

# Tāone Tupu Ora

Indigenous knowledge  
and sustainable urban design

Edited by  
Keriata Stuart &  
Michelle Thompson-Fawcett

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new zealand centre for

**Sustainable Cities**

ko te kōwhiri i te ora i te ahumahi

*Ngā mihi acknowledgements*

Ehara tāku toa i te takitahi, engari ko tāku toa ko te takikotahi;  
my strength does not lie in working alone, but in working with others.

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## CHAPTER 2

# Micro-urbanism: Regenerative buildings and the architectural landscape of the pā

Amanda Yates

AMANDA YATES is a registered architect and academic. Since beginning her research-based architectural practice, Archiscape, in 1999 she has focused on developing contemporary architecture influenced by pre-contact Māori-built environments. She has continued to develop this architectural built research since joining Massey University's Spatial Design programme. Amanda has whakapapa links to Ngāti Whakaue, Ngāti Rangiwewehi, Rongowhakaata, Te Aitanga-a-Māhaki and Ngāti Pākehā.

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We are now an urban species (1) whose practices are rapidly overwhelming the productive capacity of the planet (2). Determining how urban areas can become productive, rather than consumptive, environments that are sustainably linked into the resource and energy cycles of the whenua is an increasingly urgent task. When used in relation to urban design, the contested and complex term 'sustainability' has tended to mean the reduction of negative impacts. However, as the discourse around sustainability has developed, many researchers or practitioners (3, 4) have suggested that the built environment must become a net producer of resources. As Janis Birkeland asserts in her book *Positive Development*:

[g]iven the Earth's diminishing biodiversity and carrying capacity, development can only be considered sustainable where it increases natural capital and reduces overall resource flows – as well as meet[s] ... conventional sustainable development criteria. (5)

Reconceptualising the built environment as a generative\* site requires a major paradigm shift, for in the West cultural productions such as architecture have been conceived as separate from the living and physical environment's resource

\* The terms generative or regenerative are used in this chapter to reference the way a 'regenerative' system provides for continuous replacement, through its own functional processes, of the energy and materials used in its operation. (6) At the architectural scale 'continuous replacement' may not be achieved, but may occur in the wider productive and networked urban architectural landscape.

and energy flows. In this chapter I discuss Māori architectural landscapes, or pā, which link a productive, venerated and carved landscape with the built environment; and I propose a contemporary urban design strategy which links sustainability with this indigenous knowledge.

Operating at the intersection of urban planning, architecture, landscape architecture and landscape urbanism, urban design is a cross-disciplinary discourse concerned with the massing and formation of buildings, public space and green zones. Introducing sustainable practices or considerations into urban design requires broadening already extensive urban design factors to include social, economic and ecological issues. Holistic sustainable urban design parameters must incorporate the urban environment, including architecture, public and green space; and the spatial ordering and interrelationships of urban activities; transport planning, including pedestrianisation; energy, service and resource systems, including urban agriculture, forestry and waste management; and the development of local ecosystems (3-8). In short, sustainable urban design strategies must consider issues of both culture and nature, so that our cultural practices can contribute positively to the ecologies within which they operate.

In this chapter I focus on the development of sustainable design strategies that are influenced by indigenous knowledge. While there are examples of both sustainable and unsustainable indigenous practices, I am interested in the reverence for and connection to the environment that underpins indigenous cultures and which, I suggest, is an essential component of sustainable design. Introducing indigenous cultural paradigms and practices into discourses dominated by a hegemonic culture is a complex endeavour (9). Yet there is a growing body of Aotearoa New Zealand-based work that models strategies for introducing Māori knowledge into contemporary discourses (10-13), as

Customary principles and practices have value in the contemporary world and can enable new knowledge

well as a number of studies recently completed or in progress\* on the relationship between indigenous knowledge, resource management and urban design. Such work acknowledges that customary principles and practices have value in the contemporary world and can enable new knowledge. I explore here concepts such as mauri and whenua, and customary indigenous design practices such as the architectural landscape of the pā. These principles and practices acknowledge the intrinsic value of the environment as a whole and the essential interrelation of people and nature.

I also refer to contemporary Western design strategies, such as regenerative and positive development design, which operate within a holistic model and aim to positively generate or regenerate energy, resources and ecological systems (3-5, 14-16). These strategies focus on the interrelations within and between multiple systems. They also require an ability to work across disciplines from ecology to

\* These include *Tū whare āra - Building capacity for Māori driven design in sustainable settlement development*; the *Te Aranga Māori cultural landscapes strategy*; and *Kaitiakitanga o ngā tōhono nui - Kaitiakitanga of urban settlements*, a Landcare Research project currently underway.

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achieves net positive conditions by increasing development would leave the ecology better as well as achieving ne

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This notion of a consc aligns with, for exampl dominant Western cor conditions. While the p has shifted over time in identities has origins in which

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By contrast, many ind worldview in which hun linked to nature by ance existing as a revered del These worldviews or k In the current dominan from materials extracted are designed to be thro through bodies of air or be separate and secondu

engineering, architecture to landscape architecture, industrial design to urban planning and between different culture's knowledge systems. Describing positive development, Janis Birkeland asserts that it

achieves net positive impacts during its life cycle over pre-development conditions by increasing economic, social and ecological capital. Positive development would not only generate clean energy, air and water, it would leave the ecology better than before development. It would be 'reversible' as well as achieving net positive impacts over its life cycle... (5)

Discussing the urban environment, Birkeland notes that

(u)rban areas are widely perceived as places where natural systems cannot survive or do not even belong. But through urban 're-design' we could create more healthy, stimulating and beautiful urban living environments that reunite humans and nature. Cities can solve serious ecological and social problems at a net economic gain. (5)

Sustainability specialist Bill Reed also aims to reunite humans and nature: he defines regenerative design as being more than simply

making a landscape and local habitat more productive and healthy. Effective regeneration requires that we engage the entirety of what makes a place healthy - the core interrelationships between earth systems, humans and the consciousness or spirit that connects them. (7)

This notion of a consciousness or spirit which links environment and people aligns with, for example, the Māori concept of mauri, but sits awkwardly with dominant Western concepts of nature and culture as distinct and separate conditions. While the perception of the relationship between nature and culture has shifted over time in Western culture, the construction of the two as separate identities has origins in Aristotelian philosophy and in a Christian tradition in which

God is regarded as the creator of nature, meaning that nature in this demoted sense is distinct from God, but also that He is related to it as a creator or artisan is to a piece of work, or as a master to a servant. (17)

By contrast, many indigenous or non-Western knowledge systems share a worldview in which humanity arises from the natural environment and remains linked to nature by ancestral ties (11). In this sense nature is both 'super-natural', existing as a revered deity or pantheon of deities, and also familiar and familial. These worldviews or knowledge systems are embedded in cultural practices. In the current dominant Western model, our cultural productions are formed from materials extracted without consideration for sustainable harvesting, and are designed to be thrown 'away' after use, buried in the ground or distributed through bodies of air or water in a natural environment which is considered to be separate and secondary to human industry. Yet as architect and sustainability



writer William McDonough writes, "away" does not really exist' (3), and such industrial practices have led to a 'decline in almost every ecosystem on the planet' (3).

Our effect on the planet is now so marked that some scientists suggest we are in a new geological epoch, the 'anthropocene', which began either at the start of the industrial age or much earlier with the establishment of agriculture (18). A recent paper entitled *Planetary Boundaries: exploring the safe operating space for humanity* suggests that the definition and holistic monitoring of essential Earth system processes and biophysical thresholds is necessary as '(a)nthropogenic pressures on the Earth System have reached a scale where abrupt global environmental change can no longer be excluded' (19). Of the nine planetary 'boundaries' identified, three - biodiversity loss, nitrogen cycle and climate change - may have already been crossed, with consequent negative effects for Earth's intermeshed processes.

Developing more sustainable industrial practices and design strategies requires a return to first principles, which recognise how culture arises from nature and remains embedded in and reliant on natural resources. Polynesia's monumental landscapes offer an intriguing example of a worldview and cultural practice that blends the cultural and the natural as the ground is sculpted to enable habitation. These architectural landscapes were complex and site-specific constructions which, like the Māori pā, performed multiple functions; acting

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Pā offer a model for a contemporary sustainable architectural and urban design practice that merges nature and culture as a synthesised whole.

as markers of place and signifiers of collective prestige, as well as communal habitat or, potentially, defensible refuge. The term pā commonly refers to fortified villages as well as fighting stockades and redoubts, these diverse structures linked by their martial characteristics. However, my use of the term is restricted to elevated and terraced landscapes, and focuses on them for their urban qualities, their architectural and agricultural functions and, most importantly, for the way they combine these functions with a deep

sense of connection to and reverence for the whenua. The largest examples of pā supported many thousands of people, and I contend they offer a model for a contemporary sustainable architectural and urban design practice that merges nature and culture as a synthesised whole.\*

**Tangata whenua – people of the land**

Western and indigenous worldviews are underpinned by radically different perceptions of the relationship between human culture and the 'natural' environment. Throughout Polynesia the people and land are seen as fundamentally linked. The Māori term whenua refers to both land and place and as ecologist Geoff Park notes:

\* I discuss the architectural potential of Māori constructed landscapes in a paper entitled 'On nature, culture and sustainable design' (13).

words like whenua – heard in Tahiti, Sam Polynesian cultures – Polynesian. An ancient the south-west Pacific Fiji and the banua of historical relationship

Kaupapa Māori, a term which Māori culture is kaupapa Māori is a discipline having its own customs Sir Mason Durie describes an environment which

In Māori origin name Papa-tū-ā-nuku, from which locates a people relative deeper reference to our refers both to the breath link between land and Māori academic Aroha the Earth's womb in which mourners and adorning ā-nuku and evoke the

sense of connection between in the surrounding environment spiritual dimensions.

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[I]f the Māori of old and all plants in the maori or life principles

To exist in this world is integral, rather than do

By contrast, orthodox commonly pairs the term antithetical. Given that have tended to be understood term nature derives from suggests that there is an over time this expansion now commonly under



words like *whenua* – *fenua*, *fonua*, *fanua* – and with similar meaning, can be heard in Tahiti, Samoa and Tonga respectively: wherever in the Pacific that Polynesian cultures reached. But *whenua*'s roots are far older than anything Polynesian. An ancient Austronesian concept from when people first entered the south-west Pacific, *whenua* shares linguistic roots with the *vanua* of Fiji and the *banua* of Bali, both conceptualisations of identity in which the historical relationship between human beings and the land is vital. (20)

*Kaupapa Māori*, a term that describes Māori ideology, is a *papa* or ground upon which Māori culture is based and from which *tikanga* or practices arise. While *kaupapa Māori* is a differentiated knowledge system, with each *iwi* and *hapū* having its own customs, there are common foundational values. Māori academic Sir Mason Durie describes a worldview in which people are deeply linked with an environment which has a spiritual as well as a material aspect (11).

In Māori origin narratives, the land is body, the body of the Earth mother *Papa-tū-ā-nuku*, from whom all humans descend. *Tangata whenua* as a descriptor locates a people relative to their ancestral lands, yet it also holds within it a deeper reference to our origins as children of the Earth mother. The term *ūkaipō* refers both to the breast-feeding mother and to the land of one's childhood, the link between land and mother again apparent in the etymology of the *reo* (21). Māori academic Aroha Yates-Smith refers also to 'te *kōpū o Papa-tū-ā-nuku*, or the Earth's womb in which bodies are interred. The green leaves worn by the mourners and adorning the deceased's body invoke the connection to *Papa-tū-ā-nuku* and evoke the

sense of connection between the human dimension and the ancestors present in the surrounding environment, the tangible link between the physical and spiritual dimensions, and the fragility of life. (21)

The environment is conceptualised as dynamic and living, for as the Māori scholar and academic Mākereti wrote in 1938

[t]o the Māori of old, not only human beings, but everything, such as trees and all plants in the forest, fish, birds, animals, mountains, and rivers, had a *mauri* or life principle. (22)

To exist in this world would have meant a deep sense of interconnection as an integral, rather than dominant, part of this system of relations.

By contrast, orthodox Western thought, with its pattern of binary oppositions, commonly pairs the term nature with culture – the two being understood as antithetical. Given this thought construct, any cultural practices or outputs have tended to be understood as existing in a separate sphere from nature. The term nature derives from the Greek *phusis*, meaning 'everything' and therefore suggests that there is 'nothing that is not "nature" – it has no opposite' (17). Yet over time this expansive definition has reduced to the point where 'nature' is now commonly understood as 'the world apart from human influence' (17).

The nature/culture binary opposition is a cultural construction that has had particular currency in Western thought over the last 200 years and, rather than being universal, is specific to that cultural tradition.

In the last 50 years, groups within Western culture, including environmentalists and proponents of sustainable design, have begun to challenge the dominant conception of the relationship between nature and culture. The exploration of indigenous knowledge by Western ecologists has become more common as awareness has grown that

indigenous cultures throughout the world have long understood that any small part of a landscape – a bird, a forest or lake – is part of a larger system and contributes to its harmony through internal circuits and flows. (23)

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Ecologist and writer Geoff Park reflects this shift when he writes that '[w]henua appeals to an ecologist's sensibility because it speaks to ecology's most vital, and perhaps wisest, principle: that everything is connected' (20). Discussing the Māori concept of *mauri*, Park asserts that this

encourages us to see that sense of connection that has confronted Europeans throughout the Pacific ... In the elemental terms of matter and energy, people ultimately are land, no more, no less than the birds, insects, trees and seeds and the constant process of their birth, growth and decay and the movement of them and their parts through the landscape. (20)

Indigenous customary knowledge and practices offer important precedents in the search for sustainable practices that are culturally specific and of their place

While Western conservation theory has consistently sought to separate people from the land to keep the environment untouched and 'natural', Park suggests rather that conservation may be the act of 'allowing the life forces of culture and nature to continue expressing themselves' (20) as an interactive and evolving process. For Park, the nation of Tonga represents an example of how the customary knowledge of local ecosystems and an ethic of guardianship led to a sustainable and 'richly productive small island landscape for the 3000–4000 years the islands have been occupied' (20). The Tongan environment featured a 'natural' forested landscape interspersed with pockets of cultivated

crops in a manner that enabled ongoing soil fertility, but which in Western terms blurred the boundaries between the natural and cultural. Indigenous customary knowledge, like the concept of *mauri*, and practices such as the Tongan forest cultivations offer important precedents that can assist in the search for sustainable contemporary practices that are culturally specific and of their place.

#### Polynesian architectural landscapes

Polynesian architectural landscapes, like Tongan forest cultivations, also overlaid the 'natural' and the cultural, rendering the two a complex hybrid. In this tradition the ground was articulated, formed into furniture, ceremonial platforms or inhabitable space sculpted from the ground. This practice of earthworking was part of a complex of monumental architectures evident across Polynesia, which ranged

in type from earth or stone *malae* of Tonga and places, and ditch and bank performed a range of functions of political hierarchies and regions' (26). Archaeologists [that] ... were important symbolic and defensive ... little attention in architecture their earthen materiality. Yet the largest *pā* in Aotearoa constructions: both a deity and an evocation and emblem suggests, the powerful in

Discussing the monumentologist Ian Barber writes in Polynesia' (28). The description of a defensive stronghold, being a natural the size of the monument Austin, one of the few authors this earthworking practice Aotearoa New Zealand is

is a constructed landscape headland or spur in the has been shaped for settlement attached to these carved how important the landscape hillsides, known as *pā*.

Sarah Treadwell, in her *the architecture of the H* describing them as 'massive the ... land' (31).

The term *pā* means to as to clump or group to the term to describe fort term *pā* refers to an architecture by contrast, a *kāinga* (earthworks, though minor of *rua*, *hangī*, *takuahī* (s recessed whare (houses), and bank constructions

in type from earth or stone platforms or temples (the *heiau* of Hawai'i and raised stone *umulae* of Tonga and Samoa), earthen or stone mounds for habitations or burial places, and ditch and bank fortifications (24, 25). These monumental architectures performed a range of functions that included displays of status, the establishment of political hierarchies and 'the assertion of territorial ownership of productive regions' (26). Archaeologist Douglas Sutton describes pā as 'complex monuments [that] ... were important to people in various ways, which included ceremonial, symbolic and defensive purposes' (26). These inhabited landscapes have received little attention in architectural and urban design discourses; perhaps because, given their earthen materiality, colonists understood them only as landscape elements. Yet the largest pā in Aotearoa New Zealand, such as Maungakiekie, were complex constructions: both a dense urban site inhabited by some 5000-7000 people (27) and an evocation and embodiment of ancestral connection as well as, this chapter suggests, the powerful mauri of the living world.

Discussing the monumental landscapes of Aotearoa New Zealand, archaeologist Ian Barber writes that 'the number of Māori pā is without precedent in Polynesia' (28). The greater scale of New Zealand pā is suggested by the description of a defensive settlement on the Hawaiian Island of Maui as 'a true stronghold, being a natural hill fortified with a palisade, although nowhere near the size of the monumental Pā fortresses in New Zealand' (29). Academic Mike Austin, one of the few architectural commentators who have discussed pā, links this earthworking practice with architectural monumentality, suggesting that the Aotearoa New Zealand landscape

is a constructed landscape. More importantly, every prominent hill, island, headland or spur in the North Island ... Te Ika a Māui (the fish of Māui) has been shaped for settlement for hundreds of years. There are many stories attached to these carved and tattooed artefacts. Māori repeatedly reinforce how important the land is to their world view. ... these carved and terraced hillsides, known as pā, are our monuments. (30)

Sarah Treadwell, in her text *Categorical weavings: European representations of the architecture of the Hākari*, also refers to the terraced landscapes of Māori, describing them as 'massive architectural constructions' and an 'architecture of the ... land' (31).

The term pā means to block up, obstruct or close off an open space, as well as to clump or group together (32). Both meanings are evident in the use of the term to describe fortified villages or fighting stockades. In this chapter, the term pā refers to an architecture marked by major and monumental earthworks; by contrast, a kāinga (village) is understood as a settlement without major earthworks, though minor earthworking practices may be evident in the form of rua, hangi, takuahi (storage pits, earth ovens, hearths) and, in colder areas, recessed whare (houses). The major earthworks that distinguish pā include ditch and bank constructions and terraces (26) along with a characteristic elevation



of site and clearing of vegetation. Terracing was a practical way to achieve a flat living platform on steep hills and ridges, while the elevation and the ditch and bank structures provided defence against attack. Elevation and the clearing of bush land also enabled the terraced landscape to perform as a monumental site.

Pā varied across territories, depending on resource levels, topographies and population densities. Something in the order of 6000 pā sites have been discovered, and it seems that pā proliferated in a short period of time during the 15th and 16th centuries (33). In their monumental scaling they represented an enormous commitment of resources. Aotearoa New Zealand historian Anne Salmond links pā with an attempt to claim status through a display of prosperity, asserting that at this time

population pressures and a growing competition for resources and prestige were being reflected in the construction of elaborate fortified villages (pā) and food stores, the secret burial of the dead, and the display of wealth in greenstone ornaments and probably also in carving. (34)

30

Archaeologist Douglas Sutton, writing in *The Archaeology of Pouterua*, also ascribes a 'symbolic' function to pā, asserting that it

may well be significant that many of these pā sites began as large storage facilities ... Concentration of a large amount of food in one place implies that display was also an important component of such sites, demonstrating success to other groups ... the elevated position, while taking advantage of natural defensive features, also had an element of display ... The alteration of the large, physically dominating cone was a clear statement about 'place' and the ownership of 'place'. Simply clearing the forest vegetation and forming terraces broadcast a highly visible statement about occupation of the landscape. Covering those terraced spaces with structures filled with stored wealth amplified that statement. (26)

Sutton goes on to assert that the practice of pā building was time-consuming, and that if defence was the only reason for these structures it is likely that pā would have been hidden. Instead, the pā on volcanic cones advertised their presence even more strongly than before by constructing highly visible lines of demarcation across the rim of the cone and around its highest points' (26). This description suggests a dual role of both spectacle and defensive structure for pā, a duality which is evident also in James Cook's account in his journals of the 1769-70 exploration of Aotearoa New Zealand:

Tupia hath all along told us that they were Marae (marae) or places of Worship, but I rather think that they are places of retreat or stronghold where they defend themselves against the Attack of an Enemy. (35)

Sutton suggests that pā were

both strongholds and marae. Pā are complex monuments and were important to people in various ways, which included ceremonial, symbolic and defensive purposes. (26)

These monumental landscapes are concerned with the

creation and intensification of a strongly demarcated surrounding landscape

As such, these constructions give identity to place.

Historian James Bell, discussing defensive sites, suggests that

were so difficult to take were evidence of the presence, or emergence, in time, extractive to a sustainable

The idea of a sustainable landscape on pā. Discussing the overpopulation questions whether

pā of the 15th and 16th centuries were a reaffirmation of and a reordering of productive order into a

Barber goes on to suggest that pā stood as an integrating process

In its symbolism, the landscape with 'natural' features extended and reinterpreted

There is, in this theory, a

From pā to Te Whare Whānau

The largest pā were urban centres on volcanic cone pā in Auckland

at times of peak use (27). Anthropologist Susan Bullock

Mangere volcanic cone

one of the two largest (28) (26). The cone is complex and two prominent, on a complex of three

The terraces of Maitokie were used for storing kūmara were di

Maitokie's history is disc



These monumental landscapes, like other Polynesian monumental architectures, are concerned with the

creation and intensification of highly visible, material symbols made up of strongly demarcated or bounded areas, placed so that they dominate the surrounding landscape. (26)

As such, these constructed landscapes performed as signifiers which linked (w) identity to place.

Historian James Belich also questions the assumption that pā were primarily defensive sites, suggesting rather that pā

were so difficult to take that there was often little point in trying ... They are evidence of the presence of reserves, not their absence. They must post-date, or emerge in tandem with, the successful shift by some groups from an extractive to a sustainable economy. (33)

The idea of a sustainable economy underpins archaeologist Ian Barber's theories on pā. Discussing the overuse and subsequent failure of a primary food resource, Barber questions whether

pā of the 15th and 16th centuries at least may represent a monumental reaffirmation of and appeal for the extension of a more beneficent and productive order into a now more permanently capricious island world. (28)

Barber goes on to suggest that the act of working the land may have been understood as an integrating practice with the earth itself. He writes:

In its symbolism, the pā landscape ... united expressions of 'cultural' landscaping with 'natural' sacred ancestral prominences ... pā-building extended and reintegrated the traditional landscape. (28)

There is, in this theory, a complex merging of the cultural and the natural.

#### From pā to Te Whare Whenua

The largest pā were urban in scale and complexity of use. Maungakiekie, a volcanic cone pā in Auckland, may have had some 5000-7000 people living in it at times of peak use (27).<sup>\*</sup> In a report written for the Department of Conservation, anthropologist Susan Bulmer describes Maungakiekie pā as being, with the Māngere volcanic cone:

one of the two largest (46 ha) and the most complex of the Tūmaaki cone pā [sic]. The cone is completely terraced from summit to base. It has three peaks and two promontories, which were fortified with ditches and banks, formed on a complex of three cones joined together. (36)

The terraces of Maungakiekie were densely occupied: on some of the terraces pits for storing kūmara were dug, while postholes indicate that lightweight buildings

<sup>\*</sup> Maungakiekie's history is discussed in more detail by Blair in chapter 4.

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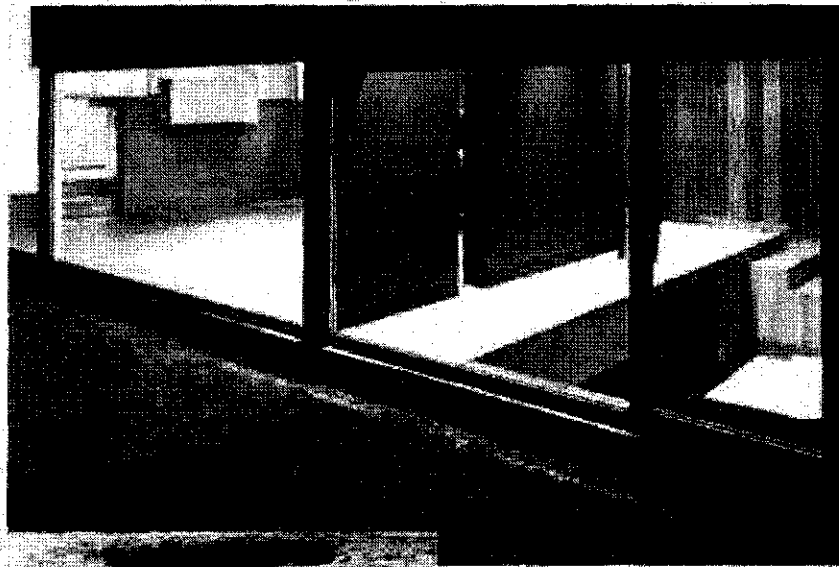


Figure 1. Ground House - a folded landscape which recesses into the ground (above), and a terraced pā landscape (left).

Kyla Macdonald

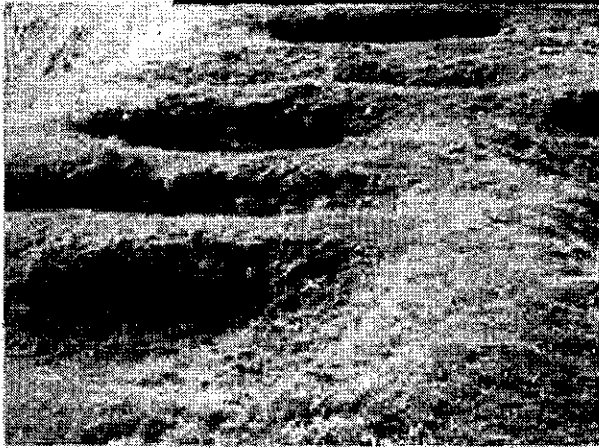


Figure 2. Sounds House - (above), and a mahau (percussion instrument) (left).

Kyla Macdonald (above), Kaitiaki Toia (left)

such as whare, pātaka and kāuta were located on the terraces, as were recessed hearths, earth ovens and middens (36). The pā was a site of intensive cultivations on the hill and in the surrounding lava fields. Kūmara would probably have been

a primary crop, along with taro and gourds (37).

As a kind of urban architecture, pā such as Maungakiekie allowed for dense habitation and, as a generative landscape, enabled local agricultural production and communal economic activity. Rising above the plain the carved whenua was - and remains in the case of Maungakiekie and many other pā - a powerful and living embodiment of the intertwining of whenua and whakapapa, environment and linked lineage over time. The synthesis of natural environment, architectural construction and resource production evident in the pā offers a way to rethink our urban and architectural practices, linking them with the productive landscape and with the cultural principles and practices of this land.

In this strategy, the city becomes a site not just for habitation and commerce, but also for urban agriculture and forestry, for grid-linked micro-generation

Pā allowed for dense habitation and enabled local agricultural production and communal economic activity

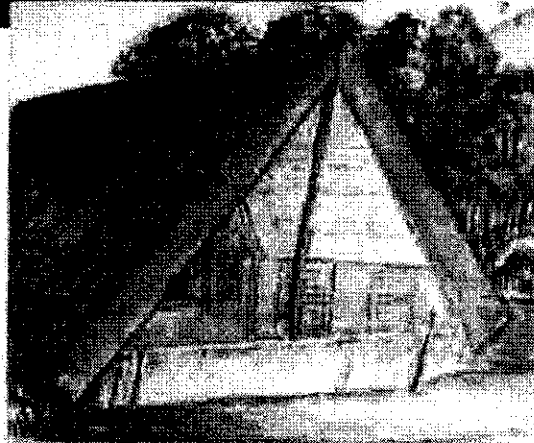
of renewable energy, for of waste and pollution, forests in the urban p the regeneration of loc use of renewably gen for transport and the urban native forests n with consequent positiv Local production of res energy security in a wor prohibitively expensive ( for and familial connecti rary culture's under-valui attributed to natural reso

In my own design res series of buildings that dr landscape of the pā. I hav or strategies by which spa recessed whare, form int and lightweight shelter st



Figure 2. Sounds House – open to the outside (above) and a mānau (porch) (right).

Neil McCredie (above), Richard Tojima, Alexander Turnbull Library (right)



of renewable energy, for the remediation of waste and pollution via wetlands and forests in the urban precinct, and for the regeneration of local ecologies. The use of renewably generated electricity for transport and the development of urban native forests reduces pollution with consequent positive health effects.

Local production of resources like food and energy enables greater food and energy security in a world where non-renewable transport fuels may become prohibitively expensive (2). Most importantly, as a materialisation of veneration for and familial connection to the environment, the pā foregrounds contemporary culture's under-valuing of the environment both literally, in terms of the value attributed to natural resources such as clean air and water, and metaphysically.

In my own design research practice I have, over the last decade, developed a series of buildings that draw on the principles and practices of the architectural landscape of the pā. I have focused on what I see as key architectural elements or strategies by which space is made: the constructed landscapes which, like the recessed whare, form inhabitable space within the ground; and the transient and lightweight shelter structures that provide roofs and partial walls for those





Figure 3 Tokatea—folded landscape and openness to the exterior (above), and generative roofscape (below).

Archiscope



Figure 4 Te Whare Whenua and an ordinary New Zealand potato plantations around it (right).

Archiscope

earthen spaces. In projects such as the Ground House\* (Figure 1), I have formed continuous concrete 'landscapes' that make space inset within the ground and fold, floors becoming walls, becoming benches.

In the Sounds House† (Figure 2) I tested out a shelter structure that was partially open to the exterior, had an open platform at its centre and glazed walls which could slide back to open up the interior to the outside.

Tokatea‡ (Figure 3), sited on a steeply sloping hill, brings together these two spatial strategies, an articulated concrete landscape following the contour of the site, wall-floor blending with the exterior when the glazed boundary walls are retracted. Phase two of this project involves the development of the roof as a generative landscape which is a site for photovoltaic panels and solar water heating, as well as for plantings. The combination of architecture and productive 'landscape' is the third characteristic of the architectural landscape of the pā I focus on. The generative

roofscape is intended to small-scale test of regeneration strategies with these be deployed more subsequent building.

#### Te Whare Whenua

Te Whare Whenua, a project (wi Ngāi Whāua, employ work while also testing re has a range of sustainability intended as a focus for the architectural landscape. It technologies: thin film photovoltaic, and glass panels an electric car; exterior a concrete\* and poured earth

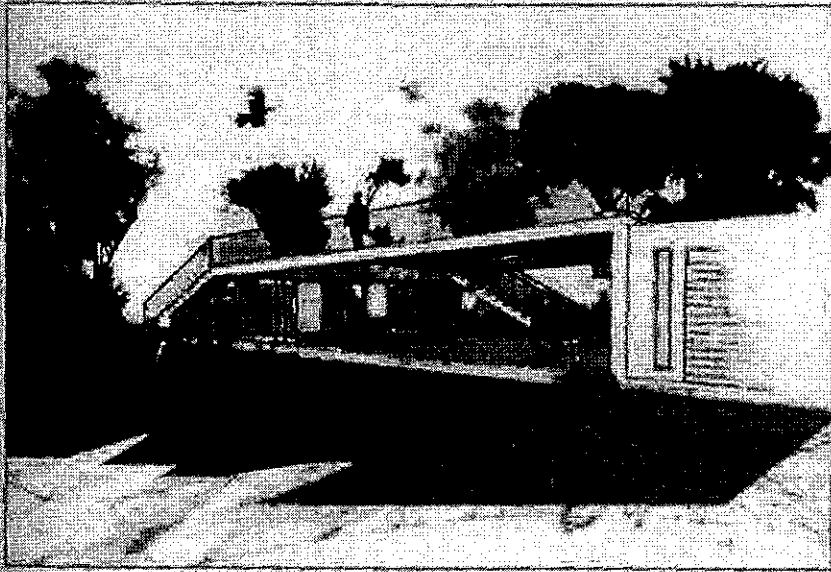
\* Ground House: Archiscope in association with IDA; Project leader Amanda Yates.

† Sounds House: Archiscope in association with IDA; Project leaders Amanda Yates with Stephen Bunnington.

‡ Tokatea: Archiscope; Amanda Yates.

\* This material is currently being  
† A technique in which earth is





35

Figure 4. Te Whare Whenua (above) and an ordinary New Zealand pā with potato plantations around it, 1845 (right).

Images: Above: Architectural (above); Right: Image: Alamy; Illustration: Turnbull Library (right)



andscape is intended to act as a small-scale test of regenerative design strategies with the aim that these be deployed more fully in a subsequent building.

#### Te Whare Whenua

Te Whare Whenua, a project developed to concept design stage with Auckland Iwi Ngāi Whānua, employs the architectural languages developed in the earlier work while also testing regenerative design strategies more intensively. The iwi has a range of sustainability programmes currently in place and the building is intended as a focus for these. Te Whare Whenua is conceptualized as a generative architectural landscape. It also aims to test out experimental as well as familiar technologies; thin film photovoltaic technology is incorporated into areas of steel cladding, and glass panels generate renewable energy to power the building and an electric car; exterior and interior mass walls are formed from low-carbon concrete\* and poured earth;† rainwater and grey water is stored for filtering and

\* This material is currently being tested and uses geo-polymer cement to achieve its low carbon state. † A technique in which earth is mixed with water and poured into in-situ formwork.

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use, while composting toilets turn waste into a resource that can be returned to the earth. In the outdoor room and on the planted roof terrace native ecologies are nurtured along with native plantings and edible crops. Te Whare Whenua is intended as a small-scale test for a multi-storey, mixed-use building.

A key aspect of the principles underpinning the pā is the sense of veneration for and connection to the environment

A key aspect of the principles underpinning the pā is the sense of veneration for and connection to the environment. While Te Whare Whenua is proposed as an architecture that generates resources it also, more radically, aims to construct a connection between people and the dynamic living landscape through design. Like the earlier buildings described in this chapter, Te Whare Whenua is influenced by the spatial qualities of the pā with its monumental folded landscapes and lightweight, open architectures.

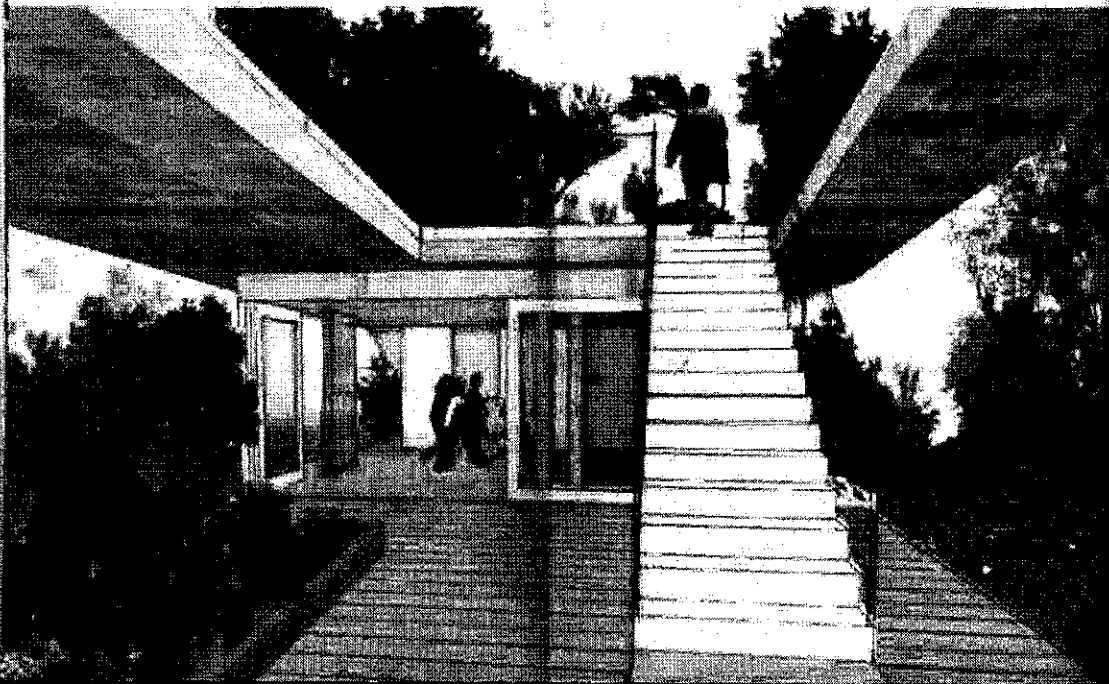
The building combines mass with lightness and permeability. Low-carbon concrete or poured earth walls, floors and benches establish a continuous folding ground plane which creates a sense of landscape within the building, while large areas of wall slide away to make space contiguous with the exterior and the outdoor room with its native plantings. Breezes and bird song enter the space, as exterior and interior, 'natural' and cultural, merge (Figure 4).

#### Conclusion

Making the urban realm sustainable requires not only a reconfiguration of the technical or material aspects of our society but, more radically, reconceptualising the very basic principles by which we live. The dominant Western knowledge system, which views nature as a separate and inferior condition, is inherently unsustainable in that it fails to adequately recognise essential planetary processes

Figure 5 Te Whare Whenua - outdoor room and rooftop landscape.

Archie Jackson Architects



or value limited global design strategies with design practices that are New Zealand.

Discussing indigenous traditional values and world, where new holistic solutions to global problems are indigenous and Western.

Working with Tikanga Māori to be expressed and celebrated culture. While founded on new knowledge and the concept of indigenous lives that indigenous people

As a complex system holistic thinking in here populated, operated as an ancestral and living links the natural and the cultural pā reminds us to establish responsive architecture and

Approaching sustainable the micro-scale of a building connected urban fabric requires the architect to that local ecologies are not renewable energy resource its weakest privileges only linked to its local 'natural' architecture and landscape by helping to model a culture between people and the building is filled with fruiting trees on building and the building itself is (Figures 4 & 5).

or value limited global resources. I suggest that developing sustainable urban design strategies with respect to mātauranga Māori can enable contemporary design practices that are more carefully attuned to their place here in Aotearoa New Zealand.

Discussing indigeneity, Māori academic Garth Harmsworth suggests that traditional values and knowledge are seen as increasingly relevant in a complex world, where new holistic perspectives and ideas need to be integrated to find solutions to global problems. In many areas we are seeing a realignment of indigenous and Western thinking. (38)

Working with tikanga Māori enables formerly marginalised indigenous principles to be expressed and celebrated in the material practices of our contemporary culture. While founded on traditional concepts, such indigenous practices will have new knowledge embedded within them. As such, as Sir Mason Durie writes, the concept of indigeneity will change over time and will be about 'embracing the lives that indigenous peoples live in modern times'. (39)

As a complex system the urban environment is well suited to the kind of holistic thinking inherent in indigenous epistemologies. The pā, at its most populated, operated as a dense urban-scaled environment which also celebrated ancestral and living links to the land, modelling a connected worldview in which the natural and the cultural merge. As a model for contemporary urban design, the pā reminds us to establish the urban condition as a hybrid of an environmentally responsive architecture and a productive and valued landscape.

Approaching sustainable urban design as a scalar condition that repeats from the micro-scale of a building to the macro-scale of a metropolis creates a rich and connected urban fabric. Rethinking architecture as a kind of micro-urbanism requires the architect to consider all the issues of sustainable urban design, so that local ecologies are nurtured, wastes are converted to resources and food and renewable energy resources generated. When this occurs, architecture – which at its weakest privileges only aesthetic form – becomes an interdisciplinary discourse linked to its local 'natural', built, social and economic environments. As both architecture and landscape, the pā sets the kaupapa for this reconceptualisation by helping to model a cultural practice that reverentially celebrates the connection between people and the productive environment. As an architectural landscape the building is filled with mauri or life force, as native birds call and eat from fruiting trees on building terraces, the sun's energy is harvested, rainwater caught and the building itself is formed from the earth, the body of Papa-tūā-nuku (Figures 4 & 5).



1. Schönfield T. Urban design network. *Planning* 2004 (1384):22.
2. Awatere S, Pulling C, Hoskin R, Rolleston S. *Tūwhare ora: An assessment tool for papakāinga*. A report prepared for Ngā Pā o te Maramatanga, University of Auckland. Hamilton: Landcare Research; 2008.
3. Rolleston S. Low impact urban design and development: a preliminary report into cultural water values. Paper presented at NZWWA 4th South Pacific Conference on Stormwater and Aquatic Resource Protection 2005 May 4-6; Auckland, New Zealand. Auckland: Water and Waste Association; 2005.
4. Rolleston S. An indigenous cultural perspective to urban design. Paper presented at the New Zealand Planning Institute and Planning Institute of Australia Congress, 2006 Apr 2-5; Gold Coast, Queensland; 2006.
5. Tutua-Nathan T. Kaitiakitanga: A commentary on the Resource Management Act 1991. In: Hayward J, editor. *Local government and the Treaty of Waitangi*. Melbourne: Oxford University Press; 2003. p. 39-43.
6. Mihitotek N. *Establising kaitiaki: a paper*. Auckland: Ngānoko Kāhau Māhūhū; 1989.

### Chapter 2: Micro-urbanism: regenerative buildings and the architectural landscape of the pā

1. United Nations. *The population division urban and rural areas 2007* [wall chart]. New York: United Nations; 2007.
2. *World energy outlook 2008*, IFA. Paris: IEA; 2008. p. 105.
3. McDonough W, Braungart M. *Cradle to cradle: remaking the way we make things*. New York: North Point Press; 2002.
4. Reed B. *Shifting our mental model - 'sustainability' to regeneration*. Paper presented at: Rethinking Sustainable Construction conference 2006: Next Generation Green Buildings; 2006 Sep 19-21; Saratoga (USA); 2006.
5. Birkeland J. *Positive development: from vicious circles to virtuous cycles through built environment design*. London: Earthscan; 2008.
6. Gehl J, Gemzoe L, Kirknaes S, Sondergaard B. *New city life*. Copenhagen: Danish Architectural Press; 2006.
7. Gehl J, Gemzoe L. *Public spaces, public life*. Copenhagen: Danish Architectural Press; 2004.
8. Calthorpe P, Fulton W. *The regional city*. Washington (DC): Island Press; 2001.
9. Smith L. *Decolonizing methodologies: research and indigenous peoples*. London: Zed Books; 1999.
10. Durie M. *To mana, te kawaranga: the politics of Māori self-determination*. Auckland: Oxford University Press; 1998.
11. Durie M. *Nga kāhui pū: launching Māori futures*. Wellington: Hula Publishers; 2003.
12. Smith L, Reid P. *Māori research development: kaupapa Māori principles and practices: a literature review*. Wellington: Te Puni Kōkiri; 2000.
13. Yates A. On nature, culture and sustainable design. In: Brebbia C, editor. *Design and nature IV: comparing design in nature with science and engineering*. Southampton: WIT Press; 2008.
14. Kellert S. *Building for life: designing and understanding the human-nature connection*. Washington (DC): Island Press; 2005.
15. Wheeler S. *Planning for sustainability: creating livable, equitable and ecological communities*. New York: Routledge; 2004.
16. Calthorpe P. *The next American metropolis: ecology, community, and the American dream*. Princeton: Princeton Architectural Press; 1993.
17. Eyerden N. *The social creation of nature*. Baltimore: John Hopkins Press; 1993.
18. Zalasiewicz J, Williams M, Smith A, Barry TL, Coe AL, Bown PR et al. Are we now living in the Anthropocene? *GSA Today* (Geological Society of America) 2008 Feb; 18(2):4-8.
19. Rockstrom J, Steffen W, Noone K, Persson A, Chapin FS, Lambin E et al. Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 2009; 14(2):32.
20. Park G. *Theatre country: essays on landscape and whenua*. Wellington: Victoria University Press; 2006.

21. Yates-Smith A. *Te ōkai Journal* 2006; 20(2):13.
22. Makereti. *The old-time*
23. Morrison R, Geraghty. *agriculture Vol. 7, Sura*
24. Kiriri P, Roger G. *Haw*. Cambridge: Cambridge
25. Clark G. *Geophysical J*. October. [cited 2010 M 18 3 42/al\_n2938] 216
26. Sutton D. *The archaeol*. Eurospan; 2003.
27. Bulmer S. *Archaeologi*. NZAA Conference; 19 for the archaeology of Department of Conser
28. Barber J. *Loss, change, classic' Māori emergent*
29. Kolb MJ, Boyd D. *Land* (and elsewhere). Amer
30. Austin M. *Pacific Islan*. London: Routledge; 20
31. Treadwell S. *Categorici*. In: Calder A, Lamb J, C Honolulu. University o
32. Best E. *The Māori Vol.*
33. Belich J. *Making peopl* end of the Nineteenth C
34. Salmond A. *Two world*
35. Beaglehole JC, editor. *J of the Inland*. 1768 University Press for the
36. Bulmer S. *Sources for t* Wellington: Departme
37. Simmons D. *Māori Au* George Graham; Aucid
38. Harnsworth G. *Indige* New Zealand case stud Cultures and the Globa Wananga o Waikato, U (ICCS). India; 2002 Ne
39. Durie M. *Te mātaur* series 2009. Massey U Available from: [### Chapter 3: Do urban Māori land for reside](http://</a></li>
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<div data-bbox=)

1. Dewee W, Walz T. *Issue* Local Government Res URL: [112](http://ImpactofRatesDe</a></li>
<li>2. <i>Regional Growth Foru</i> growth in the Auckland Regional Council; 199</li>
<li>3. <i>Smart Growth, SmartG</i> Plenty sub-region; 200</li>
</ol>
</div>
<div data-bbox=)



21. Yates-Smith A. *Te ōkaiāro – te tāiao: the mother, the nurturer – nature*. *Women's Studies Journal* 2006; 20(2):13–22.
22. Makenati. *The old-time Māori*. London: Victor Gollancz; 1938.
23. Morrison RJ, Gemighty R, Crowl E, editors. *Science and Pacific Island peoples: land use and agriculture Vol. 2*. Suva: Institute of Pacific Studies; 1994.
24. Kirch P, Roger G. *Hawaii, ancestral Polynesia: an essay in historical anthropology*. Cambridge: Cambridge University Press; 2001.
25. Clark G. Geophysical investigations at the pūmāreke mound. *Archaeology in Oceania*. 2007 October. [cited 2010 May 2]. Available from: [http://findarticles.com/p/articles/mi\\_hb1398/is\\_1\\_41/at\\_129383516/print/page-1Body.html](http://findarticles.com/p/articles/mi_hb1398/is_1_41/at_129383516/print/page-1Body.html).
26. Sutton D. *The archaeology of Pouteria*. Auckland/London: Auckland University Press/Eurospan; 2003.
27. Bulmer S. Archaeological investigations at Maungakiekie (Na2/6). Paper presented at NZAA Conference; 1980; Palmerston North New Zealand. In: Bulmer S, editor. *Sources for the archaeology of the Māori settlement of the Tamaki volcanic district*. Wellington: Department of Conservation; 1994.
28. Barber I. Loss, change, and monumental landscaping: towards a new interpretation of the 'classic' Māori emergence. *Current Anthropology* 1996; 37:868–80.
29. Kolb MJ, Boyd D. Landscapes of war: rules and conventions of conflict in ancient Hawaii (and elsewhere). *American Antiquity* 2002; 67(3): 514–34.
30. Austin M. Pacific island migration. In: Calra S, editor. *Drifting: architecture and migrancy*. London: Routledge; 2004. p. 224–238.
31. Treadwell S. Categorical weavings: European representations of the architecture of hākarī. In: Calder A, Lamb J, Orr R, editors. *Voyages and beaches, Pacific encounters, 1769–1840*. Honolulu: University of Hawaii Press; 1999.
32. Best H. *The Māori Vol. II*. Wellington: The Polynesian Society; 1941.
33. Dillich J. *Making peoples: A history of the New Zealanders: from Polynesian settlement to the end of the Nineteenth Century*. Auckland: Penguin Press; 1996.
34. Salmon A. *Two worlds*. Auckland: Viking; 1991.
35. Hoggelohle JC, editor. *The journals of James Cook on his voyages of discovery: the voyage of the Endeavour, 1768–1771: Hakluyt Society extra series no. 34*. Cambridge: Cambridge University Press for the Hakluyt Society; 1955.
36. Bulmer S. *Sources for the archaeology of the Māori settlement of the Tamaki volcanic district*. Wellington: Department of Conservation; 1994.
37. Simmons D. *Māori Auckland, including the Māori place names of Auckland collected by George Graham*. Auckland: Bush Press; 1987.
38. Harmsworth G. Indigenous concepts, values and knowledge for sustainable development: New Zealand case studies. Paper presented at 7th Joint Conference: Preservation of Ancient Cultures and the Globalization Scenario. School of Māori and Pacific Development, Te Whare Wānanga o Waikato, University of Waikato and International Centre for Cultural Studies (ICCS), India; 2002 Nov 24–24; Hamilton (New Zealand); 2002.
39. Durie M. *Pae mātahi: sustaining the Māori estate*. Paper presented at: Te Mata o te Tau lecture series 2009; Massey University; 2009; Palmerston North, New Zealand. [cited 2010 May 2]. Available from: [http://www.manu.ac.nz/content/files/pae\\_matahi.pdf](http://www.manu.ac.nz/content/files/pae_matahi.pdf)

### Chapter 3: Do urban growth strategies support the development of Māori land for residential use?

1. Dewes W, Walz T. *Issues paper on the impact of rates on Māori land: a report prepared for the Local Government Rates Inquiry*; 2007. Available from: <http://www.dia.govt.nz/Publications/URL/ImpactofRatesDewes&Walz.pdf/files/ImpactofRatesDewes&Walz.pdf>
2. *Regional Growth Forum. Auckland regional growth strategy 2030: a vision for managing growth in the Auckland region*. Auckland: Auckland Regional Growth Forum/Auckland Regional Council; 1999.
3. *SmartGrowth. SmartGrowth 30-year strategy and implementation plan, Western Bay of Plenty sub-region*; 2007.



- How can traditional Māori (with environmental and contemporary urban) development?
- How could Māori values inspire solutions for the 21st century city?
- What can Indigenous Sámi knowledge tell us about how to create more sustainable design for the future?

*Tāone Tūpā Ora* suggests answers to these important questions, bringing together perspectives on a broad range of urban issues, from Māori development to architecture, town planning to strategic growth management. It collects stories of wāi experiences in the 21st century, and suggests principles and theories on which to base change.



**Sustainable Cities**  
BY JAMES HENNING, GUY HENNING



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