

The role of Māori values in Low-impact Urban Design and Development (LIUDD)

Discussion paper

Garth Harmsworth, Landcare Research NZ Ltd. Palmerston North

HarmsworthG@LandcareResearch.co.nz

Introduction

It is difficult to understand what the role of Māori values might be in design and development in an urban environment without first having some exposure to Māori culture and some basic understanding of the Māori world-view, knowledge, values and concepts. Of equal importance is an understanding of contemporary and historical Māori issues within a geographic area. It is essential to seek guidance as much as possible from tangata whenua, Māori planners, authorities, and researchers on these matters. This discussion paper provides a framework both to guide the practical inclusion of Māori values in low-impact urban design and development (LIUDD) and to guide the development of any research intending to include a cultural perspective or bicultural approach.

In the environmental area, the contemporary Māori world-view is still strongly based on traditional cultural beliefs, knowledge, concepts, and values. These traditional concepts and values, derived from Māori knowledge (mātauranga Māori), are still fundamentally important in the way many Māori form a perspective and approach to environmental management, planning, design, policy development and implementation, and in resolving complex resource management issues.

Many concepts within LIUDD mirror indigenous thinking and have parallel goals to Māori approaches for environmental planning and resource management.

Māori concepts

Important traditional cultural concepts and knowledge are being used and interpreted in many new situations, contexts, disciplines, and have found new and modern relevance and meaning. Key cultural concepts and values have been widely used in contemporary legislation, planning, policy, and research, which have often widened their original traditional meaning to align with, and in many cases reinforce, modern concepts and situations. Many of the traditional concepts and terms now form a modern Māori perspective or world-view along with a range of modern expanded definitions and interpretations. Table 1 shows some key traditional concepts, expanded meanings, and their alignment with contemporary western thinking.

Table 1. Traditional concepts and terms within a modern paradigm

Key traditional concepts and terms	Definitions, modern explanations	Alignment with western and scientific thinking
Whakapapa	Creation stories, ancestral lineage, sequence, atua, genealogical sequence, Papatuanuku, Ranginui, taonga	Inter-relatedness between humans and ecosystems, inter-connection, integration, holistic approaches, genetic assemblage, relationships,

		flora and fauna
Atua	Nga Atua Kaitiaki, Divine forces, departmental gods, deities	Environmental, ancestral and cultural domains, frameworks
Tino rangatiratanga, mana motuhake	Sovereignty, control, autonomy, authority	Autonomy, self-determination, independence, control over the management of resources
Mana	A sense of prestige and authority	Pride, authority, self-esteem, respect
Mana Whenua	Relationship and ancestral links to land through whakapapa and occupation, rights of self-governance, rights to authority over traditional tribal land and resources	Strong established relationship or links to a defined geographic area
Mātauranga Māori	Traditional knowledge, wisdom, in the domain of Tohunga, understanding human-environmental relationships, understanding the world and universe from an indigenous perspective	All forms of knowledge used by a wide range of practitioners, traditional ecological knowledge, traditional, environmental, health, historical knowledge
Kaitiakitanga	Practice of spiritual and physical guardianship of the environment based on tikanga Active guardianship, custodianship, stewardship, sustainable management of resources, healing the land, environmental responsibility	Sustainable management of natural resources, sustainable development, integration, ecosystems, inter-connection of ecosystems, holism, inter-generational equity
Te Ao Turoa	Notion of inter-generational equity	Sustainable management of resources, sustainable development
Kotahitanga	Unity, collective, community, inclusion, tribal, respect for individual differences	Participation, consensus, collaboration, unity, participatory decision making, networking
Tikanga	Custom, lore, cultural practice the correct way of doing something	Protocols, standards, procedures
Taonga	Valued possessions, highly	Natural resources,

	prized, material or non-material – objects, things of cultural and spiritual importance under tikanga	language, objects, sites, anything significant that has priority
Whenua	The land, the earth mother Papatuanuku	The land, the biosphere, terrestrial and coastal ecosystems
Mauri (<i>basis for mauri is whakapapa</i>)	Denoting health and spirit, a sustaining life force, intrinsic life source, an essential essence of being, an energy or element that permeates through all living things	Key concept for describing environmental quality, pristine condition, human relationships, cumulative effects, cause and effect, pollution, contamination – degradation, declining, loss of mauri, a genetic code
Ritenga	The area of customs, protocols, laws that regulate actions and behaviours related to the physical environment and people. Includes tapu, rahui, and noa – everything was balanced between regulated and where tapu was sacred	Regulations, regulatory framework, rules, practical rules to sustain the wellbeing of people, communities and natural resources. Permitted activities versus restricted and prohibited activities
Tapu	Sacred state, ritual constraint or prohibition, all pervasive force, religious observance	Sacred, prohibited, protocols, highly regulated, burial sites, areas or sites off-limits, restricted access, special conditions
Rahui	Restricted use of resources, regulated state	Regulation, controlled, sustainable management, laws
Noa	Relaxed access, unrestricted use of resources de-regulated state	De-regulated, permitted, discretionary use
Wairua	Spiritual dimension	Spiritual, sacred, religious belief, cultural values

Māori values

Māori values (Barlow 1993; Mead 2004) have been expressed as instruments through which Māori make sense of, experience and interpret their environment (Marsden 1988). They form the basis for explaining the Māori world-view (Te Ao Māori), and provide the concepts, principles and lore Māori use in everyday life to varying degrees, affecting the interaction with others, and governing responsibilities and the relationship with both the natural and spiritual environment. Some important Māori values include: Tikanga – cultural practice, lore, custom, norms; Tino Rangatiratanga and Mana Motuhake – self-determination, independence or inter-dependence; Mana

Whenua – rights of self-governance, rights to authority over traditional tribal land and resources; Whānaugatanga – family connections and family relationships; Kaitiakitanga – stewardship or guardianship of the environment; Manaakitanga – reciprocal and unqualified acts of giving, caring, and hospitality; Arohatanga – the notion of care, respect, love, compassion; Awhinatanga – assistance or care; Whakakoha – the act of giving; Whakapono – trust, honesty, integrity; Whakakotahitanga – respect for individual differences and participatory inclusion for decision making; Mana Atua – supreme power, divine authority; Mana Tipuna – authority derived from the ancestors; Wairua – the spiritual dimension to life.

Beliefs and values are a significant part of Māori cultural identity, help establish cultural integrity, and can be strong determinants for regulating, modifying or controlling behaviour. Values can also be translated into actions in many ways.

A modern Māori world-view is derived from a mixture of action and association, traditional values and concepts, modern values, Mātauranga Māori, and western science.

Māori frameworks

Iwi and hapū Māori frameworks for planning, design and decision-making have their origins from Māori value concepts and perspectives. The traditional belief system includes an overarching principle of balance that Māori were, and still are, trying to understand and strive towards. The traditional Māori world-view acknowledged a natural order to the universe, built around the living and the non-living. Important elements of conceptual thinking include:

- All living things are connected through whakapapa
- All living things of the natural world are connected and interdependent
- All living things have a certain amount of mauri, tapu, and mana (Table 1)
- There is an existing relationship between the natural environment and the spiritual world
- Shifts in the balance of the environment, or mauri, for example, through misuse, damage, overuse, would cause shifts in other parts of the system and its related components – as a result, the whole system is eventually affected
- An understanding of ecosystems and processes ‘the big picture’ is only achieved through integration and holism (wholism)
- Mauri is a means of maintaining and/or restoring balance to a system
- The preservation of mauri was seen as a life principle for Māori well-being
- Tikanga was the Māori body of rules and values used to govern or shape peoples behaviour.

The process used by Māori to guide resource use reflected this belief in the interrelation of all parts of the environment. Much contemporary thinking reflects these traditional concepts. For traditional Māori, all activities and relationships were bound up and governed by mythology, tapu, and by an elaborate system of ritenga or rules.

Māori have developed frameworks and classifications to understand, communicate knowledge, make decisions, regulate, restrict and manage parts of their natural and spiritual environment. These frameworks, based on traditional concepts and knowledge, are often represented through an understanding of cultural values.

Frameworks may include key concepts such as whakapapa, Atua, tikanga, and taonga. Whakapapa is a key concept that commonly provides the basis for development of Māori frameworks for managing natural resources, such as environmental subdivision based on Atua (e.g., Tane Mahuta, Tangaroa, Tawhirimatea). The process used by traditional Māori to guide resource use reflected their belief that all parts of the environment were interrelated or interdependent through the domains of Atua. Other frameworks have used a modern approach to stratifying the environment using landscape and cultural domain subdivision, or ecosystems. LIUDD sits comfortably with a Māori holistic and integrated concept of the environment.

Kaitiakitanga

One of the most important environmental concepts is kaitiakitanga (Harmsworth 2003; Awatere 2003a; Harmsworth 1995). Kaitiakitanga is the practice of spiritual and physical guardianship of the environment based on tikanga and is therefore “active” rather than “passive” guardianship or custodianship. Kaitiakitanga as a system takes place in the natural world within the domains of Atua. As the mana for kaitiaki is derived from mana whenua, kaitiaki are the interface between the secular and spiritual worlds. Hence kaitiakitanga is inextricably linked to tino rangatiratanga (authority, inherent sovereignty, autonomy). The prefix kai denotes the agent by which the tiaki is performed. The root word, “tiaki”, includes aspects of guardianship, care, wise management, custodial responsibilities, and stewardship. Traditionally, the role of kaitiaki in the decision-making process was often given to tohunga who, in conjunction with rangatira from various whānau groups and tribal runanga, would prescribe tapu and ritenga. Kaitiakitanga is inextricably linked to mana motuhake, mana whenua, mana moana, and tino rangātiratanga.

To most contemporary Māori, kaitiaki is not about passive custodianship, neither is it simply the exercise of traditional property rights; rather it entails an active exercise of power in a manner beneficial to the resource. For many Māori it confers responsibilities and obligations, and reinforces the spiritual attachment to the natural environment. Kaitiaki who practice kaitiakitanga do so because they hold authority; that is, they have the mana to be kaitiaki. Kaitiaki are the person/s and/or agents who perform the tasks of guardianship over a particular resource or area. This can be carried out at the individual, whānau, hapū, or iwi level.

Māori perspectives and understanding

The way traditional Māori perceived and understood their environment was holistic, through four main overlapping strands of understanding and knowledge. The concept requires that to fully understand, appreciate, and acquire knowledge on the environment, four main strands of thinking must be considered within a system or environment, so that one attempts to understand the complete system or picture. The four main strands or states, derived from various modern models and conceptual approaches for health, social development and the environment, are:

- *Tinana*, what we are exposed to through our senses, our smell, touch, vision, hearing.
- *Hinengaro*, the mental state of improving knowledge and understanding, and thinking holistically about the natural environment, based on the premise that everything is interconnected and that thinking has to be integrated to understand the complete picture.

- *Wairua*, spiritual, strongly tied to people's values, relationships, beliefs, attitudes, and feelings about a place or the natural environment as a whole.
- *Whānaukatanga* emphasises association with the natural environment, and relationships between people. This state is critical for understanding the relationship between people and the natural environment, learnt from a long period of coexistence with the natural environment, and understanding the effect human activities have on the environment.

Based on this conceptual thinking, traditional Māori managed every part of their environment and their relationship with it, through an elaborate system of rules, protocols, and regulations, which were an inherent part of daily life. This was to achieve balance between 'tapu, rahui, and noa'. These offered a series of practical rules and actions to sustain the wellbeing of people, communities and natural resources. The term *tapu* denoted sacred restriction and regulation, while *noa* denoted a state of relaxed access. When resource scarcity gave way to abundance, a tapu restriction was relaxed and replaced with noa. Tapu and noa were complementary, usually associated with pairings such as: left and right, life and death, light and dark, male and female. The balance between tapu, rahui, and noa was dynamic.

Urban population – changing demography

Māori population grew from 42 650 (reported in 1896), to those of Māori descent totalling 579 714 (15% of the total NZ population) in the 1996 census. Rapid growth rates in the Māori population were recorded just after the 1930s, which slowed in the 1960s. From 1945, Māori moved progressively from rural to urban areas (Durie 1998). In 1945 the mix was 25% urban, 75% rural; by 1971 this had changed to 70% urban, 30% rural; and this trend continued to 1981, before plateauing out to some extent. Since 1996 about 83% of all Māori live in urban areas. Employment opportunities were one of the major factors influencing migration since 1950, and in more recent years other factors such as careers, lifestyle, training, education, business opportunity, and family connections have become increasingly important. In urban areas such as Wellington, Government and public service, business networks, education, health, finance and political influences have been important determinants for attracting Māori. Present figures (Te Puni Kokiri 2001) currently show 25% of the total Māori population live in the greater Auckland area, while a further 25 % live in the Waikato and Bay of Plenty. The Wellington region had 9% of the national Māori population, followed by the larger Christchurch area with 4%. Emigration overseas has also become a significant trend with between 26 000 and 30 000 Māori now resident in Australia. In the South Island, only 6% of the total population is Māori, making up 12% of the total Māori population. Trends in 2002 showed that while Māori populations in urban areas remain high, there has also been a net shift in internal migration patterns from urban back to some rural tribal areas. Using Māori descent criteria, about 15% of the New Zealand population currently identify as being Māori; about 40% of this population, as at 2002, are under 15 years. About 70% of all Māori indicated some known affiliation with iwi and hapū and about 120 000 Māori are competent speakers of te reo. The demographic for Māori in future will show a sharp rise in the proportion of older Māori over 65 years – increasing from 3% of the Māori population in 1991 to 13% in 2031. Projected growth forecasts indicate the total Māori population will reach 774 000 by 2021 (an increase of around 48%), with around 82% of all Māori living in cities (Te Puni Kokiri 2001).

The Māori population is a complex and dynamic one, as with other sectors of the New Zealand population. Information from statistics, social research, numerous political forums, and widespread participatory research suggests that within the general New Zealand population, Māori still retain a strong sense of cultural identity and purpose, and see Māori values as an integral part of strategies and actions toward Māori development and advancement (Durie 1998). Factors such as demographics (e.g., population pattern), social and economic disparity or disadvantage, and the strength of cultural and historic relationships, will have a major influence on the way different Māori groups identify, vision, and implement their goals and aspirations.

Modern society

In a modern urban society, Māori perceive and interact with their environment in ways dramatically different from those of the past, particularly from that way of life represented more than 100 years ago. Through the 19th and 20th centuries Māori society has become increasingly fragmented, and many Māori, through processes such as colonisation and assimilation, have become increasingly disconnected from their Māori culture and tradition, and a proportion now see no relevance for tradition, Māori values, or the past. Many have grown up in a dominant Pakeha (Eurocentric) culture and have never been educated or exposed to Māori culture or values. However, other groups of Māori have either held onto, or re-established connections to tradition, values, and strengthened their cultural identity. Particularly since the late 1960s, these latter groups have been active participants in a cultural revitalisation in New Zealand as a part of a wider cultural renaissance. Many urban Māori, although distanced from their cultural roots, have signalled through various forums the importance of their indigenous culture and still identify strongly with tikanga, te reo, and with iwi, hapū and whānau affiliations and values. Many belong to a new wave of urban Māori and have been active in the development of urban Māori authorities, Māori education, Māori businesses, Māori service delivery, and urban marae. Many Māori in urban areas are very supportive of cultural education, retaining links to tradition, and acquiring new skills that establish a modern cultural identity. These are all seen as important components for Māori development, Māori advancement, and the retention and enhancement of a Māori identity. It is this striving for identity and connection with tikanga and the whenua that separates many Māori from the general population. The use of Māori values, in line with many other strands of thinking on urban environments, provides a different and new perspective for design and development. It also provides that cultural or indigenous input that has been historically neglected, and continues to be commonly neglected in modern forums and scenarios.

Cultural values in LIUDD

Cultural values – for any population – reflect a myriad of beliefs, ideas, perceptions, and perspectives that usually reflect a person’s upbringing and background, often shaped by learning, experience, knowledge, and social and cultural relationships. They help construct an individual mind-set and worldview. The values of a land or building developer are often quite different to those of a conservationist or an ecologist, and commonly result in different planning scenarios being presented for the same landscape. Māori will often have a different set of values from most mainstream New Zealanders because of their cultural background or association with indigenous culture. Cultural values, in general, help shape thinking about the physical, social and economic environment we live in, and can help construct a vision and scenario for

planning or designing any environment. The use of values, through design, development, and implementation, plays an important role in improving the quality of an urban environment, responsive to people's cultural perspectives, and are integral to achieving wellbeing and ultimately human survival. Māori involvement in and contribution to planning, policy, design and decision-making will generally reflect the level of understanding of Māori values and tikanga by an individual or participating group.

General issues in urban environments

Urban areas are rapidly expanding, and with population growth and expansion come many issues. General issues in an urban environment have been documented in many forums and in numerous reports and papers (Eason et al. 2003; Landcare Research 2003). Some of the key issues include:

- Pressure on urban infrastructure (water, sewerage, stormwater reticulation and networks)
- Pollution (land, water, air)
- Industrial and factory waste, point discharge, runoff
- Sewage disposal, treatment and management of waste (e.g., major issues associated with adverse effects on waterways and coastal areas)
- Increasing highly modified, highly disturbed and altered environments
- Reduction in open space
- Increasing high density building, reduced space for new building
- Escalating costs, growing economic costs, property values
- Societal problems, economic and social issues, disparities, increased crime
- Large quantities of waste derived from high consumption, increasingly dispensable nature of products, and issues of waste management
- Drinking water, water quality and availability
- Roading and traffic congestion
- High levels of energy use and waste
- High growth rates affecting availability of land, and reduced area of high value or highly productive land
- Damage to significant indigenous ecosystems (wildlife, indigenous habitats)
- Reduction in indigenous biodiversity areas
- Decreasing environmental quality and ecosystem condition
- Impacts on human health, contamination, risk of disease
- Biosecurity, spread of pests
- Impacts on healthy environments and relationship with human wellbeing.

Many of these issues indicate urban areas are under enormous pressure and are growing in an unsustainable fashion. Some of this growth is *ad hoc*, and uncontrolled expansion and growth have dire consequences for the biophysical environment, human well-being and ultimately human survival. From a Māori values perspective urban ecosystems seem very much out of balance and require new approaches to design and development that link the urban physical, social, and cultural environment intimately to human wellbeing, values, and human existence. The recent report on sustainable development for New Zealand (Department of the Prime Minister & Cabinet 2003) states "there is growing pressure for improvements in the design of our cities" and that "urban design is at the core of sustainable development". Urban design refers to "the physical arrangement, appearance and functioning of cities",

good design should therefore be seen in “harmony with the natural and cultural landscape”. To address and solve many of the complex issues in cities, and to plan for the sustainable development of urban communities, new approaches and new perspectives to urban design and development are required. Some of the key LIUDD approaches to tackle urban problems and effect change include (Eason et al. 2003; Landcare Research 2003):

- Low-impact technologies
- New environmental technologies
- Improved links between underpinning research, policy, actions and evaluation
- Collaborative learning and community participation
- New types of urban design
- Low impact development
- Integrated design and development.

Many of the LIUDD approaches are being practically demonstrated in different part of the world (Eason et al. 2003; Landcare Research 2003). For example, many of these approaches have been used in Curitiba, Brazil, Singapore, and low-impact technologies are gaining support and interest in Christchurch and parts of the Auckland region. Practical demonstration of what might be involved in LIUDD includes (Eason et al. 2003; Landcare Research 2003):

- Strategically introducing native vegetation to key areas to reduce runoff and stormwater
- Reducing runoff in urban settings using environmental technologies
- Minimising and eliminating contamination within urban areas through advanced environmental technologies and planning
- Designing and using natural systems (e.g., wetlands, streams) for erosion, sediment, effluent control
- Providing less disturbance and fragmentation of indigenous ecosystems during development
- Re-creating more natural ecosystems within urban environments
- Defining cost-effective low impact approaches to design and development
- Improving energy efficiency within urban environments
- Improving on-site management to minimise offsite adverse environmental effects.

Māori issues in urban environments

Urban environments are modern, culturally based, high-density human settlements, where human settlement dominates and smothers conglomerates of highly fragmented, altered and often dysfunctional ecosystems, and where the separation between human beings and the natural environment is usually at its widest. Many Māori issues in urban environments are similar to issues derived from the general population, except where major social and economic disparities exist between Māori and non-Māori that can generate or exacerbate an issue (e.g., household income, housing, health), or where issues are strongly culturally based or derived from an indigenous world-view perspective. The following cultural issues, grouped into environmental, social, and cultural, have been recorded at various forums over the last 10 years and summarised here. Many of the issues provide an incentive and direction for research, within the context of LIUDD. Some of the more specific Māori issues within this context, include:

Environmental

- Elimination of natural resource areas, indigenous ecosystems and habitats (i.e. destruction of areas, sites) primarily through development
- Damage and modification to natural resource areas, indigenous ecosystems and habitats (i.e. modification to areas, sites)
- Loss of indigenous taonga species in urban areas such as plants, birds, fish and other animals
- Impacts of pests on taonga flora and fauna species
- Exclusion from/ limited participation in urban environmental planning and policy
- Lack of access to environmental and science information (also use, uptake, understanding)
- Lack of understanding by mainstream public, local and central government of Māori perspectives and concepts, Māori knowledge systems, Māori urban design aspirations
- Training, upskilling, capacity building to effectively engage in research, planning and policy
- Lack of resources to effectively engage in urban design and development.

Social

- Unemployment, education
- Low incomes
- Housing
- Transport difficulties, restricted access to networks, costs
- Health
- Effects of roading design on Māori communities (e.g., Māori settlement, papa kainga, marae)
- Effects of urban development on Māori communities (e.g., Māori settlement, papa kainga, marae)
- Effects of economics, property values, property ownership, land use, on Māori communities
- Alienation of Māori (e.g., communities) within urban environments
- Contamination, impacts of pollution on Māori communities
- Urban design, environmental change, and Māori health (e.g., illness, disease)
- Exclusion, limited participation in urban social-health-economic planning and policy
- Lack of resources, lack of capacity to effectively engage in planning, policy implementation and action
- Lack of leadership, organisation, skills for articulating issues and solutions.

Cultural

- Elimination of, and irreversible damage to culturally significant areas, natural resource taonga, traditional food source areas (e.g., mahinga kai) primarily through development
- Sewage disposal, treatment and management of waste (e.g., major issues associated with adverse effects from sewage on waterways, coastal areas, moana, traditional food source areas)

- Disconnection to culturally significant sites, traditional places
- Development and modification of culturally significant areas, natural resource taonga, traditional food source areas (e.g., mahinga kai)
- Damage, impacts, modification and on-going management of cultural heritage sites
- Damage, impacts, modification and on-going management of wahi tapu
- Loss of knowledge (Mātauranga Māori) within urban environments
- Abuse of and change of placenames, alteration and elimination of cultural landscapes and environments.

Many of the approaches prescribed under LIUDD, and promoted through sustainable development, would benefit and make a major contribution both to individual Māori and to Māori communities, and also help achieve Māori aspirations in urban areas. This approach provides an opportunity for appropriate forms of research responsive to both Māori and other communities. This may include collaborative research, collaborative learning, improved and enhanced knowledge streams, understanding, networks, and cultural partnerships in urban design and development.

A process for developing Māori research in urban areas

The following provides for discussion, a process or guideline for developing research that can support and contribute to LIUDD from a Māori perspective. It enables Māori values to be considered and incorporated into the LIUDD approach. The ideal process for formulating and developing research follows roughly the order below:

- Determination and articulation of issues, scoping the problem(s) – in an urban environment
- Determination of appropriate groups to work with, identification of tangata whenua
- Identification and linking of possible forms of research to issues, determining research benefits and relevance (prioritise research needs)
- Development of research questions
- Development of collaborative and participatory research, partnerships, involvement with communities and stakeholders
- Writing of a research plan and development of proposals
- Identification of outputs and outcomes
- Undertaking of issue-focussed research that is responsive to, and benefits, Māori and other communities
- Generation of results, dissemination of information, creation of knowledge
- Facilitation of collaborative learning
- Linking of research to policy and strategies for action
- Implementation of action on the ground (e.g., projects, design implementation)
- Evaluation of collaboration, research and action strategies for change
- Evaluation of input and effectiveness of urban design and development to desired outcomes.

The enhancement of Māori values in urban environments

Positive actions can enhance the environmental, social and cultural quality of urban environments, improve economic efficiency, help achieve goals for human health and wellbeing, and enhance Māori values. The list below provides actions, linked to

previously listed issues and LIUDD approaches, that enable Māori values to be considered and incorporated into the LIUDD approach. The actions deliver benefits to both Māori and non-Māori communities in urban environments, and underpin practical design approaches that are consistent with LIUDD. These actions include:

- Strategic introduction of native vegetation and taonga species to culturally significant areas to enhance cultural values, and to reduce runoff and stormwater, increase of use and application of raingardens using taonga species, recreate habitats based on Māori values
- Restoration and enhancement projects on Māori land (e.g., Bastion Point)
- Promotion of the planting of indigenous flora, and increase native faunal habitats within urban areas
- Reduction of disturbance and modification to culturally significant areas (e.g., pa, papa kainga, wahi taonga, wahi tapu, mahinga kai, wahi kaimoana) using low impact design and development
- Reduction of biosecurity risks to cultural areas and indigenous ecosystems, by involving tangata whenua and urban groups in pest management strategies and operations
- Promotion of safe, healthy traditional food source areas in, and adjacent to, urban areas, particularly those close to marae, papa kainga, and Māori community areas
- Promotion of safe, healthy recreational areas within urban areas, particularly those close to marae, papa kainga, and Māori community areas
- Minimisation and elimination of contamination to culturally significant areas, such as traditional food source areas, through advanced environmental technologies, design and planning
- Design and use of natural systems (e.g., wetlands, streams) to enhance cultural sites and control and reduce erosion, sediment, and reduce off-site impacts of sensitive areas
- Culturally appropriate design for sewerage reticulation, sewage disposal and treatment, effluent treatment, elimination of sewage directly entering waterways and coastal areas
- Increase of connectivity between cultural sites and indigenous ecosystems during development
- Re-creation of natural ecosystems in combination with the protection of culturally important sites within urban environments, and increased linking of cultural sites to indigenous biodiversity sites
- Definition of cost-effective, low-impact approaches to design and development, and identification and minimisation of development factors adversely impacting on Māori, and increase of culturally tailored development strategies that improve Māori housing areas and Māori housing design
- Involvement of Māori communities to improve energy efficiency strategies, as a contribution to wider population strategies
- Creation of projects that focus on cultural sites and marae development opportunities, such as restoration and enhancement projects around or near marae
- Improvement of on-site management; more holistic, integrated, catchment approaches to minimise offsite adverse environmental effects

- Design and development that improves Māori standards of living and Māori health to achieve social equity
- Improvement of transport systems, roading design, which take into account Māori values and Māori communities
- Improved and appropriate valuation methodologies for valuing cultural resources, cultural sites, and other taonga in urban environments for application and use in a range of urban development scenarios, and for comparison with more orthodox or conventional valuation methods.

A Māori research framework for LIUDD

The following research framework supports strategic planning and actions that make a positive contribution to LIUDD, and to the enhancement of Māori values in urban areas. Examples of present research, directly responsive to Māori, within urban environments:

- Improved engagement with Māori organisations, tangata whenua, and individuals, in science programmes that facilitate and increase collaborative learning and collaborative research (Landcare Research FRST programmes: Integrated Catchment Management (ICM), Restoring Indigenous Biodiversity in Human Landscapes, Low-impact Urban Design and Development, LIUDD) (Garth Harmsworth, Landcare Research and others; (Harmsworth 2001, 2002, 2003, *in press*)
- Nga Pae o te Maramatanga, Auckland University National Centre for Research Excellence funded programme: “Ko te Huarahi ki Mua: Roads for Change” (Jamie Ataria, Landcare Research; Ataria 2003)
- Engagement with Māori organisations to develop guidelines for improved roading design that takes into account Māori values and knowledge. FRST programme: “Roading Enhanced by Māori Values and Knowledge” (Opus International Consultants Ltd. and Landcare Research)
- Waikato University PhD programme: “Māori values and Resource Management”. Part of PhD using urban case studies to investigate the methods for valuing cultural and natural resources, such as contingency valuation and methods, versus more standard valuation methods based on economic analyses (Shaun Awatere, Landcare Research; Awatere 2003b).

Potential research that would contribute greatly to LIUDD, increase Māori participation in urban design and development, and enhance Māori values in urban design and development, includes research that:

- develops research partnerships with Māori organisations and focusses on well defined issues and research questions
- underpins restoration and enhancement projects that fulfil Māori aspirations and outcomes
- improves environmental technologies for treatment and improved design of contaminated sites, that reduces on-site and off-site impacts to culturally significant areas

- increases the use of low-impact design and planning, such as introducing raingardens, natural systems, and restoring designated areas for detaining water, filtering, reducing contaminants, reducing on-site and off-site impacts of culturally significant or recreated biodiversity-cultural sites
- underpins restoration and enhancement of cultural use areas specifically designed for traditional purposes such as food production, weaving, carving, taonga enhancement, and other cultural uses
- underpins the enhancement or recreation of special taonga habitats, in line with Māori aspirations for increasing certain native species (e.g., native birds, native fish, reptiles, insects) within urban environments
- improves roading design in urban environments that considers cultural and social factors
- shares knowledge and understanding between Māori and mainstream groups such as scientists, planners, policy-makers, researchers, and promotes the complementary use of Māori, science, and other knowledge systems
- improves involvement and participation with Māori groups and creates opportunities for collaborative learning and collaborative research
- develops GIS environmental sensitivity maps for planning that incorporate cultural heritage sites and other cultural factors
- underpins indigenous biodiversity restoration and enhancement projects on Māori, private or Crown land
- underpins the enhancement, protection, and appropriate management of culturally significant sites, and reduces damage and modification to these sites
- enhances the wellbeing and health of Māori communities in urban areas
- builds capacity for Māori communities to participate and actively engages in research, environmental and development projects
- helps develop urban environmental management plans, and urban development plans, for tangata whenua, urban Māori groups, and other groups in the wider population
- helps develop environmental and urban indicators that can measure progress towards defined goals and advances for Māori, and for the mainstream urban population
- advances Māori education within urban environments, and increases knowledge and understanding of Māori culture
- advances the use of te reo in urban environments, which can be developed in conjunction with low-impact design and development strategies, such as use of bilingual signs, building and roading design, restoration and enhancement projects, use and promotion of placenames, narrative stories, Māori history
- increase the use of Māori art, visual artforms that enhance urban design and development and promote cultural awareness, understanding, and pride in urban environments and New Zealand biculture.

Conclusion

The challenge in the future is to develop forward-thinking strategies that encourage people towards more sustainable forms of development, to move away from short-term piecemeal planning, highly consumptive waste behaviour, high and increasing demands on energy use, rising infrastructure costs, rising transport demands, greater demands on land and building space, increasing urban human health problems, decreasing environmental quality, neglect of cultural issues and factors, the

domination of artificial human environments over natural systems, the decreasing role played by the natural environment in the lives of urban populations, and a lack of awareness and understanding of the significance of natural ecosystems and ecosystem services in urban environments, especially for human wellbeing.

The use of Māori values in urban design and development is entirely consistent with low-impact urban design and development, but provides a sharper focus on cultural issues, understanding the cultural contribution from a Māori perspective, the way Māori development aspirations can be integrated into LIUDD, helping identify and rectify disparities between Māori and non-Māori populations, and acknowledging and correcting the under-representation of Māori in urban planning and policy in a constructive way that benefits the wider population.

This paper is intended to create awareness and understanding, and to promote discussion. It is hoped it has provided some background on Māori values and how they might be used in an urban design and development context, on how these values might be incorporated into research and planning, and particularly on how they could contribute to the larger picture of sustainable development.

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