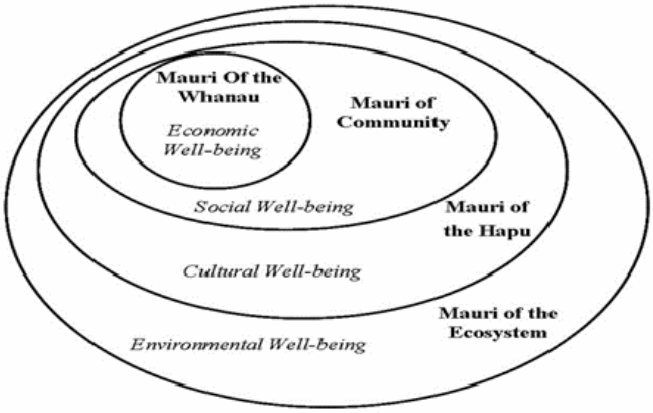
### 5.3.2 Indicators that support mauri

The model was initially developed for engineering purposes by Morgan (2007), but has wide application. Including the concept of mauri in decisions improves their potential contribution to all living things and the connection between the physical and spiritual worlds. Indicators based on mauri can be used to understand the inter-relatedness or inter-connectedness of all living things, and to measure sustainability and well-being.

Mauri-based indicators integrate across the economic, social and cultural dimensions, which are subsets of an environmental dimension. These dimensions are redefined to measure changes in the mauri of four key aspects as shown in figure 5.2: ecosystems (environmental), hapū (cultural), whānau (economic), and communities (social). The relative importance of aspects can be addressed independently by users and decision makers choosing a weighting applied to each aspect before scoring is completed. The aim is to help decision making and understand the impacts on the intrinsic values of ecosystems, and to show the inter-relatedness between sustainability dimensions.

For a given management problem, or transport project, each option can be assessed with respect to the strength of the impact on the mauri of one of the four key aspects (eg strong, weak, none) and whether the suggested practice is, eg highly sustainable (5), a viable practice enhancing the mauri (4), contributing to mauri (3), neutral (2), diminishing the mauri (1), or significantly diminishing the mauri (0).

**Figure 5.2 Key aspects of mauri and mauri- based indicators**




The resulting effect of activities and practices on the mauri will be seen as, for instance, mauri mate (destroyed mauri; –2), mauri noho (diminishing mauri; –1), neutral (+1), mauri mahi (maintaining mauri; +2) or mauri ora/kaha (enhanced mauri; >+2).

Indicators for such a mauri-based assessment share characteristics with an MCA approach, which is favoured, for instance, by the Transport Agency. Transport planners may be tempted to use mauri-derived indicators to assess projects, particularly when evaluating project option that will affect environmental processes (eg water extraction or the improvement or decline in water quality) or the economic, social and cultural context.

Māori planning can co-exist with western planning frameworks. It is important to remember, however, that the use of indicators like these requires the recognition by affected iwi and hapū with mana whenua, in a relationship of developing shared outcomes and aspirations for transport projects. Failure to do so will most likely lead down a path where Māori values, concepts and ideas are co-opted and given new, inappropriate meanings. In the long run, this outcome would likely harm future transport projects.

### 5.3.3 Indicators for a cultural health index

Indicators that contribute to a Māori cultural health index (CHI) assess progress towards or away from shared outcomes. Iwi/hapū are continuing to develop or have developed specific indicators. Variations of a CHI have been proposed: the environmental performance indicator, for instance, is a Māori tohu (sign or indicator) created to gauge, measure or indicate change in an environmental locality (Tipa 1999; Harmsworth 2002).

A CHI can comprise several components, including dichotomous variables (yes/no) (eg does a site have significance to Māori?) and qualitative ordinal rankings (low to high in five steps) for selected (environmental) indicators. Examples of indicators that could feed into a CHI are:

- CHI for streams and rivers
- CHI adapted by Tiakina te Taiao
- a coastal CHI for Te Taitokerau
- CHI for kauri
- CHI for estuaries
- CHI for wetlands
- CHI for marine ecosystems
- state of the Takiwa.

The qualitative nature of the data raises the issue of external validity, whether the results from the study can be generalised beyond the specific research context.

Like mauri-based indicators, context or location-specificity of elements of a CHI means the results from one iwi/hapū rohe do not necessarily apply or relate to other iwi/hapū rohe. While the outputs from a CHI assessment may be incomparable from iwi/hapū to iwi/hapū, however, the method and process of the CHI assessment are applicable, with some adaption, across rohe. Several publications provide in-depth reviews of these Māori monitoring tools/frameworks (Chetham et al 2010; Harmsworth et al 2011; Te Uri o Hau Environs Holdings Trust 2011; Nelson and Tipa 2012).

### 5.3.4 Cultural impact assessments

Cultural impact assessments (CIA) are useful planning tools for incorporating iwi and hapū with mana whenua perspectives into project planning. A CIA identifies Māori cultural values, interests and associations with an area or a natural resource, and the potential impacts of a proposed activity on these (MfE 2013). CIAs are a tool to facilitate meaningful and effective participation of Māori with project planners in the assessment of an infrastructure project or a housing development. A CIA is akin to a technical report provided by an engineer or to a site assessment by an archaeologist. The main objectives of a cultural impact assessment are to: evaluate the cultural risks and benefits associated with various infrastructure options; identify key cultural issues associated with infrastructure options; and provide recommendations on culturally appropriate solutions to address the cultural issues.

CIAs provide technical information that may be in the form of a narrative or a quantitative assessment using the CHI. For Tiakina te Taiao, Horne (2011) assessed the impact of the Ruby Bay Bypass on the associated wetland and estuarine areas based on the values of the iwi and hapū with mana whenua. The framework presented in section 5.3.1 of this report – the Ngā Atua Domains Framework, provided the overarching approach used by Tiakina te Taiao for the assessment of estuarine and wetland areas. For

their assessment, Tiakina Te Taiao adapted the CHI presented in section 5.3.3 of this report for an estuarine ecosystem.

The CIA produced by Tiakina te Taiao was informed by the results of their CHI monitoring over a two-year period. The results from the CHI assessment demonstrated that observations could be made with regard to the impacts from infrastructure development on areas of interest to iwi and hapū with mana whenua utilising a kaupapa Māori approach. CIAs like Tiakina te Taiao's are a useful set of technical information that can provide decision makers with complementary data that can be used alongside other technical reports such as MCAs. CIAs are a useful tool for providing partners with key discussion points to begin a collaborative process for the resolution of issues identified by of iwi and hapū with mana whenua.

## 5.4 Preparing for partnerships with mana whenua

### 5.4.1 Partnerships are key

Many of the indicators and models presented above are complementary to monitoring approaches developed through western knowledge. Some even have characteristics amenable to MCA. The tools presented can be used to assess heritage impacts through a Māori lens, and improve understanding of New Zealand's unique and fragile cultural and physical environment. The use of mātauranga Māori monitoring approaches can stimulate cultural understanding and is more likely to produce outcomes that reflect iwi/hapū aspirations and values. Limits and standards can be used to identify and support values (metaphysical and tangible), activities and uses within a defined area, such as a region, tribal areas, or catchment that can be supported by Māori and non-Māori alike.

It is essential, however, that RCAs should contact affected iwi/hapū in the very early stages of transport project development. When seeking partnerships for a project, the RCA should start from and work within the tikanga of the affected iwi and hapū with mana whenua. The expression of that relationship can take several forms, such as agreed partnership principles, shared outcomes and appropriate indicators.

Significant problems could arise if the RCA were to use mātauranga Māori without a thorough understanding of that knowledge and its meaning. These risks include dispossession of the knowledge from indigenous peoples; fixing in time of dynamic cultural knowledge; and privileging the investigator, scientific community and the bureaucracy over indigenous peoples (Agrawal 1995).

An example of such co-option was found in the RMA when it was initially enacted. The RMA defines kaitiakitanga as the exercise of guardianship, and includes with it the ethic of stewardship. At first, this fundamental Māori principle was co-opted and used generally to help achieve the goals and aspirations of the wider community.[6] 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*

[6] The RMA was modified in 1997 by the addition of 'the ethic of guardianship' to address Māori concerns about the co-option of this concept in wider circumstances.

> *those elements which they believe can be reshaped into a bicultural gloss on the exercise of Pākehā [non-Māori] power* (p8).

Many Māori perceive that their value system has been marginalised, and the role of kaitiaki has been diminished. Strong partnerships can empower Māori perspectives and values in assessing the heritage impacts of transport projects.

### 5.4.2 Partnership examples in transport

For Māori, collaborative processes typically take place within a tikanga- (cultural, values, correct process) based framework that from start to finish guides and orders towards agreed and aspirational outcomes. From a Māori perspective, this is the key to collaborative decision making as it was intended in the Treaty of Waitangi. Robb et al (2015) suggest that this tikanga cycle should start with recognition and respect of the Treaty of Waitangi, which recognises the importance of building strong relationships and partnerships based on Treaty principles from the onset. Early discussion can also define or agree on desired outcomes (e.g. a healthy ecosystem, restoring the mauri of the ecosystem). This is an essential first step to make Crown–Māori relationships meaningful, and provides a basis for on-going dialogue.

In terms of natural resource management, this partnership often begins with some type of co-governance arrangement between key partners or members, such as through signed agreements and accords to work together to achieve a desired or stated outcome or goal(s). Agreements such as the Waikato River joint management agreement and the 'Manawatū Rivers Leaders' Accord' or memoranda of understanding or partnership between councils and local iwi/hapū Māori are examples. These early agreements often reflect the Treaty in some way, and provide both the basis for the development of relationships and collective organisations to achieve a goal(s), and also statements about the responsibilities and expectations of each party.

Crown entities have a duty to recognise the Treaty of Waitangi. More directly, under section 4 of the LTMA, RCAs have a specific requirement to consult or engage with Māori. In addition to this, RCAs have a legal obligation to 'maintain and improve opportunities for Māori to contribute to land transport decision making processes' (LTMA s18H). In a practical sense, this means sharing decision making with Māori as the 'Treaty partner' when identifying priorities for investment and when identifying the best choice of transport system for their communities, both regionally and nationally.

As an example of engagement with iwi, in 2014, the Transport Agency's Regional Office (Auckland/Northland) established two operational engagement forums for Auckland: Iwi Integration Group (IIG) southern and IIG central, north, west. The groups meet monthly with Transport Agency staff as well as the Transport Agency's consultants and contractors responsible for the delivery and maintenance of the state highway network. Overall, the purpose of the forum is to facilitate early engagement, ensure no surprises, and concentrate on engagement for the relationship rather than the issue, which is particularly pertinent to Māori, especially given their partnership status. A manawhenua transport governance forum is also being considered to facilitate strategic conversations with Māori, particularly where it concerns commercial investment and wider training and employment opportunities.

The Transport Agency is planning to develop these initiatives further. One aspect will be a review of its Business Case process to determine right strategic fit for integration of mātauranga Māori. Another aspect is to assess the IIG model initiated in Auckland for adoption in other regions of New Zealand. The implementation of the Manawhenua Transport Governance Forum in Auckland could be another step towards better partnerships.

The Hōkai Nuku Relationship Agreement provides an example of a collaborative process between Crown agencies and iwi/hapū in the Auckland region. Hōkai Nuku is the authorised voice of five iwi and hapū,

with the mana whenua being Ngāti Manuhiri, Ngāti Mauku/Ngāti Kauae, Ngāti Rango, Ngāti Whātua and Ngāti Paoa. Hōkai Nuku was initially formed to collaborate with the Transport Agency on cultural matters arising from the Ara Tūhono – Pūhoi to Wellsford Road of National Significance: Pūhoi to Warkworth Section (*project*). As a Crown agency, the Transport Agency acknowledges its role to achieve the principles of the Treaty of Waitangi; extend the opportunity for Māori to participate in decision making; build Māori capacity to contribute to decision making; and consult with Māori wherever possible on activities that are likely to affect them or their interests. In the Waikato region, the Transport Agency (2015a) is demonstrating its commitment to working collaboratively with Waikato–Tainui to ensure that the interests of all parties are respected throughout the course of the infrastructure project for the entire Waikato Expressway, a commitment that is based on the principles of good faith and meaningful relationships.

The establishment of a Tangata Whenua Working Group has ensured that the interests of iwi and hapū with mana whenua are acknowledged and provided for during the course of the state highway project. This process of a working group provides a space for both of iwi and hapū and the Crown to acknowledge their respective views and is a useful approach for implementing the objectives of a relationship of partners. Tangata Whenua Working Groups have been involved in all stages of the project and also provide essential services such as a Kaitiaki Environmental Impact Assessment. This assessment explores how key sites of significance need to be preserved, what measures the RCAs may need to explore in order to preserve the cultural and heritage elements of this project, and how all stakeholders can ensure the environment is preserved. Other RCAs, such as Auckland Transport and DOC, have developed relationships with iwi using comparable agreement instruments.

# 6 Heritage Economic Benefits Framework

This chapter focuses on the impacts on intrinsic, cultural and intangible values and economic benefits of historic heritage consistently across transport projects. A key component of the Heritage Economic Benefits Framework (HEBF) is an operational tool for evaluating and expressing changes in heritage values and benefits with rich narrative and monetary valuation techniques. The HEBF places the use of the tool within a generic development and delivery cycle of transport projects. The research team attempted to keep the explanation of the HEBF general enough that other transport organisation can place the recommendations in their own processes.

Although the HEBF could potentially be used in partnerships with tangata whenua, it is currently envisaged for interactions with non-Māori communities. Heritage of tangata whenua should be considered in a process parallel to heritage assessments based on the HEBF.

## 6.1 Heritage impacts of transport projects

Because RCAs lack nationally consistent guidance for assessing heritage impacts, the development of transport projects can vary strongly in how heritage impacts are included. Individually, these heritage assessments are suited for purpose and this chapter should not be interpreted as detracting from the work of heritage experts. Across projects, however, their differences cloud the decision making about heritage conservation actions. More transparency and comparability of heritage values supports consistent delivery of value for money in heritage conservation.

This chapter proposes a structured assessment framework that allows the RCAs to distinguish the nature and extent of the heritage impacts of one project option from those of another, and to do so consistently across different projects affecting different types of heritage. That decision making capacity is particularly relevant when heritage conservation options are incremental, but is less relevant when the conservation choice is dichotomous.

The heritage impacts confronting RCAs broadly cover three types. The first are impacts that present critical risks to projects to the extent that not being aware of them is a ‘fatal flaw’ in the project planning process. The HEBF developed in this chapter can help identify such impacts and the stakeholders that would protest against them.

The second type of impact is marginal or incremental in nature, and is relevant where heritage conservation options for a project include, eg demolition, disposal, various changes to the heritage site, or bypassing the site altogether. The various options will have different costs and also different impacts on the fabric, the visual appearance, use and accessibility of the heritage site, as well as its role in the wider region. The HEBF can help RCAs identify and express these impacts, and thus understand which project option offers the best value for money regarding heritage conservation.

It should be noted that RCAs are often required to mitigate negative heritage impacts before their projects are allowed to proceed. Since these expenses are relatively straightforward to estimate but the benefits are not, it is easy to see them purely as costs unrelated to transport. The fact is, however, that these investments contribute to the conservation of heritage values and benefits. The HEBF will help identify and, where possible or desirable, quantify them. With the HEBF, these benefits can be aligned better with other project benefits.

When no legal requirement for conservation or improvement exists, there might still be arguments to make some investment. One is RCAs’ reputational risk and their ‘social licence to operate’. The social

licence to operate essentially means that, if an RCA is seen to make an effort to address community concerns and take a precautionary approach to conserving New Zealand's heritage, this can facilitate the planning and implementation of future projects. This is true for partnerships with iwi/hapū, as well as for other communities.

The second advantage for RCAs of investing in heritage relates to recouping conservation costs through the sale or adaptive re-use of heritage sites. When a minimal conservation effort is made in a project, the post-project state of affected heritage sites or places may well be such that it is difficult to dispose or sell the heritage sites, or turn them to productive use. They may languish on the balance sheet and, through deterioration, pose physical risks to local residents.

The question of how much of its investments an RCA can expect to recoup after projects have been concluded is beyond the scope of this project. For real estate heritage, the answer depends on conditions and expectations in the property market at the time the heritage site is sold or leased. The HEBF does allow an RCA to explore whether there are viable options for the successful sale or lease of acquired heritage sites, and to identify risks to recouping conservation investments when affected heritage structures are not improved.

The third type of heritage impact concerns the unexpected discovery of archaeological remains. Often, but not necessarily, these remains relate to the history of iwi and hapū. Planning not to make unexpected discoveries is impossible by definition. The HEBF emphasises that strategic partnering with iwi (and other stakeholders), rather than relying solely on data sets and experts, can reduce the possibility of an unexpected discovery.

A useful contribution of the HEBF is the development of a language for assessing heritage impacts that is familiar to the development and delivery of transport projects. It can be used in MCA reporting and is based on insights that heritage experts have developed over many years. In this sense, the HEBF can contribute to better understanding and communication between RCA planners, consultants and heritage experts. Better communication can lead to better project development and delivery.

During this project, Steering Group members expressed the wish to have a framework that could be used by all New Zealanders. Considering the differences between the often formalised Western understanding of the world and mātauranga Māori, which is much more flexible and context-specific, the project team deemed it unfeasible to create a unified framework. Instead, the team opted to emphasise parallel engagement with iwi/hapū.

If iwi find relevance in the HEBF or parts of it, however, there is no reason for them not to use or adapt it as they see fit. Otherwise, chapter 5 presents a number of assessment frameworks, which have been used before, that iwi and hapū might use to express how their values are affected by project options.

The following sections outline the steps of the HEBF, distinguishing between historic and Māori heritage impacts where relevant. While some steps draw on existing guidelines for stakeholder engagement, others are developed from the reviews in the previous chapters.

## 6.2 Research report and the Heritage Economic Benefits Framework

### 6.2.1 Elements from the research report

The HEBF is the product of the research steps in chapters 2, 3, 4 and 5. Chapter 2 discusses the differences between the concept of (intrinsic and intangible) value as used by heritage experts and

(intangible and monetary) value, as more suitable for economic analysis. The research group decided to use terminology derived from insights from the field of heritage conservation, for reasons of familiarity.

Chapter 3 discusses definitions of heritage value as proposed by heritage experts and economists. Economists use definitions that are shown in tables 3.1 and 3.2. Definitions of heritage values and benefits suggested by heritage experts and economists are compared in table 3.3. This table suggests there is considerable overlap in the various definitions of heritage values and benefits. A synthesis of heritage values based on those similarities is presented in table 3.4, which forms the basis of the HEBF's aim of structuring discussions about heritage impacts of transport projects. Although in practice, these definitions may not be as clearly delineated as they are presented here, they do support an awareness of overlapping and potentially double-counted values.

Chapter 4 gives an overview of methods to express the value of heritage values and benefits. The overview covers both current and developing practice of heritage experts, including scoring and narratives developed by experts and experts working with communities.

Based on a small set of accessible transport project documents, it was difficult to assess the current practice of translating heritage impacts into values for project option selection through MCA. This suggests that the MCA of heritage impacts are currently not standardised across projects. While this is not necessarily a problem for individual transport projects, it does not help to analyse and the delivery of value for money across projects. Consistent value for money in heritage conservation investments would be easier with comparable and transparent assessments of heritage value.

Monetisation techniques for intangible values were assessed in detail for a number of heritage types and intangible values. Tables 4.1 and 4.2 show combinations of techniques, heritage types and intangible values that are common in monetisation studies. Within the set of combinations found in the literature, monetisation appeared to be a best-practice technique only for some heritage values and benefits, and only for some types of heritage.

Although the sampled economics literature did not provide examples beyond those shown, it should be noted that combinations of heritage types and associations other than those listed in tables 4.1 and 4.2 are possible.

These findings underpin the HEBF's recommendation to use a suite of techniques to quantify (or otherwise express) intrinsic and intangible heritage values. A combination of monetary and non-monetary values sits well with similar indications in the living standards framework (Treasury 2011) and its development into the five factors (Treasury 2012), the 'four wellbeings' (or 'interests') in the Local Government Act 2002, and the wider discussion of New Zealand's strategic policy arenas by Dalziel and Saunders (2014). Furthermore, the HEBF recommends having heritage experts engage with communities to elicit key heritage associations, just like the rich narrative and ecosystem services approaches.

Chapter 5 describes mātauranga Māori frameworks for assessing impacts on heritage values held by iwi/hapū. It also presents progress made by both the Transport Agency and Auckland Transport in developing partnerships with iwi and hapū for project planning. The research team did not think it would be a step forward to formalise mātauranga Māori approaches within the HEBF.

The case studies in appendices C and D and the guidance manual to the HEBF in appendix B illustrate how concluded roading projects engaged with iwi and communities and how the HEBF could have made various heritage values and benefits more explicit.

### 6.2.2 Feedback from practitioners

The development of the HEBF and its key tool component was guided by internal feedback from the project owner and other end-users within the Transport Agency, guidance from the Steering Group, and hui with the Māori liaison persons at the Transport Agency and Auckland Transport.

HNZPT, MCH and the aforementioned Māori liaison teams all suggested that the HEBF as described below is useful primarily for non-listed heritage, or for identifying critical community-held heritage values not captured by expert opinion and available heritage inventories. As the HEBF discusses, however, it can also be used to compare costs and benefits when multiple approaches to mitigating heritage impacts exist.

Transport projects sometimes affect easily identifiable critical heritage, so-called 'fatal flaws'. Examples would be known pa sites or wāhi tapū, or category I listed heritage. If a project affects such critical heritage, the HEBF can provide a common language for RCAs and HNZPT and MCH, but economic analysis of benefits does not apply in these cases.[7] Contact with HNZPT should be sought immediately.

Hui with the Māori liaison persons emphasised that it is essential that contact with iwi is established sooner rather than later. Starting the discussion during the strategic planning of a transport project allows more flexibility than later development phases when experts already have shortlisted project options and incorporating changes to safeguard heritage may be harder. Establishing a partnership with iwi and hapū, where planners and engineers develop outcomes with iwi/hapū and use principles that reflect the Māori world view, will create goodwill and help the project. Having a good reputation for partnerships may also help RCAs in future projects.

It should be noted that early engagement with stakeholders is good practice in general. In fact, developing relationships and creating project ownership for all who are affected is a fundamental part of the HEBF. Creating these relationships and allowing various needs to inform the project process is likely to lead to decisions with which all can agree, thus preventing roadblocks arising in a late stage of the project. Recent history has shown that not being aware of strongly held community values can be a fatal flaw in the process.

Finally, it was suggested that the varied approaches to heritage assessments of transport projects tend to reflect the mild regulatory obligations on RCAs to consider such impacts. In project development, factors like travel times, traffic reliability and road safety are weighted more heavily than environmental or heritage benefits. The latter may even not be considered as a benefit at all. This perception can lead to underinvestment in heritage infrastructure that an RCA may end up owning indefinitely. Where such infrastructure is still in active use, this creates physical risks for the users and legal risks.

Defining benefits that go beyond travel time and reliability and giving them a meaningful weight in the decision is perhaps unfamiliar territory for RCAs. The HEBF nonetheless recommends that heritage benefits are given appropriate weights in project assessments to create transport decisions that 'support economic, social, cultural and environmental well-being' (GPS 2015).

[7] One requirement for assessing alternatives based on economic theory is that there is a plentiful supply of a good, or that substitute goods are available. For wāhi tapū, wāhi tūpuna and category 1 heritage, these assumptions are unlikely to apply. An agreement about acceptable mitigation efforts can still be reached, of course, but it will be an outcome of debate and negotiations, rather than economic rationality.

## 6.3 Heritage Economic Benefits Framework as a tool

The HEBF structures the identification, measurement and valuation of heritage values and benefits in transport projects or strategic infrastructural projects more generally. This section describes how the HEBF can be used as a tool; the next section discusses the HEBF in the wider context of project planning, development and stakeholder engagement processes.

**Table 6.1 Methods for expressing heritage values and benefits**

| Heritage value/benefit | Explanation | Potential indicator | Sources | Quantification method | Appropriate monetary valuation technique (where no technique is recommended, use rich narrative) |
|---|---|---|---|---|---|
| Amenity | The place/space/area is visually attractive and pleasant. | Visual qualities (including context); aspects of heritage place (fabric, material, structure); spatial characteristics | Community; expert | NECAMS (Meurk et al 2012); high-low; numeric scale; monetary unit | Hedonic pricing method |
| Spiritual/cultural | Deeper experience of the place that transcends amenity associations and is distinct from commemorative associations | Presence or strength | Community; online and offline media | Present-absent; high-low | – |
| Bequest | The place is archaeologically or architecturally unique, or represents a historic technological development that is not found elsewhere, and needs to be preserved for future generations | Rarity; threat; integrity; presence or strength | Community; expert; online and offline media | High-low; numeric scale; monetary unit | Stated preference survey |
| Historic education | The place has the potential to be used for formal and informal educational purposes related to history, architecture, science, engineering, technology or design | Student visits; use of the place as an educational example; recognition in literature | Community; expert; online and offline media | High-low; numeric scale | - |
| Commemorative | The place is connected with an event, idea or person that defines the (local, regional or national) community beyond historic educational purposes | Description; presence or strength | Community; expert | High-low; numeric scale | - |
| Associative | The place is an essential element of history and culture in a wider | Description | Expert | – | - |

| Heritage value/benefit | Explanation | Potential indicator | Sources | Quantification method | Appropriate monetary valuation technique (where no technique is recommended, use rich narrative) |
|---|---|---|---|---|---|
| | heritage area | | | | |
| Recreation | Unpaid, intentional use of the place | (Potential) number of visitors | Community; online and offline media | Numeric; monetary unit | Benefits transfer; stated preference survey; travel cost method |
| Tourism | Paid, intentional use of the place | (Potential) revenue | Council; asset management | Monetary unit | Market price method |
| Functional | Paid, intentional use of the place that is not tourism | (Potential) revenue; market prices | Users (business, tourism, residential); market data | Monetary unit | Market price method |
| Other economic | Effects on the wider economy of heritage improvements and/or costs associated with demolition/disposal | Cost; tax revenues; employment; indirect effects | Council; market data; economic modelling | Monetary unit; number of jobs; market price method | Market price method; avoided costs |

Table 6.1 brings together table 3.4 and the insights from chapter 4 and feedback received during the project. The first column provides a list of heritage values and benefits that might apply to heritage areas, sites and items. The second column describes the heritage values and benefits. The third and fourth columns suggest indicators for the values and benefits with potential sources to find information. In the fifth and sixth column are methods to quantify values and benefits and, where possible, estimate their monetary value.

The 'amenity' value captures the aesthetics of heritage. Amenity value is experienced when the heritage area, site or item is seen, but this definition excludes intentional visits. Indicators focus on visual qualities, where both experts and communities can provide information. A range of quantification options is available, and monetary valuation is possible.

'Spiritual/cultural' value is present when individuals or communities attach a deeper (eg ethical, philosophical or religious) meaning to heritage. Whereas many heritage areas and sites with high bequest values are known, it is not certain that such lists are complete. The recommended indicator is the presence or absence of this value, although potentially the strength or intensity of the spiritual/cultural value or the number of people that hold it could be alternative indicators. The local community and various media can indicate whether this value applies to affected heritage. There is no monetary valuation technique that can be used for this value.

The 'bequest' value applies to heritage that should be preserved for posterity. It is likely that heritage sites with high bequest values are listed as category 1 sites or are present on other heritage listings. Potential indicators are the rarity of the heritage, the degree to which it is at risk of being lost (locally, regionally and nationally), the integrity of the heritage in terms of its original condition. Other indicators would measure the extent to which local communities hold bequest value. Experts, communities and media can provide information whether this value is relevant. A range of quantification methods exist, and it is possible to apply monetary valuation to this heritage value.

Heritage has 'historic education' value when it has the potential to educate or more generally raise awareness about aspects of New Zealand's culture and history. Heritage may be a part of education curricula or may be mentioned in the media; a council using heritage for promotional purposes could be placed here. Indicators cover both formal and informal education, and sources include communities, experts and media. Methods for quantification are available, but estimating monetary values is not recommended.

A 'commemorative' value stems from a site's association with historic events, processes or people that provides groups with a sense of identity and continuity. The recommended indicator is the presence or absence of this value. The strength or intensity of the commemorative value or the number of people that hold it could be alternative indicators. Local communities and media can indicate whether this value applies to affected heritage. There is no recommended monetary valuation technique for this value.

The 'associative' value is present when the degradation or loss of a heritage site diminishes intrinsic and intangible values of a wider heritage area. Heritage experts can provide the arguments whether and to what extent the associative value is affected by project options.

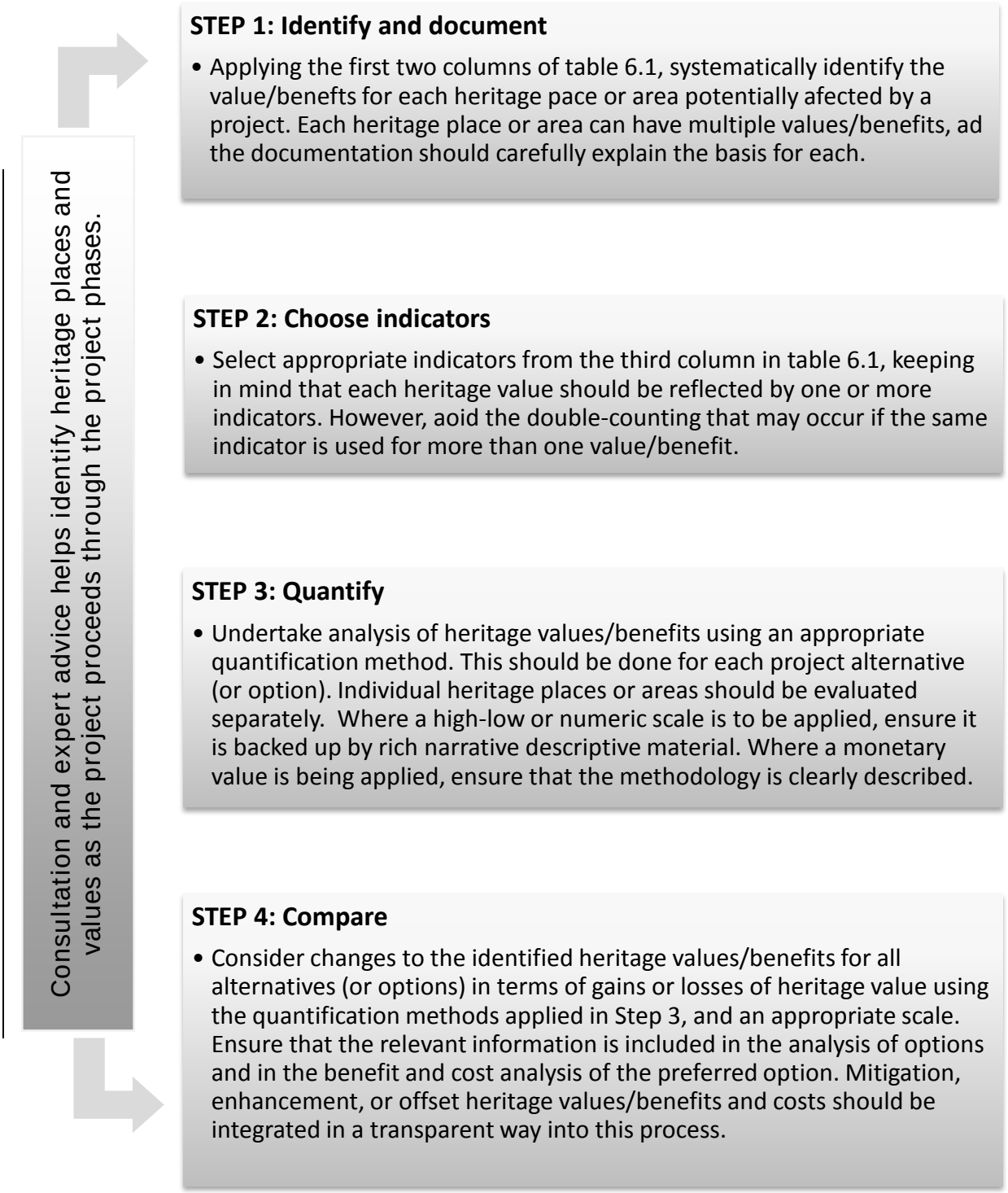
The final entries in table 6.1 have strong characteristics of economic benefits (as shown in section 4.3). The 'recreation' benefit is different from the amenity value in that recreation is intentional. The number of recreational visitors is a straightforward indicator for which communities and media can provide information. Various techniques exist to estimate a monetary value for recreation benefits.

The next two benefits, 'tourism' and 'functional' allow RCAs to investigate their ability to capture some of the increase in heritage value from a conservation investment they choose to make. A tourist destination

that is difficult to get to might be made more accessible as part of a project, and a steady stream of fees would enable an RCA to recoup some of the investment. Renovating a historic building can increase its attractiveness to businesses and other tenants (eg Rypkema 2015a). Estimates of potential users and revenues can be collected from councils, property managers or market data. This market information can be used to estimate the monetary value of these benefits.

The final economic benefit is 'other economic' and can indicate a situation when improving heritage can attract additional investment, provide access to an area, or stimulate the economy via indirect effects (eg Rypkema 2005; 2015a; 2015b). 'Other economic' benefits can also be directly related to project options. For instance, demolishing a building and removing the rubble as well as payments when heritage is disposed of may create significant expenditures. Heritage conservation may create smaller expenditures and thus diminish the overall costs of a project. Costs and project-related expenditures are likely to arise when projects are developed, and wider economic effects can be indicated with employment or changes in the local economy and tax revenues. Market prices and avoided costs can provide monetary value estimates.

**Figure 6.1 Steps for using the HEBF as a tool**




There are four steps to follow when using the HEBF as a tool (figure 6.1), which follow the structure of table 6.1. The first step is to identify heritage values and benefits that apply to the various heritage areas, sites and items affected by a project. Each heritage area, site or item can have one or more values or benefits. While the values and benefits have been defined to be mutually exclusive, in practice the distinctions will be more fluid.

For instance, a site that has spiritual/cultural value is likely to have bequest value as well. In such cases, table 6.1 provides a structure for choosing one (eg strongly held) value or benefit to capture the values and benefits that are hard to separate. This prevents double counting values and benefits. Documentation should be provided which other values or benefits are included. When a heritage site has both spiritual/cultural value and generates tourism benefits as well, these can be clearly distinguished and assessed separately.

The second step is to choose indicators for each heritage value or benefit. The suggestions are not exhaustive and it is recommended to identify appropriate indicators with stakeholders. While it is acceptable to have multiple indicators for one value or benefit (eg when the value is composed of multiple aspects), care should be taken that each indicator is used for one value or benefit only. To manage the complexity of the problem, however, it is better to limit the number of indicators for each key value or benefit. This maintains the clarity of the assessment and limits the amount of data that needs to be collected from various sources.

The suggested methods to articulate heritage values and benefits combine qualitative, quantitative and monetisation approaches. This is intentional, as there are no recommended monetisation techniques for several intangible heritage values, and intrinsic values often do not need be quantified. If communities strongly hold intrinsic or intangible values, addressing their concerns early on can help prevent costly litigation and delays in later stages. Numeric or scaled indicators fit the MCA approach better than qualitative or descriptive indicators, but the latter should not be disregarded as a rule.

The third step is to express heritage values and benefits for each project option. For instance, avoiding a heritage site, mitigating project impacts, or restoring and adapting heritage for post-project use are likely to affect (the indicators of) heritage values and benefits differently. Where numerical indicators are chosen, the rich narrative approach (described in section 4.1) can provide the argumentation for the scores. This process and the outcomes should be documented. For monetary valuation estimates, the methodology should be clearly reported as well.

The fourth step is to compare the indicator scores (qualitative, numerical or monetary) for various project options. The difference and overall outcomes provide the rationale for deciding on a preferred course of action for the heritage affected by the project. One project option may have lower costs but cause disproportionately high losses in the value of the heritage values and benefits. Conversely, another option may be significantly more expensive without improving values and benefits. This comparison of heritage conservation alternatives should be clearly documented.

Involving communities along with experts in this comparison is advisable. Communities may perceive heritage values that an expert assessment may overlook, and can help avoid undesirable outcomes for them and RCAs. Moreover, it creates community ownership of the final decision.

## 6.4 Heritage Economic Benefits Framework in projects

This section summarises the HEBF. Appendix B describes in more detail how the HEBF can be used in various development and delivery phases of transport projects. Appendices C and D provide retrospective illustrations from Transport Agency projects.

There is no objection per se to use the HEBF in partnerships when iwi and hapū think this is appropriate, but it was not developed with the intention of doing so. Partnerships with iwi and hapū should be built on an understanding and respect for mātauranga Māori. Chapter 5 of this research report and appendix B provide a background to the Māori worldview and examples of how mātauranga Māori has been used to

provide information for decision making. This may be useful in preparing for partnerships and the conversations about heritage impacts and their mitigation.

When considering the strategic argument for a transport project, the main course of action is to establish contact with relevant tangata whenua groups, HNZPT and other heritage interest groups, and local communities. The aim is to identify affected heritage areas, sites or items and particularly heritage that is likely to generate discussion if impacted upon. Although specialist advice may be needed at this point, a detailed analysis of heritage values and benefits is not needed. The HEBF can serve as a starting point for the conversations, and the preliminary benefit cost analysis can include items for strongly held heritage values and benefits that are at risk.

When screening projects, a shortlist of project options is made. Further heritage areas, sites or items may be included at this stage. A first assessment of project options, their impacts on heritage and the costs and benefits of mitigating this impact is conducted. The HEBF can be used to systematically assess the heritage values and benefits generated by the identified heritage sites, and to express, quantify or monetise the negative and positive impacts of project options and preliminary impact mitigation. Cultural impact assessment and specialist advice are likely to be required at this stage. Heritage values and benefits that are monetised should be included in the benefit cost analysis, along with the costs of any impact mitigation actions. Heritage outcomes should be suitably emphasised when evaluating the overall benefit cost outcome for the project.

Assessing delivery variations for the selected project option involves obtaining statutory approvals, creating more certainty around project costs and identifying benefits that either help with approvals or which can offset project costs. From its use in the previous development stages, the HEBF will have provided much of the needed information. Where possible, heritage values and benefits should be quantified. Qualitative and quantitative information should be developed using a Rich narrative approach and documented clearly. Further studies may improve insights, but their cost should be proportionate to the heritage values at risk and the expected additional insight.

During the project delivery/pre-implementation phase, the HEBF can be used to further refine the project and to address new heritage impacts that arise during this stage. The HEBF can also support ongoing project decisions.

## 6.5 Summary

The HEBF can identify heritage values and benefits, and help evaluate heritage conservation outcomes for project options. It combines insights from heritage conservation with economics and monetary valuation techniques. The use of the HEBF changes with project stages and emphasises building partnerships with tangata whenua based on mātauranga Māori.

The HEBF explicitly allows for non-monetary expressions of heritage values. This reflects the conclusion from the literature review in section 4.3: robust monetary valuation estimates are possible only for a few select intangible heritage values. In cases where monetary estimates are not possible, the HEBF recommends using a rich narrative approach to provide the documentation for heritage assessments. Heritage outcomes should be suitably considered in the overall evaluation of project options.

This combination of qualitative, quantitative and monetary indicators fits with similar suggestions in The Treasury (2011) and The Treasury 2012), the Local Government Act 2002, and the wider discussion of New Zealand's strategic policy arenas by Dalziel and Saunders (2014).

While the HEBF adds a further element to project planning, the benefits of using it – and giving stakeholders ample room to discuss heritage impacts – can be significant. An important element of the HEBF is the engagement and discourse about projects. It aims to support a common language between experts and planners. Furthermore, the emphasis on stakeholder involvement decreases the risk of project delays and litigation by creating ownership of project decision for affected communities.

It will likely require some time to develop experience with the HEBF and use it to its full potential. In time, RCAs will be in a position to more objectively determine appropriate mitigation efforts for the heritage impacts of future projects.

# 7 References


Agrawal, A (1995) Dismantling the divide between indigenous and scientific knowledge. *Development and Change 26,* no.3: 413–439.

Alessa, L, A Kliskey and G Brown (2008) Social–ecological hotspots mapping: spatial approach for identifying coupled social–ecological space. *Landscape and Urban Planning 85*, no.1: 27–39.

Allan, C, A Grimes and K Kerr (2013) *Value and culture: an economic framework*. Wellington: Ministry for Culture and Heritage – Manatū Taonga.

Archaeological Services (2012) *Cultural heritage assessment report: built heritage resources and cultural heritage landscapes. Existing conditions – assessment of impacts report. Improvements to Highway 8 - Bond Street to Park Avenue study*. Prepared for City of Hamilton, Ontario, Canada.

Arrow, K, R Solow, P Portney, E Leamer, R Radner and H Schuman (1993) *Report of the NOAA Panel on Contingent Valuation.* National Oceanic and Atmospheric Administration.

Auckland Council Chief Economist Unit (2013) *Cost benefit analysis primer*. Auckland: Auckland City Council.

Avrami, E, R Mason and M De la Torre (2000) *Values and heritage conservation: research report*. Los Angeles: The Getty Conservation Institute.

Awatere, S; M Ihaka and D Harrison (2000) *Tangata Whenua perspectives of wastewater*. A report prepared for the Gisborne District Council.

Barlow, C (1991) *Tikanga whakaaro: key concepts in Māori culture*. Auckland: Oxford University Press.

Barrena, J, L Nahuelhual, A Báez, I Schiappacasse and C Cerda (2014) Valuing cultural ecosystem services: agricultural heritage in Chiloé island, southern Chile. *Ecosystem Services 7*: 66–75.

Battiste M and J Henderson (Eds) (2000) *Protecting indigenous knowledge and heritage: a global challenge*. Saskatoon: Purich Publishing.

Beltrán, E and M Rojas (1996) Diversified funding methods in Mexican archeology. *Annals of Tourism Research 23*, no.2: 463–478.

Best, E (1942) Forest law of the Māori. *Dominion Museum Bulletin no.14 and Polynesian Society memoir no.1*8. Auckland.

Bogaards, R (2008) Cost benefit analysis and historic heritage regulation. Address to the *Department of the Environment and Water Resources Workshop 'The Economics of Heritage: integrating costs and benefits of heritage into government decision making*', Canberra, 11 October 2007.

BOP Consulting (2012) *Measuring the economic benefits of arts and culture: practical guidance on research methodologies for arts and cultural organisations*. London: Arts Council England.

Bostedt, G and T Lundgren (2010) Accounting for cultural heritage – a theoretical and empirical exploration with focus on Swedish reindeer husbandry. *Ecological Economics 69*, no.3: 651–657.

Boyd, J and S Banzhaf (2007) What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics 63*: 616–626.

Brander, LM (2013) *Guidance manual on value transfer methods for ecosystem services*. Nairobi: UNEP-DEPI (United Nations Environmental Programme – Department of Environmental Policy Implementation).

Brouwer, R, LM Brander, O Kuik, E Papyrakis and IJ Bateman (2013) *A synthesis of approaches to assess and value ecosystem services in the EU in the context of TEEB*. Amsterdam: Institute for Environmental Studies.

Buck, P (1950) *The coming of the Māori*. Wellington: Māori Purposes Fund Board.

Chetham, J, T Shortland, P Nuttall and A Newell (2010) *Māori cultural environmental monitoring stocktake*. Opua: Repo Consultancy report for the Ministry for the Environment.

Crossman, ND, B Burkhard, S Nedkov, L Willemen, K Petz, I Palomo, EG Drakou, B Martín-Lopez, T McPhearson, K Boyanova, R Alkemade, B Egoh, MB Dunbar and J MaesJ (2013) A blueprint for mapping and modelling ecosystem services. *Ecosystem Services 4*: 4–14.

Daily, G (1997) *Nature's services: societal dependence on natural ecosystems*. Washington DC: Island Press.

Dalziel, P and C Saunders (2014) *Wellbeing economics: future directions for New Zealand*. Wellington: Bridget Williams Books.

Daniel, TC, A Muhar, A Arnberger, O Aznar, JW Boyd, KMA Chan, R Costanza, T Elmqvist, GG Flint, PH Gobster, A Grêt-Regamey, R Lave, S Muhar, M Penker, RG Ribe, T Schauppenlehner, T Sikor, I Soloviy, M Spierenburg, K Taczanowska, J Tam and A von der Dunk (2012) Contributions of cultural services to the ecosystem services agenda. *Proceedings of the National Academy of Sciences 109*, no.23: 8812–8819.

de Groot, RS, MA Wilson and RMJ Boumans (2002) A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics 41P*: 393–408.

de la Torre, M (Ed) (2002) *Assessing the values of cultural heritage: research report*. Los Angeles CA: The Getty Conservation Institute.

Deloria, B, K Foehner and S Scinta (Eds) (1999) S*pirit and reason: The Vine Deloria, Jr reader*. Fulcrum Publishing.

Department for Transport and Highways Agency (2015) *A303/A358/A30 Corridor feasibility study summary*. London: Department for Transport and Highways Agency. 20pp.

Donaghey, S (2006) *Valuing our place: A critical exploration of frameworks for assessing the significance of New Zealand's historic heritage*. Auckland: Massey University.

Dümcke, C and M Gnedovsky (2013) *The social and economic value of cultural heritage: literature review*. EENC paper. Berlin and Moscow.

English Heritage (1997) *Sustaining the historic environment: new perspectives on the future*. London: English Heritage.

English Heritage (2008) *Conservation principles, policies and guidance*. London: English Heritage.

EPA-SAB (2009) *Valuing the protection of ecological systems and services: a report of the EPA Science Advisory Board*. Washington DC: United States Environmental Protection Agency.

Ernst & Young (2014) *Creating public value: transforming Australia's social services.* Accessed 29 July 2016. www.ey.com/AU/en/Industries/Government---Public-Sector/EY-creating-public-value

Fisher, B and RK Turner (2008) Ecosystem services: classification for valuation. *Biological Conservation 141*: 1167–1169.

Fisher, B, RK Turner and P Morling (2009) Defining and classifying ecosystem services for decision making. *Ecological Economics 68*: 643–653.

Foley, JA, R DeFries, GP Asner, C Barford, G Bonan, SR Carpenter, FS Chapin, MT Coe, GC Daily, HK Gibbs, JH Helkowski, T Holloway, EA Howard, CJ Kucharik, C Monfreda, JA Patz, IC Prentice, N Ramankutty and PK Snyder (2005) Global consequences of land use. *Science 309*: 570–574.

Foley, JA, N Ramankutty, LA Brauman, ES Cassidy, JS Gerber, M Johnston, ND Mueller, C O'Connell, DK Ray, PC West, C Balzer, EM Bennett, SR Carpenter, J Hill, C Monfreda, S Polasky, J Rockstrom, J Sheehan, S Siebert, D Tilman and DPM Zaks (2011) Solutions for a cultivated planet. *Nature 478*, no.7369: 337–342.

Garven P, M Nepia, H Ashwell (1997) *Te Whakatau Kaupapa o Murihiku: Ngai Tahu resource management strategy for the Southland region*. Christchurch, Aoraki Press.

Gibson, L (2008) In defence of instrumentality. *Cultural Trends 17*, no.4: 247–257.

Gibson, L and J Pendlebury (Eds) (2009) *Valuing historic environments*. Farnham, UK: Ashgate.

Grabow, S and JS WalkerS (in press) Inclusivity and multivocality in socio-political archaeologies and culture heritage management: reflections, trends, and tensions. Heritage & Society.

Harmsworth, G, T Warmenhoven, P Pohatu, M Page (2002). *Waiapu catchment report: maori community goals for enhancing ecosystem health TWWX0001*. Lincoln: Landcare Research Report LC0102/100.

Harmsworth, G, L Dixon and S Awatere (2011) *Review paper: improved reporting tools – Māori cultural monitoring approaches throughout Aotearoa*.

Henare, M (1988) *Ngā tikanga me ngā ritenga o te ao Māori: standards and foundations of Māori society.* Report of the Royal Commission on Social Policy, Wellington.

Henare, M (2001) Tapu, mana, mauri, hau, wairua. A Māori philosophy of vitalism and cosmos. Indigenous traditions and ecology. Pp197–221 in JA Grimm (Ed) *Indigenous traditions and ecology: the interbeing of cosmology and community*. Cambridge, Massachusetts: Harvard University Press for the Centre of the Study of World Religions, Harvard Divinity School.

Hernández-Morcillo, M, T Plieninger and C Bieling (2013) An empirical review of cultural ecosystem service indicators. *Ecological Indicators 29*: 434–444.

Hewison, R and J Holden (2006) *Public value as a framework for analysing the value of heritage: the ideas.* London: The Public Values of Heritage Proceedings of the London Conference.

Hewison, R and J Holden (2014) *Turbulent times: the prospects for heritage*. Presentation for the Heritage Lottery Fund.

Highways Agency, Transport Scotland, Welsh Assembly Government and The Department for Regional Development Northern Ireland (2007) *Design manual for roads and bridges. Cultural heritage. HA 208/07. Volume 11, section 3, part 2*. London.

Holden, J (2005) Capturing cultural value: How culture has become a tool of government policy. *Cultural Trends 14*, no.1: 113–128.

Horne, D (2011) *Estuarine cultural health indicators Ruby Bay bypass*. Nelson, Tiakina te Taiao report for the NZ Transport Agency.

Hudson, M and A Ahuriri-Driscoll (2006) A Māori ethical framework: the bridge between tikanga Māori and ethical review. In *Proceedings of Matauranga Taketake, Traditional Knowledge Conference on*

*Indigenous Indicators of Well-being: Perspectives, Practices, Solutions. Nga Pae o te Maramatanga*, Auckland: 23–28.

Hughes, R (2010) *The issue of landscape: achieving consistency and clear direction for the identification and management of landscape values*. Tauranga: Presentation at the RMLA-LGNZ seminar.

ICOMOS Australia (2013a) *The Burra Charter: the Australian ICOMOS Charter for Places of Cultural Significance*. Revised ed. Burwood, Australia: ICOMOS. Accessed 1 August 2016. http://australia.icomos.org/publications/charters/

ICOMOS Australia (2013b) *Practice note: understanding and assessing cultural significance*. Version 1. Burwood, Australia: ICOMOS. Accessed 1 August 2016. http://australia.icomos.org/publications/charters/

ICOMOS New Zealand (2010) *ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value*. Revised ed. Accessed 1 August 2016. www.icomos.org.nz/nzcharters.htm

Jackson, M (1992) The colonization of Māori philosophy. In *Justice, ethics and New Zealand society*. G Odie and R Perret (Eds). Auckland: Oxford University Press.

James, B (1993) *The Māori relationship with the environment*. Wellington: Department of Conservation.

Kelly, M (2000) Building a case: assessing significance. In *Common ground: heritage and public places in New Zealand*. A Trapeynick (Ed). Dunedin: Otago University Press.

Lindsay, S and R Damania (2000) Valuing New Zealand recreational fishing: an assessment of the validity of contingent valuation methodology. Paper presented to *44th Annual Conference of the Australian Agricultural and Resource Economics Society*, Sydney, 23–25 January 2000.

Luck, GW, KMA Chan, UTA Eser, E Gómez-Baggethun, B Matzdorf, B Norton and BM Potschin (2012) Ethical considerations in on-ground applications of the ecosystem services concept. *BioScience 62*, no.12: 1020–1029.

Marsden, M (1989) *Resource management law reform: part A, The natural world and natural resources, Māori value systems & perspectives: part B, Water resources and the Kai Tahu claim*. Working paper 29. Wellington: Ministry for the Environment.

Marsden, M and M King (1975) God, man and universe: a Māori view. Pp 191–212 in *Te Ao Hurihuri: the world moves on.* M King (Ed). Wellington: Hicks Smith & Sons.

Mason, R (1999) Economics and heritage conservation: concepts, values, and agendas for research. Pp 2–18 in *Economics and heritage conservation.* R Mason (Ed). Los Angeles CA: Getty Conservation Institute.

Mattinson, D (2006) The value of heritage: What does the public think? In *Capturing the public value of heritage*. K Clark (Ed). UK, London.

Matunga, H (2000) Decolonising planning: the Treaty of Waitangi, the environment and a dual planning tradition. In: P Memon and H Perkins (eds.) *Environmental planning and management in New Zealand*. Palmerston North: Dunmore Press.

McCauley, DJ (2006) Selling out on nature. *Nature 443*, no.7107: 27–28.

Mead, HM (2003) *Tikanga Māori: living by Māori values*. Wellington: Huia.

Mead, HM and N Grove (2001) *Ngā pepeha a ngā Tipuna*. Wellington: Victoria University Press.

Meurk, CD, RH Watts, SR Swaffield and S Awatere (2012) *A natural environment cultural asset management system for New Zealand's state highway network: towards a practical concept and application.*

Ministry for the Environment (MfE) (2013) *Consent support: FAQs about cultural impact assessments*. Wellington: MfE.

Millennium Ecosystem Assessment (MEA) (2003) *Ecosystems and human well-being: a framework for assessment.* Washington DC: Island Press.

Millennium Ecosystem Assessment (MEA) (2005) *Ecosystems and human well-being: synthesis*. Washington DC: Island Press.

Ministry for Culture and Heritage (MCH) (2004) *Policy for government departments' management of historic heritage 2003*. Wellington: MCH.

Moore, MH (1995) *Creating public value: strategic management in government*. Cambridge, M: Harvard University Press.

Morgan, TKKB (2007) Waiora and cultural identity: water quality assessment using the mauri model. *AlterNative 3*, no.1: 44–69.

Mourato, S and M Mazzanti (2002) *Economic valuation of cultural heritage: evidence and prospects in assessing the values of cultural heritage*. Los Angeles CA: The Getty Conservation Institute.

Muradian, R, M Arsel, L Pellegrini, F Adaman, B Aguilar, B Agarwal, E Corbera, D Ezzine de Blas, J Farley, G Froger, E Garcia-Frapolli, E Gómez-Baggethun, J Gowdy, N Kosoy, JF Le Coq, P Leroy, P May, P Méral, P Mibielli, R Norgaard, B Ozkaynak, U Pascual, W Pengue, M Perez, D Pesche, R Pirard, J Ramos-Martin, L Rival, F Saenz, G Van Hecken, A Vatn, B Vira and K Urama (2013) Payments for ecosystem services and the fatal attraction of win-win solutions. *Conservation Letters 6*, no.4: 274–279.

Nahuelhual, L, A Carmona, P Laterra, J Barrena and J Aguayo (2014) A mapping approach to assess intangible cultural ecosystem services: the case of agriculture heritage in Southern Chile. *Ecological Indicators 40*: 90–101.

Navrud S and R Ready (2002) *Valuing cultural heritage: applying environmental valuation techniques to historic buildings, monuments and artifacts*.Northampton (MA), Edward Elgar.

Nelson, K and G Tipa (2012) *Cultural indicators, monitoring frameworks & assessment tools*. Report for the Wheel of Water Research Programme.

New Zealand Historic Places Trust – Pouhere Taonga (NZHPT) (2007a) *Assessment criteria to assist in the identification of historic heritage. Sustainable management of historic heritage guidance series: information sheets*. Wellington: NZHPT.

New Zealand Historic Places Trust – Pouhere Taonga (NZHPT) (2007b) *Sustainable management of historic heritage guide no. 3. District plans*. Wellington: NZHPT.

New Zealand Historic Places Trust – Pouhere Taonga (NZHPT) (2009) *Tapuwae: a vision for places of Māori heritage*. Wellington: NZHPT.

NZ Transport Agency (2007) *Planning policy manual*. Version 1. Wellington: NZ Transport Agency.

NZ Transport Agency (2013a) *Peka Peka to Otaki Expressway. Volume 2. Assessment of environmental effects*. Wellington: NZ Transport Agency.

NZ Transport Agency (2013b*) Economic evaluation manual*. First edition, amendment 0. Wellington: NZ Transport Agency.

NZ Transport Agency (2014a) *State highway environmental and social responsibility screen: explanation June 2014*. Wellington: NZ Transport Agency.

NZ Transport Agency (2014b) *Procurement manual*. Accessed 19 August 2016. www.nzta.govt.nz/resources/procurement-manual/procurement-manual.html

NZ Transport Agency (2015a*) Tangata whenua – kaitiakitanga*. Accessed 29 September 2015. www.nzta.govt.nz/projects/waikato-expressway/huntly/tangata-whenua-kaitiakitanga/

NZ Transport Agency (2015b) *Historic heritage impact assessment guide for state highway projects*. Version 2.6. Wellington: NZ Transport Agency.

NZ Transport Agency and Wellington Tunnels Alliance (2011) *Mount Victoria to Cobham Drive study*. Scoping report. Wellington: NZ Transport Agency.

Ngā Kaitūhono (2012) *Conversations on mātauranga Māori*. Wellington: New Zealand Qualifications Authority.

Nijkamp, P (2012) Economic valuation of cultural heritage. In *The economics of uniqueness: historic cities and cultural heritage assets as public goods*. GA Licciardi and R Amirtahmasebi (Eds). Washington DC: World Bank.

Noonan, DS (2003) Contingent valuation and cultural resources: a meta-analytic review of the literature. *Journal of Cultural Economics 27*, no.3–4: 159–176.

O'Brien, D (2010) *Measuring the value of culture: a report to the Department for Culture, Media and Sport*. London: DCMS.

Oleson, KLL, KLL Barnes, LM Brander, TA Oliver, I van Beek, B Zafindrasilivonona and P van Beukering (2015) Cultural bequest values for ecosystem service flows among indigenous fishers: a discrete choice experiment validated with mixed methods. *Ecological Economics 114*: 104–116.

Plieninger T, C Schleyer, H Schaich, B Ohnesorge, H Gerdes, M Hernandez-Morcillo, C Bieling (2012) Mainstreaming ecosystem services through reforemed European agricultural policies. *Conservation Letters 5*: 281-288.

Provins, A, P Pearce, E Ozdemiroglu, S Mourato and S Morse-Jones (2008) Valuation of the historic environment: the scope for using economic valuation evidence in the appraisal of heritage-related projects. *Progress in Planning 69*, no.4: 131–175.

Rama, M (2012) Investing in the sense of place: the economics of urban upgrading projects with a cultural dimension. In *The economics of uniqueness: historic cities and cultural heritage assets as public goods*. GA Licciardi and R Amirtahmasebi (Eds). Washington DC: World Bank.

Riganti, P and P Nijkamp (2007) Benefit transfer of cultural values: Lessons from environmental economics. *Zeitschrift für Umweltpolitik und Umweltrecht – Journal of Environmental Policy and Law 2*: 135–148.

Robb, M, G Harmsworth and S Awatere (2015) *Māori values and perspectives to inform collaborative processes and planning for freshwater management.*

Roberts, M, B Haami, R Benton, T Satterfield, MT Finucane and M Henare (2004) Whakapapa as a Māori mental construct: some implications for the debate over genetic modification of organisms. *Contemporary Pacific 16*, no.1: 1–28.

Rolfe, J and J Windle (2003) Valuing the protection of aboriginal cultural heritage sites. *Economic Record 79*, (Special Issue): S85–S95.

Rypkema, D (2005) *The economics of historic preservation: a community leader's guide.* 2nd ed. Washington, DC: National Trust for Historic Preservation.

Rypkema, D, C Cheong and R Mason (2011*) Measuring economic impacts of historic preservation: a report to the Advisory Council on Historic Preservation*. Washington DC.

Rypkema, D (2015a) Heritage conservation and the economic benefits to Auckland. Presentation at Auckland Conversations, Auckland.

Rypkema, D (2015b) Heritage and the economy. Wellington: Presentation to the Wellington Civic Trust.

Sagoff, M (2008) On the economic value of ecosystem services. *Environmental Values 17*, no.2: 239–257.

Sayman, S and A Onculer (2005) Effects of study design characteristics on the WTA-WTP disparity: a meta analytical framework. *Journal of Economic Psychology 26*, no.2: 289–312.

Shirres, MP (1982) Tapu. *Journal of the Polynesian Society 91*, no.1: 29–51.

Stephenson J (2005) *Values in space and time: a framework for understanding and linking multiple cultural values in landscapes*. University of Otage PhD thesis.

Stephenson, J (2008) The cultural values model: an integrated approach to values in landscapes. *Landscape and Urban Planning 84*, no.2: 127–139.

Szücs L, U Anders and R Bürger-Arndt (2015) Assessment and illustration of cultural ecosystem services at the local scale – a retrospective trend analysis. *Ecological Indicators 50*: 120–134.

Tau, T, A Goodhall, D Palmer, R Tau (1990) The Whakatau Kaupapa, Ngai Tahu resource management strategy for the Canterbury Region. Christchurch: Aoraki Press.

Te Uri o Hau Environs Holdings Trust (2011) *Assessing the mauri of the Kaipara*. Prepared for Manaaki Whenua Landcare Research.

Te Uri o Hau Environs Holdings Trust (2012) *Assessing the mauri of the Kaipara: phase 2 – developing a monitoring framework for Te Uri o Hau.*

Te Wai-Puanga-Aqua-Rigel (1993). *Planning in waste management: te whakaari o takitimu; Guidelines for Māori*. Wellington: Ministry for the Environment.

TEEB (2008) *The economics of ecosystems and biodiversity: an interim report*. Brussels: European Communities.

TEEB (2010a) *The Economics of Ecosystems and Biodiversity: ecological and economic foundations*. London: Earthscan.

TEEB (2010b) *Mainstreaming the economics of nature: a synthesis of the approach, conclusions and recommendations of TEEB*. Malta: Progress Press.

TEEB (2011) *The economics of ecosystems and biodiversity in national and international policy making*. London: Earthscan.

TEEB (2012) *The economics of ecosystems and biodiversity in local and regional policy and management*. London: Earthscan.

TEEB (2013) *Guidance manual for TEEB country studies*. Version 1.0. London: Earthscan.

Tipa, G (1999) *Taieri river case study*. Wellington: Ministry for the Environment Technical Paper 58.

The National Trust (2006) *Demonstrating the public value of heritage*. London: The National Trust.

The Treasury (2011) *Working towards higher living standards for New Zealanders*. Wellington: The Treasury.

The Treasury (2012) *Improving the living standards of New Zealanders: moving from a framework to implementation*. Wellington: The Treasury.

Throsby, D (2001) *Economics and culture*. Cambridge: Cambridge University Press.

Throsby, D (2012) Heritage economics: a conceptual framework. In *The economics of uniqueness: historic cities and cultural heritage assets as public goods*. GA Licciardi and R Amirtahmasebi (Eds). Washington DC: World Bank.

Transport South Australia (1999) *Cultural heritage guidelines*. Adelaide: Transport South Australia.

Tuan, TH, U Seenprachawong and S Navrud (2009) Comparing cultural heritage values in South East Asia – possibilities and difficulties in cross-country transfers of economic values. *Journal of Cultural Heritage 10*, no.1: 9–21.

Turner, RK, J Paavola, P Cooper, SC Farber, V Jessamy and S Georgiou (2003) Valuing nature: lessons learned and future research directions. *Ecological Economics 46*: 493–510.

UNESCO (2003) *Convention for the safeguarding of intangible cultural heritage*. Geneva: UNESCO.

van Riper, CJ, GT Kyle, SG Sutton, M Barnes and BC Sherrouse (2012) Mapping outdoor recreationists' perceived social values for ecosystem services at Hinchinbrook Island National Park, Australia. *Applied Geography 35*, no.1–2: 164–173.

Vihervaara, P, M Ronka and M Walls (2010) Trends in ecosystem service research: early steps and current drivers. *Ambio 39*, no.4: 314–24.

Waitangi Tribunal (2011) *Report of the Waitangi Tribunal on Indigenous Flora and Fauna and Cultural Intellectual Property Claim (Wai 262)*. Wellington: Waitangi Tribunal.

Warren, D (1991) Using indigenous knowledge in agricultural development. *World Bank discussion paper 127*.

World Resources Institute (2008). *Ecosystem services: a guide for decision makers*. Washington, DC: World Resources Institute.

# Appendix A: List of publications used in chapter 4, section 4.3

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| Global review | Boxall PC, J Englin, WL Adamowicz | 2003 | Valuing Aboriginal artefacts: a combined revealed-stated preference approach | Journal of Environmental Economics and Management | 45 | 213–230 |
| | Kim SS, KKF Wong, M Cho | 2007 | Assessing the economic value of a world heritage site and willingness-to-pay determinants: a case of Changdeok Palace | Tourism Management | 28 | 317–322 |
| | Kinghorn N, K Willis | 2008 | Valuing the components of an archaeological site: An application of choice experiment to Vindolanda, Hadrian's Wall | Journal of Cultural Heritage | 9 | 117–124 |
| | Rolfe J, J Windle | 2003 | Valuing the protection of Aboriginal cultural heritage sites | The Economic Record | 79 | S85–S95 |
| | Tuan TH, S Navrud | 2007 | Valuing cultural heritage in developing countries: comparing and pooling contingent valuation and choice modelling estimates | Environmental and Resource Economics | 38 | 51–69 |
| | Baez A, LC Herrero | 2012 | Using contingent valuation and cost-benefit analysis to design a policy for restoring cultural heritage | Journal of Cultural Heritage | 13 | 235–245 |
| | Baez-Montenegro A, AM Bedate, LC Herrero, JA Sanz | 2012 | Inhabitants' willingness to pay for cultural heritage: a case study in Valdivia, Chile, using contingent valuation | Journal of Applied Economics | 15 | 235–258 |
| | Barrena J, L Nahuelhual, A Baez, I Schiappacasse, C Cerda | 2014 | Valuing cultural ecosystem services: agricultural heritage in Chiloe island, southern Chile | Ecosystem Services | 7 | 66–75 |
| | Choi AS, BW Ritchie, F Papandrea, J Bennett | 2010 | Economic valuation of cultural heritage sites: a choice modelling approach | Tourism Management | 31 | 213–220 |
| | Del Saz-Salazar S, I Guaita-Pradas | 2013 | On the value of drovers' routes as environmental assets: a contingent valuation approach | Land Use Policy | 732 | 78–88 |
| | Dutta M, S Banerjee, Z Husain | 2007 | Untapped demand for heritage: a contingent valuation study of Prinsep Ghat, Calcutta | Tourism Management | 28 | 83–95 |
| | Lee JS | 2014 | Measuring the benefits of the Intangible Cultural Heritage Hall in Jeonju | Journal of Cultural | 16 | 236–238 |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | | | Korea: results of a contingent valuation survey | Heritage | | |
| | Melstrom RT | 2014 | Valuing a historic site with multiple visitor types and missing survey data | Journal of Cultural Heritage | 16 | 102–105 |
| | Mazzanti M | 2003 | Valuing cultural heritage in a multi-attribute framework microeconomic perspectives and policy implications | Journal of Socio-Economics | 32 | 549–569 |
| | Nahuelhual L, A Carmona, P Laterra, J Barrena, M Aguayo | 2014 | A mapping approach to asses intangible cultural ecosystem services: the case of agriculture heritage in Southern Chile | Ecological Indicators | 40 | 90–101 |
| | Ruijgrok ECM | 2006 | The three economic values of cultural heritage: a case study in the Netherlands | Journal of Cultural Heritage | 7 | 206–213 |
| | Del Saz-Salazar, S, JM Marques | 2005 | Valuing cultural heritage: the social benefits of restoring an old Arab tower | Journal of Cultural Heritage | 6 | 69–77 |
| | Seenprachawong | 2006 | Economic valuation of cultural heritage: a case study of historic temples in Thailand | - | - | - |
| | Alberini A, A Longo | 2007 | Valuing the cultural monuments of Armenia: Bayesian updating of prior beliefs in contingent valuation | FEEM Working Papers | 23 | - |
| | Giannakopoulou S, D Damigos, D Kaliampakos | 2011 | Assessing the economic value of vernacular architecture of mountain regions using contingent valuation | Journal of Mountain Science | 8 | 629–640 |
| | Grazuleviciute-Vileniske I, V Janilionis, J Guseinskiene, L Azukaite | 2011 | Contingent valuation of built heritage properties in a transition country: a case of Lithuania | International Journal of Strategic Property Management | 15 | 393–415 |
| | Melstrom RT | 2013 | Valuing historic battlefields: an application of the travel cost method to three American civil war battlefields | Journal of Cultural Economics | 38 | 223–236 |
| | Garrod GD, KG Willis, H Bjarnadottir, P Cockbain | 1996 | The non-priced benefits of renovating historic buildings | Cities | 13 | 423–430 |
| | Santagata W, G | 2000 | Contingent valuation of a cultural public good and policy design: the case of | Journal of Cultural | 24 | 181–204 |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | Signorello | | "Napoli Musei Aperti" | Economics | | |
| | Lee CK, SY Han | 2002 | Estimating the use and preservation values of national parks' tourism resources using a contingent valuation method | Tourism Management | 23 | 531–540 |
| | Navrud S, J Strand | 2002 | Social costs and benefits of preserving and restoring the Nidaros cathedral | Valuing cultural heritage: applying environmental techniques to historic buildings, monuments and artefacts | - | 31–39 |
| | Pollicino M, D Maddison | 2001 | Valuing the benefits of cleaning Lincoln cathedral | Journal of Cultural Economics | 25 | 131–148 |
| | Mourato S, A Kontoleon, A Danchev | 2002 | Preserving cultural heritage in transition economies: a contingent valuation study of Bulgarian monasteries | Valuing cultural heritage: applying environmental techniques to historic buildings, monuments and artefacts | - | 68–86 |
| | Maddison D, S Mourato | 2001 | Valuing different road options for Stonehenge | Conservation and Management of Archaeological Sites | 4 | 203–212 |
| | Poor PJ, JM Smith | 2004 | Travel cost analysis of a cultural heritage site: the case of historic St. Mary's City of Maryland | Journal of Cultural Economics | 28 | 217–229 |
| | Provins A, D Pearce, E Ozdemiroglu, S Mourato, S Morse-Jones | 2008 | Valuation of the historic environment: the scope for using economic valuation evidence in the appraisal of heritage-related projects | Progress in Planning | 69 | 131–175 |
| | Bostedt G, T Lundgren | 2010 | Accounting for cultural heritage - a theoretical and empirical exploration with focus on Swedish reindeer husbandry | Ecological Economics | 69 | 651–657 |
| | Oleson K, M Barnes, L Brander, TA Oliver, I van Beek, B | 2015 | Cultural bequest values for ecosystem service flows among indigenous fishers: a discrete choice experiment validated with mixed methods | Ecological Economics | 114 | 104–116 |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | Zafindrasilivonona, PJH van Beukering | | | | | |
| | Lakkhanaadisorn W | 2014 | The valuation of heritage interpretation for conservation and sustainable tourism: a case study of the historic city of Ayutthaya | - | - | - |
| | Maskey V, C Brown, AR Collins, HF Nassar | 2007 | What is historic integrity worth to the general public? Evidence from a proposed relocation of a West Virginia agricultural mill | Agricultural and Resource Economics | 36 | 39–52 |
| | Carson RT, RC Mitchell, MB Conaway | 2002 | Economic benefits to foreigners visiting Morocco accruing from the rehabilitation of the Fes Medina | Valuing cultural heritage: applying environmental techniques to historic buildings, monuments and artifacts | - | 118–141 |
| | Bedate Centeno A, LC Herrero Prieto | 2000 | The travel cost method applied to the valuation of the historic and cultural heritage of the Castile-Leon region of Spain | 40th Congress of the ERSA | - | - |
| | Chambers CM, PE Chamber, JC Whitehead | 1998 | Contingent valuation of quasi-public goods: validity, reliability, and application to valuing a historic site | Public Finance Review | 26 | 137–154 |
| | Del Saz-Salazar S, L Garcia-Menendez | 2003 | The nonmarket benefits of redeveloping dockland areas for recreational purposes: the case of Castellon, Spain | Environment and Planning A | 35 | 2115–2129 |
| | Grosclaude P, NC Soguel | 1994 | Valuing damage to historic buildings using a contingent market: a case study of road traffic externalities | Journal of Environmental Planning and Management | 37 | 279–287 |
| | Kling RW, CF Revier, K Sable | 2004 | Estimating the public good value of preserving a local historic landmark: the role of non-substitutability and citizen information | Urban Studies | 41 | 2025–2041 |
| | Lockwood M | 1996 | Analysing conflict between cultural heritage and nature conservation in the Australian alps: a CVM approach | Journal of Environmental Planning and Management | 39 | 357–370 |
| | Riganti P, R Scarpa | 1998 | Categorical nesting and information effects on WTP estimates for the conservation of cultural heritage in Campi Flegrei | Environmental resource valuation: applications of the contingent | - | 245–259 |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | | | | valuation method in Italy | | |
| | Scarpa | 1998 | Kernel vs logit modelling of single bounded CV responses: valuing access to architectural and visual arts heritage in Italy | Environmental resource valuation: applications of the contingent valuation method in Italy | - | 233–244 |
| | Willis KG | 1994 | Paying for heritage: what price for Durham cathedral? | Journal of Environmental Planning and Management | 37 | 267–278 |
| | Powe NA, KG Willis | 1996 | Benefits received by visitors to heritage sites: a case study of Warkworth castle | Leisure Studies | 15 | 259–275 |
| | Whitehead JC, SS Finney | 2003 | Willingness to pay for submerges maritime cultural resources | Journal of Cultural Economics | 27 | 231–240 |
| | Adamowicz WL, G Garrod, K Willis | 1995 | Estimating the passive-use benefits of Britain's inland waterways | University of Newcastle Research Report | - | - |
| | Coulson NE, RM Leichenko | 2001 | The internal and external impact of historical designation on property values | The Journal of Real Estate Finance and Economics | 23 | 113–124 |
| | Leichenko RM, NE Coulson, D Listokin | 2001 | Historic preservation and residential property values: an analysis of Texas cities | Urban Studies | 38 | 1973–1987 |
| | Morey E, KG Rossmann | 2003 | Using stated-preference questions to investigate variations in willingness to pay for preserving marble monuments: classic heterogeneity, random parameters, and mixture models | Journal of Cultural Economics | 27 | 215–229 |
| | Parumog MG, CC Primitivo, S Mizokami | 2003 | Using travel cost and contingent valuation methodologies in valuing externalities of urban road development: an application in valuing damages to cultural heritage | Journal of the Eastern Asia Society for Transportation Studies | 5 | 2948–2961 |
| | Alberini A, A Longo | 2006 | Combining the travel cost and contingent behaviour methods to value cultural heritage sites: evidence from Armenia | Journal of Cultural Economics | 30 | 287–304 |
| | Bedate A, LC Herrero, | 2004 | Economic valuation of the cultural heritage: application to four case studies | Journal of Cultural | 5 | 101–111 |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | JA Sanz | | in Spain | Heritage | | |
| | Lazrak F, P Nijkamp, P Rietveld, J Rouwendal | 2014 | The market value of cultural heritage in urban areas: an application of spatial hedonic pricing | Journal of Geographical Systems | 16 | 89–114 |
| | Alberini A, P Riganti, A Longo | 2003 | Can people value the aesthetic and use services of urban sites? Evidence from a survey of Belfast residents | Journal of Cultural Economics | 27 | 193–213 |
| | Riganti P, P Nijkamp | 2004 | Valuing cultural heritage benefits to urban and regional development | 44th Congress of the ERSA | - | - |
| | Beltran E, M Rojas | 1996 | Diversified funding methods in Mexican archaeology | Annals of Tourism Research | 23 | 463–478 |
| | Moro M, K Mayor, S Lyons, RSJ Tol | 2011 | Does the housing market reflect cultural heritage? A case study of Greater Dublin | ESRI Working Paper 386 | - | - |
| | Barnes-Mauthe M, KLL Oleson, LM Brander, B Zafindrasilivonona, TA Oliver, P van Beukering | in press | Social capital as an ecosystem service: evidence from a locally managed marine area | Ecosystem Services | - | - |
| | Hicks RL, BM Queen | 2007 | Valuing historical and cultural amenities with hedonic property valuation models | CRE Working Papers 2007/05 | - | - |
| | Apostolakis A, S Jaffry | 2005 | A choice modeling application for Greek heritage attractions | Journal of Travel Research | 43 | 309–318 |
| | Ulibarri CA, VC Ulibarri | 2010 | Benefit-transfer valuation of a cultural heritage site: the Petroglyph national monument | Environment and Development Economics | 15 | 39–57 |
| | Willis KG | 2009 | Assessing visitor preferences in the management of archaeological and heritage attractions: a case study of Hadrian's Roman Wall | International Journal of Tourism Research | 11 | 487–505 |
| NZ review | Baskaran R, R Cullen, Y Takatsuka | 2009 | Estimating the value of agricultural ecosystem services: a case study of New Zealand pastoral farming | Australasian Journal of Environmental Management | 16 | 103–112 |
| | Greer G, RL Sheppard | 1990 | An economic evaluation of the benefits of research into biological control of Clematis vitalba | Lincoln University AERU Monograph | - | - |
| | Kaval P | 2004 | The Maungatautari Ecological Island Trust: an economic analysis | University of Waikato | - | - |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | | | | Department of Economics Report | | |
| | Kerr GN, R Cullen | 1995 | Public preferences and efficient allocation of a possum-control budget | Journal of Environmental Management | 43 | 1–15 |
| | Kerr GN, BMH Sharp, P White | 2001 | Non-marketed impacts of ground water extraction | Australian Agriculture and Resource Economics Society Conference | - | - |
| | Kerr GN, KFD Hughey, R Cullen | 2003 | Marine recreational fishing: perceptions and contingent behaviour | Lincoln University | - | - |
| | Kerr GN, BMH Sharp, KL Leathers | 2004 | Instream water values: Canterbury's Rakaia and Waimakariri rivers | Lincoln University | - | - |
| | Kerr GN, G Greer | 2004 | New Zealand river management: economic values of Rangitata river fishery protection | Australasian Journal of Environmental Management | 11 | 139–149 |
| | Lynch RJ, JA Weber | 1992 | Valuing water of the Ashburton river: in-stream flow versus irrigation | Australian Agriculture and Resource Economics Society Conference | - | - |
| | Marsh D, B Ramesh | 2009 | Valuation of water quality improvements in the Karapiro catchment: a choice modelling approach | Australian Agriculture and Resource Economics Society Conference | - | - |
| | Marsh D, Y Phillips | 2012 | Which future for the Hurunui? Combining choice analysis with stakeholder consultation | University of Waikato | - | - |
| | Lindsay S, R Damania | 2000 | Valuing New Zealand recreational fishing: an assessment of the validity of contingent valuation methodology | Australian Agriculture and Resource Economics Society Conference | - | - |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | Sheppard R, G Kerr, R Cullen, T Ferguson | 1993 | Contingent valuation of improved water quality in the Lower Waimakariri river | Lincoln University | - | - |
| | Tait P, R Baskaran, R Cullen, K Bicknell | 2011 | Valuation of agricultural impacts on rivers and streams using choice modelling: a New Zealand case study | New Zealand Journal of Agricultural Research | 54 | 143–154 |
| | Tait P, R Baskaran, R Cullen, K Bicknell | 2012 | Nonmarket valuation of water quality: addressing spatially heterogeneous preferences using GIS and a random parameter logit model | Ecological Economics | 75 | 15–21 |
| | Takatsuka Y, R Cullen, M Wilson, S Wratten | 2005 | Using choice modelling to value ecosystem services on arable land | Australian Agriculture and Resource Economics Society Conference | | |
| | White PA, BMH Sharp, GN Kerr | 2001 | Economic valuation of the Waimea Plains groundwater system | Journal of Hydrology (New Zealand) | 40 | 59–76 |
| | Yao RT, R Scarpa, JA Turner, TD Barnard, JM Rose, JHN Palma, DR Harrison | 2014 | Valuing biodiversity enhancement in New Zealand's planted forests: socioeconomic and spatial determinants of willingness-to-pay | Ecological Economics | 98 | 90–101 |
| | Kaval P, M Roskruge | 2009 | The value of native bird conservation: a New Zealand case study | University of Waikato | - | - |
| | Yao R, P Kaval | 2008 | Valuing biodiversity enhancement in New Zealand | University of Waikato | - | - |
| | Kerr GN, BMH Sharp | 2008 | Evaluating off-site environmental mitigation using choice modelling | Australian Journal of Agricultural and Resource Economics | 52 | 381–399 |
| | Kerr GN, SR Swaffield | 2012 | Identifying cultural service values of a small river in the agricultural landscape of Canterbury, New Zealand, using combined methods | Society & Natural Resources: An International Journal | 25 | 1330–1339 |
| | Marsh D | 2012 | Water resource management in New Zealand: Jobs or algal blooms? | Journal of Environmental Management | 109 | 33–42 |
| | Mkwara L, D Marsh | 2011 | Valuing trout angling benefits of water quality improvements while accounting for unobserved lake characteristics: an application to the Rotorua Lakes | New Zealand Agricultural and Resource Economics | - | - |

| | Authors | Year | Title | Journal | Volume | Pages |
|---|---|---|---|---|---|---|
| | | | | Society Conference | | |
| | Ndebele T | 2009 | Economic non-market valuation techniques: theory and application to ecosystems and ecosystem services. A case study of the restoration and preservation of Pekapeka swamp | University of Massey | - | - |
| | Kaval P, W Hughes, F Scrimgeour | 2004 | Te Kouma Farm Park: an economic analysis. | University of Waikato | - | - |
| | Sharp B, G Kerr | 2005 | Option and existence values for the Waitaki catchment | Ministry for the Environment | - | - |
| | Vesely ET | 2007 | Green for green: the perceived value of a quantitative change in the urban tree estate of New Zealand | Ecological Economics | 63 | 605–615 |

# Appendix B: Using the Heritage Economic Benefits Framework in transport projects

## B1 Preamble

The Heritage Economic Benefits Framework (HEBF) guidance is to be read alongside the NZ Transport Agency's (2015) *Historic heritage impact assessment guide for state highway projects*. The Transport Agency has a statement of commitment to environmental and social responsibility, to which this guidance contributes.

Heritage places are a finite part of the environment and are often highly valued by various sections of the community. They can be natural, cultural, historic or a combination thereof. While some heritage is already identified, other heritage sites, areas and values emerge during investigations and consultation on transport projects. The Transport Agency and other road controlling authorities (RCAs) have a duty under various statutes to identify, recognise and avoid damage to historic heritage. While heritage costs are regularly accounted for as a project cost, benefits are less frequently acknowledged and estimating the economic benefits of heritage can be complex.

The framework incorporates an HEBF tool to assist in identifying, recognising and, as far as practicable, quantifying the positive benefits and opportunities associated with aspects of heritage in transport projects. It also provides commentary on how the tool can be used in the development of transport projects including in the analyses of project benefits and costs, to determine value for money of heritage conservation investments.

The framework can be applied to a wide range of transport investments – from state highway upgrade and major maintenance projects, to local roading, public transport, cycleways and integrated intermodal projects. Both a knowledge of heritage values and the application of creative concepts and ideas may be needed to develop an approach to heritage conservation that encourages the retention and re-use of heritage places. The recognition of heritage benefits can assist in the identification of options and opportunities within projects that heritage can provide and will assist in the comprehensive evaluation of alternatives.

This HEBF guidance emphasises the importance of engaging with tāngata whenua, stakeholders and the community in the identification and evaluation of heritage impacts for any transport project. In particular, tāngata whenua have a world view, knowledge and values relating to heritage which is likely to be location and context-specific. The Transport Agency has a duty to consult with and involve tāngata whenua in decision making processes, including over heritage which may be affected by transport proposals. Annex BA provides a summary background to tāngata whenua heritage concepts.

The HEBF tool is based on research carried out for the Transport Agency, and applies current thinking and best practice to the economic benefit evaluation of heritage aspects of the environmental change that can be associated with transport projects of any RCA.

## B2 Key partners and stakeholders in applying the Heritage Economic Benefits Framework

Key partners, stakeholders and the wider community who become engaged through consultation processes, can make important contributions in identifying, articulating and quantifying heritage values at each step of a project. Internal stakeholders need to understand heritage values, carry them through in projects and maintain and evaluate them post-implementation.

Key partners and stakeholders in applying the HEBF include:

- iwi and hapū with mana whenua – contributing to recognising heritage values and contributing to decision making in terms of the Land Transport Management Act
- Ministry for Culture and Heritage Manatū Taonga – the policy framework for government department management of historic heritage
- Heritage New Zealand Pouhere Taonga – administration of the National Heritage List of historic and cultural heritage places, sites and areas; and advocating for the recognition and protection of these places
- local authorities – providing policy direction for heritage protection at regional and local levels and for Treaty of Waitangi recognition, as well as the statutory protection of heritage and contributing understanding of local heritage values
- local residents and businesses – contributing local knowledge and perceptions of values of heritage
- internal stakeholders and affected departments – integrating heritage values into project decisions and ensuring that the heritage benefits of approved projects are delivered.

Expert advice provides a further layer of information and evaluation which is essential in decision making on heritage and its relationship with any transport project.

## B3 Why a Heritage Economic Benefits Framework?

- It provides a common language for planners, heritage experts and the public.
- It promotes processes that identify opportunities and benefits of heritage in and near to projects, that can sit alongside the costs that are more readily identified.
- It sets out agreed and appropriate methods of evaluation for monetary and non-monetary beneficial aspects of heritage.
- It emphasises adaptive and iterative methods which can contribute to successful projects for communities.
- It provides a basis for transparency in the maintenance and enhancement of heritage stock in New Zealand, contributing to economic, social and cultural wellbeing through transport-related projects.

## B4 What is the Heritage Economic Benefits Framework tool?

The tool lists heritage values or benefits that can to some extent be quantified, outlines the indicators and possible sources of information on values, and suggests methods which may contribute to estimating monetary values for heritage benefits in a given situation. The tool is presented in a simple tabular form in table B.1 and the accompanying explanation, and can be adapted for any situation.

The tool recognises that:

1 Every project will affect an area that has heritage values and benefits of some kind. These values and benefits are attached to areas and places, some of which will already be known and understood and others that may not be recognised.

2 There is a set of heritage values and benefits that are widely recognised in local and international literature, which need to be identified for the heritage associated with each project.

3 Many heritage values and benefits cannot yet be quantitatively measured or translated into monetary values where they can readily sit within a benefit cost framework.

4 Where heritage values and benefits can be translated into monetary terms, and the exercise of doing so is proportionate, they should be.

5 Where they cannot be, or where the cost of estimating monetary values is very high, heritage values and benefits must nevertheless be captured and descriptive techniques should be used. Rich narrative[8] is a recognised technique which can sit alongside monetary techniques and covers heritage values and benefits which cannot be translated into monetary terms. It should be used to cover intangible values of heritage in any analysis.

6 In situations where evaluation does not use quantification methods of any kind, descriptive techniques such as rich narrative should nevertheless consider the range of heritage values in the tool.

7 While monetary values can feed directly into a benefit cost framework, monetarised, numerical and rich narrative expressions of heritage value can contribute to a scoring system in a multi-criteria analysis.

8 A project may have a range of different effects and opportunities on a range of heritage resources (for example, a building, structure, land use, natural feature or landscape) and each affected resource needs to be considered separately, as well as for the project as a whole

9 Each phase of a transport project requires a different level of detail in the analysis. The effort to be placed on monetary evaluation as compared to rich narrative requires judgement that will need to be exercised by the project team following consultation with stakeholders and experts.

Annex BB provides a brief description of the various monetary valuation techniques referred to in the Tool, and some other methods that may have appropriate application in specific circumstances. While some of these methods are currently not recommended for use within the tool, their use should continue to be considered for specific situations, depending on expert advice.

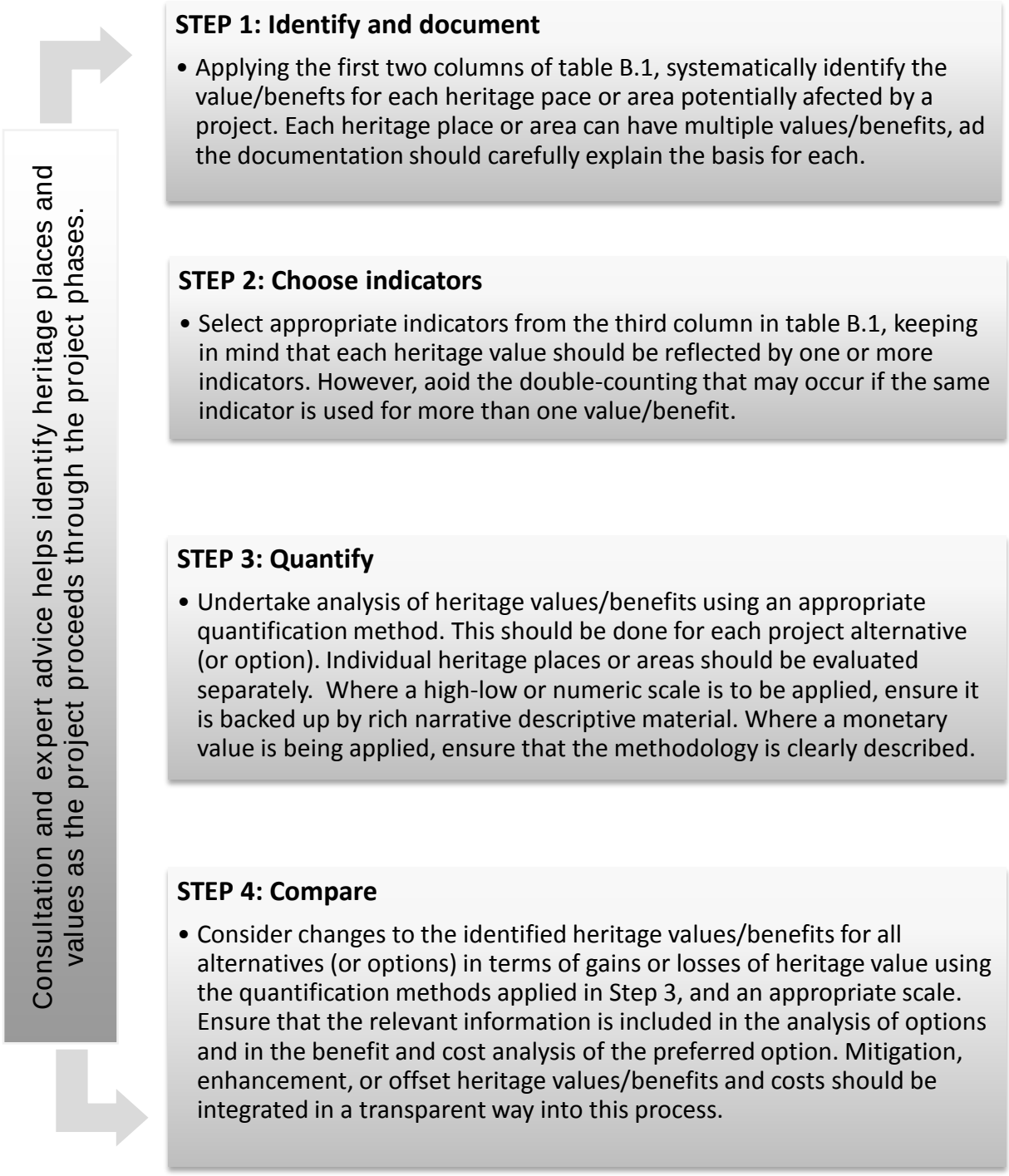
## B5 Applying the Heritage Economic Benefits Framework tool

Applying the tool requires preliminary work to identify potentially affected heritage places and areas, and risk aspects such as archaeological and cultural values. The tool can be applied on the basis of an initial scoping of heritage and its existing benefits and opportunities, including from published material, consultation and expert input. As a project moves from strategic planning to delivery, the tool provides for further, increasingly in-depth, identification and evaluation of heritage benefits.

.

[8] Rich narrative is a method of describing heritage values and qualities in a way that documents those identified and recognised by the community, including groups within the community, in addition to those of expert heritage practitioners (see section 4.1 of the main body of this report). In New Zealand, the values of iwi and hapu have particular significance (see annex BA) in terms of recognising the breadth of heritage and its interconnectedness in time and space. Local interest groups, businesses and individuals with special knowledge (key informants) also contribute to compiling rich narrative of heritage values.

**Figure B.1 Steps for using the HEBF as a tool**




The step-wise process may need to be repeated several times as projects proceed from strategic planning to delivery phases, each time with greater detail. This is outlined under the phases below.

Additional information is likely to arise from consultation input as the project moves forward and during the preparation of information for statutory approvals when detailed expert investigation and analysis is undertaken.

**Table B.1 Methods for expressing heritage values and benefits**

| Heritage value/benefit | Explanation | Potential indicator | Sources | Quantification method | Appropriate monetary valuation technique (where no technique is recommended, use rich narrative) |
|---|---|---|---|---|---|
| Amenity | The place/space/area is visually attractive and pleasant. | Visual qualities (including context); aspects of heritage place (fabric, material, structure); spatial characteristics | Community; expert | NECAMS (Meurk et al 2012); high-low; numeric scale; monetary unit | Hedonic pricing method |
| Spiritual/cultural | Deeper experience of the place that transcends amenity associations and is distinct from commemorative associations | Presence or strength | Community; online and offline media | Present-absent; high-low | – |
| Bequest | The place is archaeologically or architecturally unique, or represents a historic technological development that is not found elsewhere, and needs to be preserved for future generations | Rarity; threat; integrity; presence or strength | Community; expert; on-line and off-line media | High-low; numeric scale; monetary unit | Stated preference survey |
| Historic education | The place has the potential to be used for formal and informal educational purposes related to history, architecture, science, engineering, technology or design | Student visits; use of the place as an educational example; recognition in literature | Community; expert; online and offline media | High-low; numeric scale | – |
| Commemorative | The place is connected with an event, idea or person that defines the (local, regional or national) community beyond historic educational purposes | Description; presence or strength | Community; expert | High-low; numeric scale | – |
| Associative | The place is an essential element of history and culture in a wider heritage area | Description | Expert | – | – |

| Heritage value/benefit | Explanation | Potential indicator | Sources | Quantification method | Appropriate monetary valuation technique (where no technique is recommended, use rich narrative) |
|---|---|---|---|---|---|
| Recreation | Unpaid, intentional use of the place | (Potential) number of visitors | Community; online and offline media | Numeric; monetary unit | Benefits transfer; stated preference survey; travel cost method |
| Tourism | Paid, intentional use of the place | (Potential) revenue | Council; asset management | Monetary unit | Market price method |
| Functional | Paid, intentional use of the place that is not tourism | (Potential) revenue; market prices | Users (business, tourism, residential); market data | Monetary unit | Market price method |
| Other economic | Effects on the wider economy of heritage improvements and/or costs associated with demolition/disposal | Cost; (tax) revenues; employment; indirect effects | Council; market data; economic modelling | Monetary unit; number of jobs; market price method | Market price method; avoided costs |

# B6 Support given to transport projects by the Heritage Economic Benefits Framework tool

The HEBF tool provides guidance on the monetary and non-monetary benefits of heritage while setting out:

- a means to consistently identify and quantify key benefits of heritage investments
- a guide to incorporating the positive values of heritage impacts in project phases.

The phases of evaluation that relate to the tool can be applied at distinct phases of transport projects. Guidance is provided below for the strategic planning phase, the project screening phase and the project assessment and delivery phases. In practice, the distinction between phases may not be maintained as strictly as it is presented here. The recommended application of the tool can also be interpreted flexibly.

The HEBF tool recognises and supplements the traditional method of evaluating heritage as cost-only items in traditional transport cost-benefit analyses. The tool also provides a basis for long-term evaluation of project benefits in heritage terms.

# B7 Applying the Heritage Economic Benefits Framework tool in project phases

## B7.1 Strategic planning phase

This is the phase at which a transport issue is recognised and a long list of possible options for its resolution are identified and considered. Preliminary actions relating to heritage values in this phase are:

- Tāngata whenua relationships – make sure all relevant tāngata whenua groups and interests within the broad project areas are identified, and that engagement is established in a way that includes appropriate respect for mātauranga Māori, and that provides a basis for integrating Māori cultural heritage values into decision making.
- Make sure heritage interests are adequately represented in consultation and engagement strategies, and that early project information collection involves engagement with all useful sources: include organisations with heritage interests and seek out information on heritage values from statutory and non-statutory organisations (HNZPT, territorial and regional councils, local groups and associations) and any specialist key informants. Include recognised (listed) heritage and other known information (from historic societies, botanical societies and local knowledge) in the project information database.

Heritage values are unlikely to need to be evaluated in detail in this phase, but steps 1 to 3 of the tool should be used as a checklist. Heritage issues, including loss in existing heritage values, should be included in any risk assessment, particularly when these constitute potential fatal flaws.

If potentially significant opportunities to retain or reuse heritage places (or risks to the conservation of heritage values) are identified, this can be noted so these issues are duly considered in more detailed benefit cost analyses in subsequent project phases. This need not have been the subject of detailed monetary or narrative evaluation in terms of the tool, but sufficient consideration should have been given by the project team (including stakeholder consideration and expert advice if appropriate).

Even if heritage values are not considered likely to be critical, being aware of key tangible and intangible heritage values and who holds them benefits the RCA. It focuses the exploration of protection, enhancement and mitigation possibilities, and potentially limits costs by understanding how change can

affect one or more heritage values or benefits. It also encourages early consideration of opportunities to retain and promote heritage values and economic benefits from heritage places ('win-wins'). Understanding the heritage values that communities hold, facilitates the exploration of economic benefits from heritage and recovery of costs. Such considerations will need to be investigated further and reviewed in later phases.

## B7.2 Project screening phase

This phase proceeds once the previous phase has identified that the transport project merits further investigation. This is the phase in which the long list of options is reduced to a short list. Some options can perhaps be ruled out immediately, whereas other options require further evaluation and refinement. A single preferred alternative may be determined in this or a later phase. All steps in 1 to 4 in the tool are applied. Key actions for this phase include:

- Further identification, documentation and mapping of known and likely areas places and areas of heritage value
- Consider engaging a specialist on built heritage, archaeology and social engagement for advice, particularly if category 1 heritage places are potentially within the project footprint, if the risk of disturbing archaeological sites is high, or when there is a possibility that the public appreciation of structures, facilities or areas is affected.
- An assessment of actual and potential effects or impacts against a base case (which may be do-nothing or do-minimum), including positive and negative effects on heritage values. The tool should be used to systematically identify and evaluate the effects for each place or area using one or more of the indicators and quantification methods in the tool's columns.
- Preliminary identification of mitigation options and their associated costs and benefits
- Application of a multi-criteria or other systematic method of evaluating alternatives, within which impacts on heritage (including heritage benefit opportunities) should be suitably emphasised.
- Evaluation of the heritage effects/impacts criterion for each alternative in terms of the available information – whether this is expressed in monetary, other quantitative, or rich narrative terms or a combination. Documentation of the basis for the comparative evaluation, explaining the methods used.

Māori cultural value and impact assessments and specialist heritage evaluations should be commenced during this phase. Economic evaluations may also be able to contribute to heritage evaluations. Scoping studies for these can contribute to the development and evaluation of alternatives in heritage value terms, including fatal flaw and risk assessments. Such evaluations may remove some alternatives from further consideration early in this phase.

As part of this stage, the environmental and social responsibility screen (ESR) would be applied to the project. Although the Transport Agency is responsible for the state highway network, its guidelines and decision support tool are available for all RCAs. If an RCA uses the ESR screen, reporting on the five cultural heritage questions would ideally be in terms of the values set out in the tool.

As far as possible, and depending on the level of detail available during this phase, heritage related costs and benefits should be included in the benefit-cost analysis. This evaluation provides for the recognition of 'non-monetised benefits and additional benefits'. Where monetised information relating to heritage is available, this should be included in the benefit-cost analysis worksheets. Where the benefits are not able

to be built into the analysis in this way, they may be considered as part of the wider economic benefits descriptive material that can be refined in subsequent project phases[9].

## B7.3 Project assessment phase

By the commencement of this stage, a preferred alternative has been identified and the alternative is being refined into a specific transport project. The effort at this stage is focused on preparing to obtain statutory approvals, undertaking sufficient design work to ascertain project costs with a high degree of certainty, and identifying benefits which can either be offset against the costs or which will carry weight in approvals processes.

Key actions for this stage include:

- detailed assessments of effects (which may include heritage, cultural, archaeological and/or economic) for RMA approvals
- project refinement in a way which minimises and mitigates adverse effects
- development of proposals for project benefits (which can be offset against residual adverse effects) and their incorporation in the project through draft conditions
- consideration of the need for archaeological authorities from HNZPT.

During this stage, maximum use should be made of the quantification methods in the tool to articulate the benefits of heritage values. This helps identify and develop opportunities to retain and reuse heritage places. Expert advice should be sought to determine the extent to which additional studies will be worthwhile to quantify benefits. In most situations, rich narrative descriptions will be needed to supplement monetary valuation and any other quantification techniques. Heritage expert evaluations will be needed to support RMA approvals.

This stage contributes to both statutory approvals and the RCA's decision on whether to proceed with detailed design and funding of the project. This stage may involve several iterations to refine the project scope and to assess its costs and benefits in greater detail, including heritage aspects. The project assessment phase will determine funding approval if the project obtains statutory approvals (a project is unlikely to proceed to statutory approvals if the project assessment does not deliver an acceptable benefit cost ratio).

## B7.4 Pre-implementation/delivery phase

This follows from work and decisions in the report from the previous phase and may partially overlap with it. It generally includes obtaining statutory approvals, land and asset acquisition, detailed design and delivery. The scope of the project will be bound by conditions of consent, most of which will have been identified in the previous stage and incorporated in the project description.

Opportunities for heritage benefits are likely to continue to be found in this phase. These will require the project team to respond flexibly to insights about heritage values as they develop. The tool should continue to be used as far as possible in making ongoing decisions.

The tool also provides a basis for review and evaluation of the project post-implementation.

[9] For further information, please refer to the Transport Agency's Planning and Investment Knowledge Base, Benefit and Cost Appraisal; www.pikb.co.nz/assessment-framework/benefit-and-cost-appraisal/

# Annex BA: Involvement of Māori in identifying and valuing heritage

This annex provides a basic introduction to Māori world views and values, and discusses approaches and methods that can be used to identify, assess and incorporate tangata whenua heritage values within transport projects.

The Land Transport Management Act 2003 has amongst its stated purposes improved opportunities for Māori to contribute to land transport decision-making processes.

RCAs should contact affected iwi/hapū with mana whenua in the very early stages of their projects, ie when thinking about the project screening phase. This must start from and work within the tikanga of the affected iwi and hapū. The expression of that relationship can take several forms and can include memoranda of understanding, agreed partnership principles, a statement seeking shared outcomes, and use of appropriate methodologies to identify values and apply indicators.

## BA.1 Cultural impact assessments

Cultural impact assessments (CIA) are useful planning tools for incorporating iwi and hapū with mana whenua perspectives into project planning. A CIA identifies Māori cultural values, interests and associations with an area or a natural resource, and the potential impacts of a proposed activity on these (MfE 2013). CIAs are a tool to facilitate meaningful and effective participation of Māori with project planners in the assessment of an infrastructure project or a housing development. A CIA is akin to a technical report provided by an engineer or to a site assessment by an archaeologist. The main objectives of a cultural impact assessment are to, evaluate the cultural risks and benefits associated with various infrastructure options, identify key cultural issues associated with infrastructure options, and provide recommendations on culturally appropriate solutions to address the cultural issues.

CIAs provide technical information that may be in the form of a narrative or a quantitative assessment. An example of the latter is the cultural health index (CHI) developed for Tiakina te Taiao (Horne 2011) to assess the impact of the Ruby Bay Bypass on the associated wetland and estuarine areas based on the values of the iwi and hapū with mana whenua. The framework described later – the Ngā Atua Domains Framework – provided the overarching approach used by Tiakina te Taiao for the assessment of estuarine and wetland areas. For their assessment, Tiakina Te Taiao adapted the CHI for an estuarine ecosystem.

CIAs are a useful tool for working in a partnership relationship. They can help to identify key discussion points to begin a collaborative process for the resolution of issues identified by iwi and hapū with mana whenua.

## BA.2 Mātauranga Māori

Mātauranga Māori or Māori knowledge systems are specific to indigenous Māori people. The term has many definitions that cover belief systems, epistemologies, values, and knowledge both in a traditional and contemporary sense. Mātauranga Māori can be most broadly defined as the knowledge, comprehension or understanding of everything visible and invisible existing in the universe. It is a dynamic construct which includes traditional associations and connections to place, as well as contemporary relationships. Similar to other systems, mātauranga Māori has both qualitative and quantitative aspects.

## BA.3 Key concepts in mātauranga Māori

Through their values, Māori make sense of, experience, and interpret their environment. Values form the basis for Te Ao Māori (the Māori world view), and provide the concepts, principles, and information to establish significance and to prioritise values. Key concepts in relation to heritage are:

| | |
|---|---|
| *whakapapa* | Ancestral lineage, genealogical connections, relationships, links to ecosystems |
| *mana whenua* | Authority over land and resources |
| *kaitiakitanga* | Environmental guardianship |
| *arohatanga* | The notion of care, respect, love, compassion |
| *ki uta ki tai* | A whole-of-landscape approach, understanding and managing inter-connected resources and ecosystems from the mountains to the sea |
| *mauri* | An internal energy or life force derived from whakapapa, an essential essence or element sustaining all forms of life. Mauri provides life and energy to all living things, and is the binding force that links the physical to the spiritual worlds (eg wairua). |
| *tikanga* | Doing something the correct or right way. It is often described as customary protocols, values and traditions that establish behavioural or procedural guidelines for daily life and interaction. Tikanga is often specific to iwi/hapū/marae and is integral to developing kawa (protocols and procedures). |
| *tapū* | This signifies the sacred, and has associated restrictions which could change with time and environment as needed. The diverse meanings behind tapū are derived from the context in which it is applied. |
| *wahi tapu* | When tapū is applied to places of significance to iwi/hapū, these places are deemed wāhi tapū. Wāhi tapū are areas that provide physical and emotional links to the ancestors and signify rights of co-occupation and use. Wāhi tapū may include burial grounds, places for ritual cleansing after battle, spiritual qualities linked to medicinal or therapeutic use, or were incidents from the past. |
| *wāhi tūpuna* | This can be translated as 'ancestral site', and can be defined as 'a place important to Māori for its ancestral significance and associated cultural and traditional values'. This concept of Māori heritage encompasses more than wāhi tapū alone, and supports the conservation of places and areas that are not sacred, but which nonetheless have heritage value to iwi/hapū (see section 66 of the Heritage NZ Pouhere Taonga Act). |

Māori values are more than (quantifiable) information that feeds into decisions; they govern responsibilities, the relationship tangata whenua have with the environment and the way iwi/hapū make decisions. These values are dynamic, locally specific and based on long-standing interactions – through time and space – between people and their surrounding environment. Consequently, there is no (numerical) scale that is both simple and meaningful, on which the range of these values can be placed.

## BA.4 Culturally appropriate indicators

It is important to apply assessment systems that provide a balance in cultural perspectives and take into account mātauranga Māori and other knowledge for different parts of the environment. Since the 1990s a number of cultural monitoring frameworks have been developed to help Māori articulate perceptions of environmental change, environmental health, Māori well-being and culturally appropriate outcomes.

Several iwi/hapū are trialling, testing and refining cultural monitoring approaches and indicators. A significant benefit of mātauranga Māori-based indicators is the ease with which kaitiaki can connect with them because of their relatedness to an ideology with which kaitiaki are familiar.

These indicators have been developed primarily in relation to the natural environment, but may be able to be extended to encompass the spiritual and cultural components of place and other cultural heritage values and benefits. These approaches are (partially) unique to iwi/hapū and cannot simply be transferred from one project to the next.

Several publications provide in-depth reviews of these Māori monitoring tools/frameworks (Chetham et al 2010; Harmsworth et al 2011; Te Uri o Hau Environs Holdings Trust 2011; Nelson and Tipa 2012).

## BA.5 Indicators using Atua domains

Tiakina Te Taiao, a kaitiaki group from the Motueka catchment, developed indicators for their planning processes along Ngā Atua domains (see table BA.1). Each indicator and descriptor represents an ecosystem from Tangaroa (estuarine and river ecosystems) to Tane Mahuta (terrestrial ecosystems) (Harmsworth et al 2011). A Ngā Atua Domains framework for developing indicators has also been adapted by Te Uri o Hau for monitoring the mauri of the Kaipara Harbour (Te Uri o Hau Environs Holdings Trust 2012). While this system has not been applied to historic heritage, it may be able to be applied or adapted for this purpose in the future.

**Table BA.1 Examples of indicators aligned with Atua domains**

| | |
|---|---|
| **Tangaroa**<br>• Water clarity<br>• Water flow<br>• Water quality<br>• Shape and form of river, riverbank condition,<br>• sediment<br>• Insects<br>• Fish<br>**Tāne Mahuta**<br>• Riparian vegetation<br>• Catchment vegetation<br>• Bird life (species)<br>• Ngahere/taonga<br>• Pests | **Haumia tiketike**<br>• Mahinga kai<br>• Rongoa<br>**Tūmatauenga**<br>• Human activity, Use of river<br>• Access<br>• Cultural sites<br>**Tāwhirimātea**<br>• Smell<br>**Mauri/Wairua**<br>• Feeling, taste, well-being |

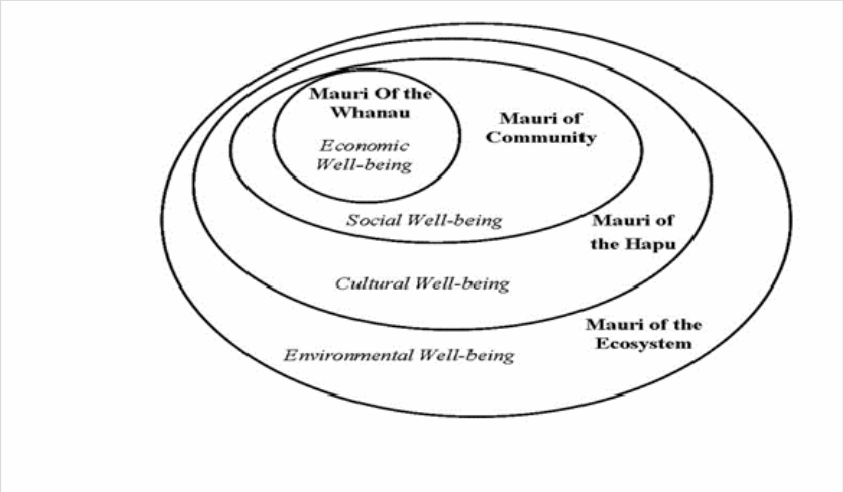
## BA.6 Indicators that support mauri

The model was initially developed for engineering evaluation purposes, but has wide application. Including the concept of mauri in decisions improves their potential contribution to all living things and the connection between the physical and spiritual worlds. Indicators based on mauri can be used to understand the inter-relatedness or inter-connectedness of all living things, and to measure sustainability and well-being.

Mauri-based indicators integrate across the economic, social and cultural dimensions, which are subsets of an environmental dimension. These dimensions are redefined to measure changes in the mauri of four key aspects shown in the figure below: ecosystems (environmental), hapū (cultural), whānau (economic) and communities (social). The relative importance of aspects can be addressed independently by users

and decision makers choosing a weighting applied to each aspect before scoring is completed. The aim is to help decision making and understand the impacts on intrinsic values, and to show the inter-relatedness between sustainability dimensions.

**Figure BA.1 Key aspects of mauri and mauri- based indicators**




For a given management problem, or transport project, each option can be assessed with respect to the strength of the impact on the mauri of one of the four key aspects (eg strong, weak, none) and whether the suggested practice is, eg highly sustainable (5), a viable practice enhancing the mauri (4), contributing to mauri (3), neutral (2), diminishing the mauri (1), or significantly diminishing the mauri (0).

The use of such indicators requires the involvement of affected iwi and hapū with mana whenua, in a relationship of shared outcomes and aspirations. It is important that Māori values, concepts, and ideas are not simply co-opted as they may be given new, inappropriate meanings; an outcome which may harm future projects.

Indicators for such a mauri-based assessment share some characteristics with the multi-criteria analysis approach. Mauri-derived indicators can be used to assess transport projects, particularly when evaluating project options that will affect environmental processes or the economic, social and cultural context.

## BA.7 Indicators for a cultural health index

Indicators that contribute to a Māori CHI assess progress towards or away from shared outcomes. Iwi/hapū are continuing to develop or have developed specific indicators. Variations of a CHI have been proposed; the environmental performance indicator, for instance, is a Māori indicator created to gauge, measure or indicate change in an environmental locality.

A CHI can comprise several components, including dichotomous variables (yes/no) (eg does a place have significance to Māori?) and qualitative ordinal rankings (low to high in five steps) for selected (environmental) indicators. Examples of indicators that could feed into CHI are:

- CHI for streams and rivers
- CHI adapted by Tiakina te Taiao
- a coastal CHI for Te Taitokerau
- CHI for kauri
- CHI for estuaries

- CHI for wetlands
- CHI for marine ecosystems
- state of the Takiwa.

Like mauri-based indicators, the context or location-specificity of elements of a CHI means the results from one iwi/hapū rohe do not necessarily apply or relate to other iwi/hapū rohe. While the outputs from a CHI assessment may not be comparable, the method and process of the CHI assessment are potentially applicable, with some adaptation, across rohe.

## BA.8 Summary

Many of the indicators and models presented above are complementary to established approaches. Some have characteristics amenable to multi-criteria analysis. The tools presented can be used to assess heritage impacts through a Māori lens, and improve understanding of New Zealand's unique and fragile cultural and physical environment. The use of mātauranga Māori approaches can stimulate cultural understanding and is more likely to produce outcomes that reflect iwi/hapū aspirations and values. They can be used to identify and support values (metaphysical and tangible), activities and uses within a defined area, such as a region, tribal areas, or catchment that can be supported by Māori and non-Māori alike.

# Annex BB: Methods for valuation of economic benefits

There is a continuing emphasis on endeavouring to account for as many heritage values in terms of economic benefits as possible. This endeavour does not seek to undermine the intangible aspects of heritage values; rather it seeks to place as many components of heritage values into a framework where they can be accounted for alongside other tangible benefits of change in the physical environment as possible.

The potential suite of techniques to estimate the monetary value of benefits briefly described here is drawn from environmental economics studies of the benefits provided by natural resources (Navrud and Ready 2002) provide more detailed, yet accessible, explanations and applications of these techniques in the context of valuing the benefits of historic and cultural heritage.

Market price-based techniques use prices that are observed in markets to estimate the monetary value of benefits provided by environmental goods or services. This technique can only be used if a market for the goods exists. Examples for heritage include entry fees for historic buildings or parks.

The net factor income technique and the production function technique estimate the monetary value of benefits from environmental resources by assessing their contribution to goods and services that are traded in markets. These approaches are similar to economic impact assessment, economic footprint analysis, and the social return on investment techniques employed to assess the benefits of conservation expenditures and cultural events (Rypkema et al 2011).

The replacement cost technique and the restoration cost technique equate the monetary value of benefits from environmental resources with the cost of replacing environmental resources with human-made structures that provide the same benefits; or the cost of restoring a degraded place or location to an improved or pristine state. Replacement and restoration are concepts that readily transfer to heritage.

A related technique with relevance to heritage is the public pricing technique. This uses public expenditures (eg taxes or subsidies) as a measure of the monetary value of benefits.

The damage cost avoided technique, which looks at the damage protection or mitigation benefits provided by environmental resources, can be used when project engineering options have different impacts on heritage. An example could be where boring instead of drilling for the supports of a viaduct can reduce vibration and damage to heritage.

The hedonic pricing technique can be used to estimate a monetary value for heritage assets if there are goods or services whose price is related to the asset. This approach is commonly used to estimate the monetary value of monumental buildings or areas by looking at housing prices in the vicinity.

The travel cost technique derives the monetary value of a site or area by considering the costs people incur to get there. These costs relate to, for example, fuel and time spent to travel from their homes to the place. By analysing the relation between the number of visitors for different travel distances and cost levels, it is possible to estimate the monetary value of a place.

Finally, there is a suite of techniques, collectively known as stated preference techniques, which rely on asking people directly about their preferences for (hypothetical) changes to an environmental resource or heritage place. Often preferences are framed as respondents' willingness to pay (WTP) for improvements to the building, or – less often – as their willingness to accept (WTA) negative changes to it. Generally, studies find that WTA estimates are higher than WTP estimates (BOP Consulting 2012), so the framing of the question can have significant consequences for monetary value estimates.

Stated preference surveys can be framed in terms of a financial contribution respondents think they would make (contingent valuation), a preferred option they would choose from several alternatives (multiple methods, including choice experiments or conjoint analysis), or as a change in behaviour they would implement (stated behaviour).

The advantage of stated preference surveys is that they can be applied to virtually any type of heritage, heritage impact or heritage value. An important criticism is that such surveys are hypothetical and, since responses have no consequences, do not necessarily reflect people's real preferences.

Finally, there is a technique called benefit or value transfer, in which estimated monetised intangible values from other heritage are applied to the heritage place of interest. Applications may be more or less technically refined, but the accuracy of any value transfer study depends on the availability of studies of similar heritage from similar social, economic and cultural settings.

Each of these valuation techniques has its merits, drawbacks and relevance in terms of evaluating the economic benefits of heritage in any situation.

# Appendix C: Heritage Economic Benefits Framework: Case study 1: Ruby Bay Bypass

## C1 Introduction to Ruby Bay Bypass

The Ruby Bay Bypass (RBB) project improved road safety and travel times on the route between Nelson and Motueka. The original route close to the coast had 145 access points and multiple speed limits. The RBB diverted traffic inland to a four-lane highway with a single speed limit and only 11 access points. The 10.6km highway cost $27.7 million and opened in October 2010.

The RBB is in a rural area where it traverses the Waimea (Mapua wetland) and Moutere (Mariri wetlands) inlets at several locations. A number of known heritage sites along the proposed RBB route had been identified in 1999, but would not be significantly affected. A site that would be affected was the Tasman Ford, which crosses Fields Creek and had existed before 1900. A further archaeological report was presented in 2011 which describes the archaeological context of the area in more detail. An archaeological authority with standard conditions was granted, with additional conditions to identify and tape off the Tasman Ford prior to commencing earthworks. This condition was later amended to allow modification of the ford. Further archaeological artefacts were uncovered in the course of the project.

## C2 Retrospective assessment of heritage values and benefits

In the initial (strategic business case) phase of projects, the Heritage Economic Benefits Framework (HEBF) emphasises developing partnerships with tangata whenua, heritage organisations and the wider community to identify locations and sites of heritage value.

In the RBB project, much effort was put into developing a partnership with mana whenua iwi. In the first year of the investigative phase of the project, iwi (later organised into Tiakino te Taiao) were invited to a day-long field trip along the preferred route of the bypass. Their feedback was incorporated into the RBB design and a cultural health index (CHI) monitoring framework was used to assess impacts during and after the project. The partnership ensured, for instance, that the sedimentation of the estuary caused by an extreme rain event did not become a major issue.

Partway through preliminary design, it became clear that some in the wider community attached high bequest, historic education, commemorative, or associative value to the Tasman Ford. The ford, part of an early 20th century route to Motueka, would be unavoidably damaged during construction of the preferred route option. To minimise the loss of heritage value, a relatively minor alignment change was adopted, the layout of the ford was drawn and photographed, and a retention wall installed to further mitigate impacts on the ford's remaining elements. These mitigating actions reduced submissions during the project notification period and preserved the knowledge of the historic road.

The archaeological authority granted by Heritage New Zealand Pouhere Taonga (HNZPT) required that any uncovered archaeological features should be recorded. The items found were saved and preserved, with a description of their context.

Among the finds were the remains of two confirmed *umu* (ovens). These finds indicate there was seasonal or semi-permanent pre-European occupation. Before these ovens were uncovered, there were no recorded archaeological sites at Tasman.

Further evidence of Māori activity in the project area included an argillite flake and a number of stones that may have been used as anchor stones. One of the anchor stones was of a type of rock that does not occur naturally in the area, and was therefore probably brought to the site by pre-European Māori.

Recording these archaeological finds in the context of their locations preserves historic education and associative values. Mātauranga Māori-based values that may have been associated with these items were also preserved. Their excavation and preservation means these items may become a part of museum displays, furthering their heritage values and benefits.

During the RBB earthworks, a wooden object was found that was initially identified as a coffin. Activities at the find were immediately halted so the nature of the find could be determined and the potential *koiwi* (skeleton) was not disturbed any further. Earthworks continued on another section of the project while the wooden object was carefully excavated. The find proved to be a shallow-draft punt. It fell apart during the attempt to remove it, but representative samples of the punt were saved for possible future display.

# C3 Lessons learnt

**Identification of known and previously unidentified heritage can prevent fatal flaws**

Including iwi and community concerns in the early design and later stages of the project meant that significant community concerns could be managed.

**Engagement with iwi and community enables issues to be managed as they arise**

By keeping tangata whenua and the wider community involved in the project, relationships were strong enough to address heritage impacts as they occurred.

**On- site induction by iwi and project archaeologists eases project constraints for unexpected discoveries**

The discovery of potential koiwi halted work at that site while the find was analysed, but construction could continue elsewhere.

# Appendix D: Heritage Economic Benefits Framework: Case study 2: Victoria Park Tunnel

## D1 Introduction to Victoria Park Tunnel

The Victoria Park Tunnel (VPT) project increased the capacity of the highway section between the Wellington Street overbridge and the Auckland Harbour Bridge. Originally, this section of State Highway 1, between Newmarket and the Auckland Harbour Bridge, was only a four-lane urban highway that presented a bottleneck for one of New Zealand's busiest roads. The 2.2km VPT, which includes a 440m tunnel, was constructed to increase the vehicle carrying capacity of this section. The project reduced congestion and so improved travel times, reliability for freight operators and overall road safety. The VPT was completed in March 2012 at a cost of $340 million.

Construction of the VPT had the potential to affect European archaeological sites in Freemans's Bay, and earlier Māori sites in the area now known as St Marys Bay and Point Erin Park. Additionally, there were significant heritage impacts and associated designation requirements for historic structures around the project area. These structures included category I historic places listed by Heritage New Zealand Pouhere Taonga (HNZPT), such as the Auckland Municipal Destructor, and other structures listed by Auckland Council. The Rob Roy Hotel and the Campbell Free Kindergarten raised illustrative heritage conservation challenges and opportunities.

## D2 Retrospective assessment of heritage values and benefits

In the initial (strategic business case) phase of projects, the Heritage Economic Benefits Framework (HEBF) emphasises developing partnerships with tangata whenua, heritage organisations and the wider community to identify locations and sites of with heritage value.

For the VPT project, tangata whenua were contacted to understand mātauranga Māori-based impacts of tunnel design options. An investigative archaeological assessment indicated that the likelihood of encountering features relating to Māori settlements was low.

A number of European historical siteswere located at several points along the tunnel alignment. The site that would be most affected was the Rob Roy Hotel, listed as category II heritage by HNZPT. HNZPT describes the heritage values, which include: amenity value from its exterior, historic education value for its technological and architectural features, commemorative value arising from the 1913 Waterfront Strike and connections with notable persons and breweries, and associative value from having been an element of life in the suburb for over 100 years and its context that includes several other heritage structures.

The designation for the VPT required the heritage values of the Rob Roy Hotel to be maintained. This requirement could have been achieved by moving the hotel south-west along Franklin Road and leaving the structure there. Since the structure would be unusable, the consequence of this solution could have been that both the hotel structure and the land it sat on would lose all value. It would leave the Transport Agency with a (financially) valueless asset with probable future costs to prevent collapse and risks to residents.

It was suggested instead to restore the functional use and benefits of the hotel in its new location, so the ground floor could be leased out again as a tavern and the first floor as offices. Local residents then voiced concerns that a tavern close by would generate too much noise. Although this conservation option

would allow the Transport Agency to recoup its conservation investment, the residents' concerns meant acquiring a new tavern permit might be difficult.

By revisiting and adjusting the engineering plan for the Rob Roy Hotel and the tunnel, the hotel could be moved back to its original location without significant cost to the Transport Agency. A full economic assessment was conducted to estimate the revenues that could be expected from the leases at potential final locations. Since the original location of the hotel was distant enough that a tavern would not create noise for residents, the functional benefits of the hotel could indeed allow the Transport Agency to recoup its conservation investment.

Another historic structure affected by the VPT project was the Campbell Free Kindergarten, listed by Auckland Council. The designation for the VPT required that any damage from construction vibrations to the kindergarten was monitored and managed. This required an assessment before the start of construction. The kindergarten had been neglected to the point where it was unsafe to enter; however, creating a situation where a requirement for designation could not be met. The situation was resolved by creating a functional benefit for the kindergarten building.

In the original VPT design, the tunnel control centre was located 500m away from the tunnel itself, requiring pipes and cables to run between the two. A disproportionate cost saving could be achieved by housing the control centre in the Campbell Free Kindergarten building, as it was much closer to the tunnel. Its owner agreed to lease the first floor of the kindergarten to the Transport Agency for a symbolic amount provided the cost savings were used to improve and refurbish the building to such an extent that the wider community could use it. By creating a functional benefit for the heritage site, a fatal flaw was resolved, the commemorative value of the kindergarten maintained and its associative value greatly improved.

A further heritage structure identified during an early stage was the Auckland Municipal Destructor, listed by HNZPT as a category I historic place. Placing viaduct piles by drilling rather than driving allowed the amenity, bequest, historic education and associative values of the destructor to be maintained.

A loss of heritage values and benefits associated with the Jacob's Ladder walkway in St Marys Bay could also be minimised. The walkway, which had been part of the suburb and used for over 100 years with associative value for residents, could not be maintained in its location. A new walkway now connects Beaumont Street to Point Erin Park, mitigating the loss of the associative value, and since the accessibility of Point Erin Park from the harbour has been maintained, recreational values have been maintained as well.

In line with the requirements for the project designation and the archaeological authority conditions, any archaeological sites and materials found during excavation and construction were saved and recorded. These items are available for future generations (bequest value), and the documentation that describes them provides the context to place them in the history of St Marys Bay and Auckland (historic education value).

# D3 Lessons learnt

**Early involvement of the Transport Agency's property advisors led to optimal outcomes for heritage and assisted in maximising the heritage economic benefits within the overall project**

The Rob Roy Hotel and Campbell Free Kindergarten are now actively used elements of S. Marys Bay and cost-neutral or revenue-generating assets for the Transport Agency

**Engaging with tangata whenua and local communities avoids fatal flaws**

Locations where Māori archaeological sites and features could be found were identified early, and the design of the project included mātauranga Māori-based values. Engaging with local communities made it possible to lease the Rob Roy Hotel as a tavern and office building.

# Appendix E: Glossary

| | |
|---|---|
| BT | benefits transfer (method) |
| CBA | cost-benefit analysis |
| CE | choice experiment (method) |
| CHI | cultural health index |
| CIA | cultural impact assessment |
| CICES | Common International Classification of Ecosystem Services |
| CVM | contingent valuation method |
| DfT | Department for Transport (UK) |
| DOC | Department of Conservation |
| ESR | environmental and social responsibility (screen) |
| ESS | ecosystem services |
| GPS | Government Policy Statement on Land Transport |
| HEBF | Heritage Economic Benefits Framework |
| HNZPT | Heritage New Zealand Pouhere Taonga |
| HNZPTA | Heritage New Zealand Pouhere Taonga Act 2014 |
| HPM | hedonic pricing method |
| HVSS | Historic Values Scoring System |
| ICOMOS | International Council on Monuments and Sites |
| IIG | Iwi Integration Group |
| IK | indigenous knowledge |
| LTMA | Land Transport Management Act 2003 |
| MCA | multi-criteria assessment |
| MEA | Millennium Ecosystem Assessment |
| NECAMS | Natural Environment and Cultural Asset Management System |
| NZHPT | New Zealand Historic Places Trust |
| RCA | road controlling authority |
| RMA | Resource Management Act 1991 |
| TCM | travel cost method |
| TEEB | The Economics of Ecosystems and Biodiversity |
| TEK | traditional ecological knowledge |
| TEV | total economic value |

| | |
|---|---|
| TK | traditional knowledge |
| Transport Agency | New Zealand Transport Agency |
| VPT | Victoria Park Tunnel |
| WRI | World Resources Institute |
| WTA | willingness-to-accept |
| WTP | willingness-to-pay |