National SCIENCE Challenges

Evaluating the Application of Māori Design Principles to Urban Neighbourhood Development Projects to Develop a Kaupapa Māori Design Framework and Assessment Tools

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Abstract

Aims/purpose: This paper discusses and evaluates the application of Te Aranga and other kaupapa Māori design principles (principles derived from a Māori worldview and incorporating Māori knowledge and values) to urban neighbourhood development projects. By critically interrogating the application of established design principles, this project seeks to the evaluate their spatial application and to assess actual vs anticipated social outcomes. This study aims to support developers, designers, and planners working alongside mana whenua (local iwi or hapū who maintain customary authority over an identified area) and mataawaka communities (Māori living within in a given region who do not belong to a mana whenua group) to develop better spatial design processes, and to deliver better social outcomes at a neighbourhood scale.

Methodology/approach: The research involves the development of a formal method of evaluation to assess the spatial and social outcomes realized through the application of Māori design principles to urban neighbourhood development/regeneration projects. Through the testing phase, a mixture of quantitative (through onsite observation and analysis of desktop material, such as master plans and architectural drawings) and qualitative (through the post-occupancy evaluation walk-through interviews with residents and key informants) data will be collected and analysed using the prototype assessment tool. The research has four distinct phases: (i) Synthesis of existing design principles to develop a kaupapa Māori neighbourhood design framework (ii) Development of a prototype spatial analysis/observation tool (iii) Development of a prototype post-occupancy evaluation tool (iv) Testing tools using built examples.

Research implications: Māori design principles, such as Te Aranga, have the potential to significantly impact future neighbourhood regeneration and housing developments. Through a better understanding of implementation/application, methodologies and assessment tools which are aligned with a values-based approach can be developed to inform more culturally attuned spatial design processes and outcomes.

Paper type: Conference paper

Introduction

Over the past two decades, Māori built environment practitioners have developed Māori urban design and architectural principles in collaboration with mana whenua in Auckland and across the country. These have been developed to assist mana whenua (and to a lesser degree, mataawaka) to engage in urban design and architecture within their local area in a meaningful way. These principles have been further developed through application to projects within Auckland and have since been adopted by Auckland Council and various local governance bodies around New Zealand.

With local tribes throughout Auckland achieving or approaching settlement, there are significant emerging opportunities for tribal groups to play a leading role in major urban development projects within their local area, and to develop their land returned or purchased through settlement for housing. Additionally, developers are increasingly required by planning authorities to consider a Māori worldview and to engage positively with mana whenua entities in the design and planning of neighbourhood development projects.

Underpinning these principles from inception has been the intention for these to be flexible and adaptive yet limited formal evaluation or academic research has been undertaken to date.

Research Questions

This study is in its embryonic stage of a wider study which provides the opportunity to examine and explore the development of tools and methods for conducting spatial analysis and post-occupancy evaluations of projects. Te Aranga and other principles have been critically interrogated to investigate:

- How have Māori design principles been applied to neighbourhood regeneration projects in Tāmaki Makaurau?

- To what extent does the reality of living in a dwelling or neighbourhood or using/experiencing an urban area or building match anticipated social and design outcomes (established through analysis)?

- How can the formal evaluation of the application of design principles to case study projects be used to develop neighbourhood design assessment tools?

- How can neighbourhood design assessment tools support designers/planners working with mana whenua and mataawaka communities to develop better spatial design processes, and deliver better social outcomes at a neighbourhood scale?

The intention behind producing consistent methods of formal evaluation is to enable these principles to further develop and evolve over time, particularly as more tribal groups adapt and modify the principles to better align to their own values and unique perspectives. The

tools produced are intended to be used primarily by mana whenua groups, and their nominated practitioners and development partners.

Literature Review

The review of literature discusses and analyses the following studies:

1. Te Aranga Design Principles

2. Ki te Hau Kāinga: New Perspectives on Māori Housing Solutions

3. Master of Architecture thesis by Jade Kake

4. A Design Framework for Remote Indigenous Housing in Australia

5. The Neighbourhood Sustainability Framework and Assessment Kit by Beacon Pathway

6. A research study on the methodology for the development of a neighbourhood assessment tool by Lund University master's student Angelica Castro

The Te Aranga Māori Design Principles[1] are a set of seven Māori urban design principles founded on core Māori cultural values and designed to provide practical guidance for enhancing design outcomes in the built environment. These principles, which have emerged through projects with mana whenua in Tāmaki Makaurau, have arisen from a widely held Māori desire to enhance iwi / hapū presence, visibility and participation in the design of the physical environment. Principles include: mana rangatiratanga (authority), whakapapa (names and naming), taiao (the natural environment), mauri tū (environmental health), mahi toi (creative expression), tohu (the wider cultural landscape), and ahi kā (the living presence).

Ki te Hau Kāinga: New Perspectives on Māori Housing Solutions[2] is a report prepared for Housing New Zealand Corporation in 2002 (with a preliminary update completed in 2014), which outlines general master planning principles for papakāinga (housing and other communal buildings erected on ancestral land) and papakāinga-style developments, and guidelines for the design of individual dwellings. Of importance are the concepts of tapū (restricted) and noa (unrestricted), and how these impact on the arrangement and adjacency of spaces that are conducive to Māori family dynamics and cultural practices. The design guide also includes worked examples in both rural and urban settings.

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[1] Rau Hoskins and Jade Kake, 'Te Aranga Principles', *Auckland Design Manual*, [website], 2013, http://www.aucklanddesignmanual.co.nz/design-thinking/Māori-design/te_aranga_principles, (accessed 20 March 2018).
[2] Rau Hoskins, Rihi Te Nana, Peter Rhodes, Philip Guy, and Chris Sage, *Ki te Hau Kainga: New Perspectives on Māori Housing Solutions: A Design Guide prepared for Housing New Zealand Corporation*, 2002 (second edition, eds. Rau Hoskins and Jade Kake [2014]), www.tematapihi.org.nz (accessed 20 March 2018).

Master's thesis by Jade Kake[3] provides a completed a diagrammatic analysis of fifteen master plans for pre- / early- European settlement pā (fortified settlements) and kāinga (unfortified settlements), contemporary papakāinga, and cohousing developments. Masterplan overlays were completed in plan and cross-examined for common patterns and differences. Categories of analysis included figure-ground, circulation, parking, green space, and shared/private space. This analysis produced a set of commonalities, which could be extended to produce design guidelines for master planning at a site or papakāinga scale.

A Design Framework for Remote Indigenous Housing[4] was produced by researchers at the Australian Housing and Urban Research Institute (AHURI) in 2008. The framework aimed to synthesize design, policy and public health dimensions. A draft framework was developed, then tested and refined through fieldwork with three remote indigenous communities. Six integrated dimensions of 'sustainability' were developed as the key focus for design. These included: (i) culturally responsive design, (ii) eco-efficiency, (iii) healthy living practices, (iv) housing-related training and employment, (v) life-cycle costing of projects, and (vi) innovation in procurement, ownership and construction systems.

The Neighbourhood Sustainability Framework and Assessment Kit were developed by Beacon Pathway and published in 2012[5]. The framework identifies six areas critical to neighbourhood sustainability – (1) flexibility and adaptability, (2) neighbourhood satisfaction, (3) minimized costs, (4) effective governance, (5) resource use, and (6) environmental protection. The framework is holistic, considering residential and non-residential components, and connectivity both intra- and inter- neighbourhood. Two tools were developed as part of the Neighbourhood Sustainability Framework and Assessment Kit – the Observational Tool, and the Resident Survey Tool. The Observational Tool is an Excel-based desktop calculator and uses both quantitative and qualitative data. The Resident Self-Report tool is a multi-step survey and Excel-based calculator. The Resident Self-Report Tool utilizes qualitative data collected through a survey process, which is then analysed in relation to data collected in the 2008 National Neighbourhood Survey.

Research by Castro, a masters student at Lund University, outlined a methodology for the development of a neighbourhood assessment tool[6]. The tool is a pre-implementation tool intended to guide the planning and design of residential projects. The tool was developed and tested in the Netherlands (with a discussion of broader applicability) and aims to better align neighbourhood design with national and municipal policy. The tool includes seven criteria of spatial quality, drawn from national policy on spatial planning – (1) spatial diversity, (2) economic and social functionalities, (3) cultural diversity, (4) social equality, (5)

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[3] Bonnie Jade Kake, 'Pehiāweri Marae papakāinga: a model for community regeneration in Te Tai Tokerau', Master's thesis, Unitec Institute of Technology, 2015.

[4] John Fien, Esther Charlesworth, Gini Lee, David Morris, Doug Baker and Tammy Grice, *Towards a Design Framework for Remote Indigenous Housing*, Australian Housing and Urban Research Institute, 2008, https://www.ahuri.edu.au/research/final-reports/114, (accessed 20 March 2018).

[5] Denise Bijoux, *A Neighbourhood Sustainability Framework for New Zealand: Beacon's research and tools*, Report NH2012 for Beacon Pathway Inc., 2012, http://www.beaconpathway.co.nz/images/uploads/Report_NH2012(3)_A_Neighbourhood_Sustainability_Framework_for_New_Zealand.pdf, (accessed 20 March 2018).

[6] Angelica Castro, 'Assessment Tool to Assure Spatial Planning for Quality Urban Housing', Master's thesis, Lund University, 2005.

sustainability, (6) attractiveness, (7) human scale. Indicators across multiple planning documents were cross-examined and synthesized, and a set of indicators were developed across three scales – (i) municipality, (ii) neighbourhood, and (ii) dwelling.

A range of other international neighbourhood assessment and evaluation tools have been developed, many of which align with National standards and rating systems. These include Building for Life[7] (UK), CASBEE for urban development[8] (Japan), Breeam Communities (UK), EcoCity (AT, DE, NL), HQE[2]R (FR, EU), Leed for neighbourhood development (US), DuurzaamheidsProfiel van een Locatie[9] (NL), and many others.

Methodology

This study involves the development of a formal method of evaluation to assess the application of Māori design principles to urban neighbourhood development/regeneration projects, and the resulting spatial and social outcomes. Through the testing phase, a mixture of quantitative (through onsite observation and analysis of desktop material, such as master plans and architectural drawings) and qualitative (through the post-occupancy evaluation walk-through interviews with residents and key informants) data will be collected and analysed using the prototype assessment tool.

Two aspects will be measured: (i) the degree of success in the spatial application of kaupapa Māori design principles (through observation/spatial analysis) and (ii) reality vs anticipated social outcomes as determined by the spatial analysis (through post-occupancy walk-through interviews). Limitations of the methods proposed include the subjective and interpretive nature of the qualitative aspects of the research, including using judgement to define where design principles have been applied successfully (indicators), and to what degree (measures). There are additional challenges associated with measuring cultural intangibles.

Convening a working group of key stakeholders, including mana whenua representatives, developers, and architects to meet at key points through the tool development process is a strategy proposed to manage limitations. This also provides an ability to assess the success of the proposed methodology. Workshops could be convened at three key points - (i) draft framework and prototype observation/spatial analysis tool (ii) prototype post-occupancy evaluation tool (iii) testing and development of weightings.

The research has four distinct phases:

1. Synthesis of existing design principles to develop a kaupapa Māori neighbourhood design framework

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[7] Building for Life/CABE, *Evaluating Housing Proposal Step by Step*, https://www.designcouncil.org.uk/resources/guide/evaluating-housing-proposals-step-step, (accessed 20 March 2018).

[8] Shuzo Murakami at al., 'Development of a comprehensive city assessment tool: CASBEE-City', *Building Research & Information*, vol. 39, no. 3, 2011, pp. 195-210.

[9] Jorge Gil and Jose Pinto Duarte, 'Tools for evaluating the sustainability of urban design: a review', *Urban Design and Planning,* vol. 166 no. DP6, 2013.

2. Development of a prototype spatial analysis/observation tool

3. Development of a prototype post-occupancy evaluation tool

4. Testing using built examples

Kaupapa Māori neighbourhood design framework

Established design principles – including Te Aranga[10], Ki te Hau Kāinga[11], principles developed through Kake thesis[12], and the Design Framework for Remote Indigenous Housing[13] – will be synthesized to develop a kaupapa Māori neighbourhood design framework. A range of predominantly qualitative indicators will be established under each category of the framework and across three scales – neighbourhood, site, and building/dwelling.

Prototype spatial analysis/observation tool

The spatial analysis/observation tool will create a consistent method for analysis of developments. The tool will be suitable for application to both built and unbuilt projects. Self-reported assessment against indicators will be based on on-site observation (for built examples), and analysis of plans and drawings (for either built or unbuilt examples. Where appropriate, annotated analytical diagrams can be attached by users of the tool as supporting evidence of self-reported assessment against indicators.

Weighting could be established on a project-by-project basis, with selection for inclusion and weighting of indicators established by mana whenua at the outset of the project. Indicators could be refined and improved over time, based on data collected through analysis of projects. Data could be voluntarily provided by users of the tool and collected in a central repository for analysis by researchers.

Prototype post-occupancy evaluation tool

The post-occupancy evaluation tool provides an opportunity to obtain direct feedback from residents (who may include mana whenua, mataawaka, Pākehā and other non-Māori). Alongside the development of the spatial analysis/observation tool, a series of questions relating to the design of individual dwelling and the overall development has been developed for inclusion as part of the resident post-occupancy interviews. Data collected through the walk-through interviews will be aligned to and analysed using the post-occupancy evaluation tool. A modified version of the post-occupancy evaluation tool will be prepared for use with developers, mana whenua representatives (if not part of the development consortia), and architects or other designers.

By piloting both tools on built examples using a consistent framework, it will be possible to compare the anticipated social outcomes (based on spatial analysis against established

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[10] Hoskins and Kake, 'Te Aranga principles'.

[11] Hoskins et al, *Ki te hau kāinga.*

[12] Kake, 'Pehiāweri marae papakāinga'.

[13] Fien et al, *Towards a Design Framework for Remote Indigenous Housing*.

Māori design principles) with responses from the residents and architects (established through the post-occupancy evaluation walk-through interviews) to determine what aspects of the design are most successful in terms of responding to Māori cultural preferences and heightening sense of place relationships.

Testing using built examples

<u>Waimahia Inlet</u>

Waimahia Inlet is a 295-dwelling greenfield development over 16 hectares in Weymouth, on the edge of Manukau Harbour. The Waimahia Inlet development is a partnership between the Crown, The Tāmaki Collective, and three community housing providers – Te Tumu Kāinga, The New Zealand Housing Foundation, and the Community of Refuge Trust (CORT) Community Housing. The project was initiated in 2013, with construction commencing July 2014. As at October 2016, 144 homes were completed and occupied.

The Tāmaki Collective and Te Tumu Kāinga identified from the outset that they have a mutual interest in using the Waimahia site for the provision of affordable housing aimed at Māori and Pasifika. The Tāmaki Collective, as a mana whenua grouping, have an additional interest in championing developments that express their unique cultural identity and narratives through urban design, which has the dual purpose of re-asserting ahi kā (for mana whenua) and heightening sense of place relationships (for mana whenua and mataawaka alike).

A large proportion of residents within the Waimahia Inlet development (and wider Weymouth community) identify as Māori, and in the interviews, some residents specified that shared Māori cultural identity was of importance to them. The report by Fergusson et al.[14] indicates that the development is succeeding in relation to this objective and that the residents feel that this contributes to a healthy community. This suggests there would be value in investigating how responsive the masterplan and individual housing design is to Māori whānau dynamics and cultural preferences, and how well the design of the overall development expresses mana whenua cultural values and narratives.

This project has been selected as a test site due to significant mana-whenua participation within the development consortia, the high proportion of Māori residents, and its location on a greenfield site in an outer-suburban neighbourhood.

<u>Tāmaki Regeneration</u>

The Tāmaki area (Glen Innes, Point England, Wai O Taiki Bay and Panmure) is currently going through the process of regeneration led by the Tamaki Regeneration Company. The Tāmaki Regeneration Company is a joint entity with the Crown and Auckland Council which is the first community regeneration programme in New Zealand. The regeneration program works

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[14] Emma Fergusson et al., *'Everything is community': Developer and incoming resident experiences of the establishment phase at Waimahia Inlet,* Residential Choice and Community Formation Strand Resilient Urban Futures, 2016, http://sustainablecities.org.nz/wp-content/uploads/Waimahia-Report-for-Publication.pdf, (accessed 20 March 2018).

in partnerships with local residents and businesses, mana whenua, local and central government agencies, the Maungakiekie, Tāmaki and Ōrākei local boards, local service providers, the community and private sectors[15].

This project is significant as a national regeneration pilot and has highlighted some of the issues associated with displacement of existing communities in the regeneration process. The existing Tāmaki community is a historic state housing area and has a high proportion of Māori and Pasifika families on low incomes. Through the development process a dichotomy between private versus public interests has emerged, and conflict between the need to maintain development margins in an overheated market, and the need to maintain housing affordability. Meaningful involvement of residents and mana whenua in the development process is an ongoing challenge, but one which is critical to producing 'good regeneration' and avoiding further gentrification and displacement of existing communities.

This project has been selected as a test site due to its significance as a national regeneration pilot, the high proportion of Māori residents, and its location on a brownfield site (within an existing community) in an inner-city neighbourhood.

Preliminary findings

A draft framework has been produced through the synthesis of principles from Te Aranga[16], Ki te Hau Kāinga[17], and Kake thesis[18] (figure 1). To create the framework, existing principles were broken down into a set of objectives and indicators for each principle to enable consistent comparison. Indicators were then cross-examined to eliminate redundancies.

Six overarching outcomes areas or domains were identified through analysis of indicators, and broadly in alignment with the Design Framework of Remote Indigenous Housing[19]. The draft framework consists of six outcome areas: (I) Identity and sense of place relationships, (II) Connectivity, (III) Culturally appropriate design, (IV) Human health and wellbeing, (V) Environmental health, and (VI) Innovation in procurement. Objectives and indicators (drawn from existing design guidance) were then sorted into the six categories, and assigned a neighbourhood, site, or dwelling scale designation, with additional indicators developed as required. Appropriate metrics will be developed for each indicator, which will form the basis of the prototype tool.

In the next phase of the study, the prototype observation / spatial analysis tool will be built and tested and refined using built test site projects (Waimahia Inlet and Tāmaki Regeneration) through desktop study and onsite observation. The prototype resident/developer post-occupancy evaluation tool will then be built and tested through interviews with residents and developers/architects (which could include development

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[15] Jacqueline Paul, *Exploring Te Aranga Design Principles in Tāmaki*, 2016, http://buildingbetter.nz/publications/SRA4/Paul_2017_exploring_te_aranga_design_principles.pdf, (accessed 28 April 2018).

[16] Hoskins and Kake, 'Te Aranga principles'.

[17] Hoskins et al, *Ki te hau kāinga.*

[18] Kake, 'Pehiāweri marae papakāinga'.

[19] Fien et al, *Towards a Design Framework for Remote Indigenous Housing*.

partners, mana whenua – if not part of the development consortia, architects, and other designers). Two residents and three developer/architect key informants for each project have been selected to participate in walk-through interviews as part of the prototyping process.

Figure 1. Draft kaupapa Māori neighbourhood design framework
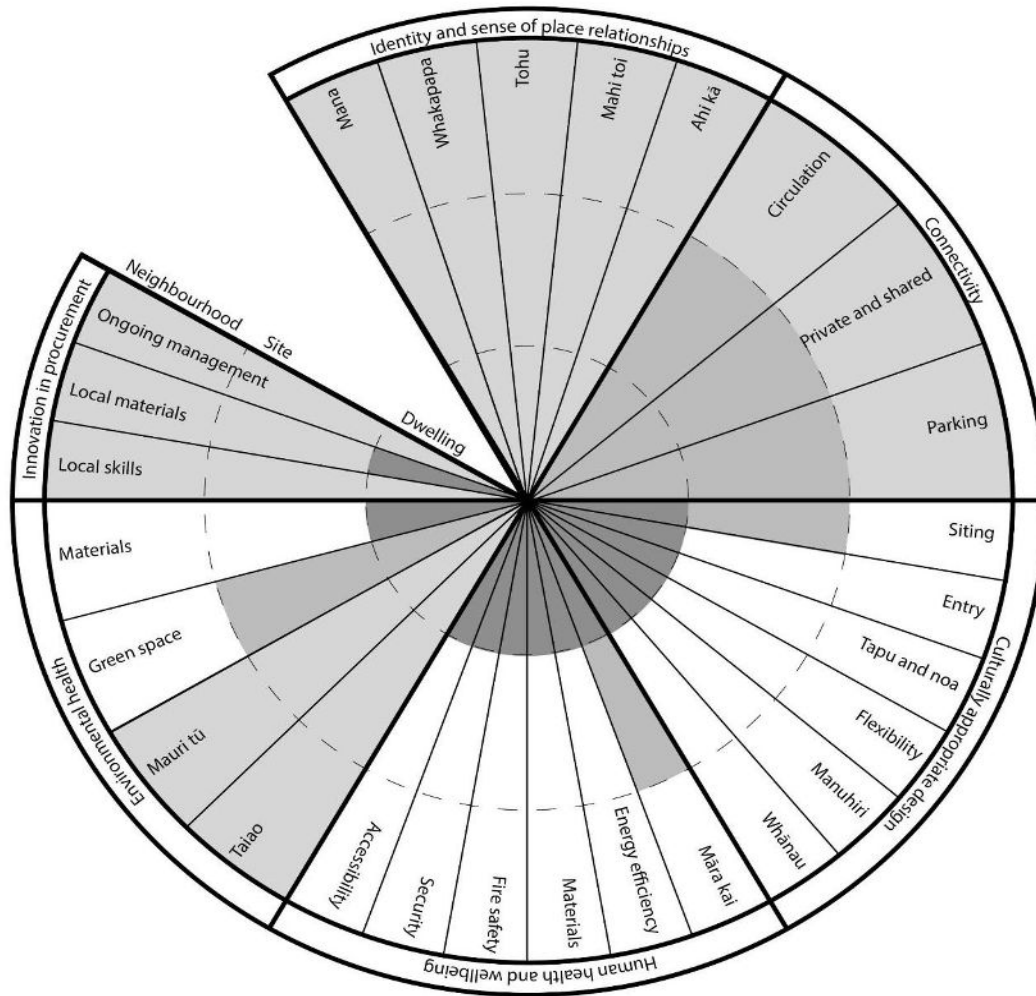
Discussion

As design principles - such as Te Aranga - have been increasingly integrated and cemented within local government and procurement policies, there has emerged a need to critically consider applications across differing typologies and development scales. Given these principles have the potential to significantly impact future neighbourhood regeneration and housing developments, these applications warrant further consideration and research. Through a better understanding of implementation/application, methodologies and assessment tools which are aligned with a values-based approach can be developed to inform more culturally attuned spatial design processes and outcomes.

There are challenges inherent to attempting to interpret and represent cultural intangibles within the visual realm. More visible and tangible outcomes are generally more readily identifiable and easily understood - by professionals and residents/occupants alike - than process-oriented and intangible outcomes. General users tend to understand the application of these principles when they are tangible or very visual, although they may not understand or be able to identify the underlying concepts.

With increasing uptake, there remains the risk that developers and designers may self-assess their integration of design principles as successful, but in reality, local iwi, residents, and users may not agree with this assessment. The neighbourhood design assessment tools are intended - amongst other strategies and tools - to empower mana whenua and residents to provide their own evaluation and measurement of the success of the application of these principles. It is important that this is a process and partnership as a whole rather than just a tick the box exercise - from project establishment, through the design and development phases, to post-occupancy monitoring and evaluation.

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