

Building for wellbeing – a review of the literature

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Abstract

This report presents an examination of literature surrounding the relationship between occupant wellbeing and the built environment. This review aims to understand how wellbeing is defined, the current policy framework for wellbeing in Aotearoa New Zealand and the emerging themes regarding the relationship between wellbeing and the built environment. Additionally, this review outlines what research has been completed regarding wellbeing and the built environment and aims to explore what knowledge gaps may exist regarding building for wellbeing. The literature sources included relevant books, journal articles, conference papers, reports and central and local government policy and strategy publications, all with a focus on an Aotearoa New Zealand context. Although there is no agreed-upon definition of wellbeing, it is generally accepted as a multi-dimensional concept. There are a multitude of stakeholders active in the building for wellbeing political landscape, which signals the importance of this matter for Aotearoa's built environment. Three key themes were identified from the literature: housing, wellbeing in the workplace, and wellbeing and neighbourhood design. Completed research in this space covers a wide range of topics such as climate change, ageing and mental health, but there remain some gaps. A total of 10 gaps in knowledge were identified and, when addressed, these may contribute to national wellbeing objectives and therefore support the intergenerational wellbeing of all New Zealanders. The findings from this review show that there is an important place for wellbeing in the heart of building design and performance, which can further advance wellbeing outcomes for all New Zealanders.

Note: This report was written prior to the 2023 General Election.

Keywords

Wellbeing, occupants, buildings, built environment.



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Executive summary

Wellbeing has become a key focus of research and a specific outcome for government (The Treasury, 2017). This report outlines the key findings of a literature review completed to understand the relationship between wellbeing and the built environment and explores opportunities for building for wellbeing – wellbeing at the centre of building design and performance.

This report represents a preliminary investigation into how wellbeing is defined, what implications the current policy framework for wellbeing in Aotearoa New Zealand has on the built environment and emerging themes from literature reviewed regarding building for wellbeing. It also outlines what research has been completed or is under way regarding wellbeing and the built environment and what knowledge gaps may exist that could translate into an industry need for wellbeing-centric building research.

What is wellbeing?

The literature reviewed identified that there is no universally agreed definition of wellbeing, although it is generally accepted that wellbeing is a multi-dimensional concept (Hone et al., 2015). Similarly in Aotearoa New Zealand, very few definitions of wellbeing exist, and those that do are provided primarily by government agencies. Opportunities were identified to better understand Māori concepts of wellbeing to inform thinking regarding wellbeing in general and as it relates to the built environment.

New Zealand's wellbeing policy framework

A comprehensive wellbeing policy framework has emerged in Aotearoa New Zealand in recent years. This includes Māori wellbeing frameworks such as He Ara Waiora and Whānau Ora and central government initiatives such as the Living Standards Framework, the Wellbeing Budget 2019 and Ngā Tūtohu Aotearoa. Local government was also found to have a strong mandate for progressing both wellbeing and building outcomes along with the construction sector. The myriad of stakeholders active in the building for wellbeing policy landscape signals the increasing importance of this aspect of wellbeing to improve the living standards of all New Zealanders.

Key themes from literature

The literature reviewed identified three key themes in relation to building for wellbeing: housing, wellbeing in the workplace, and wellbeing and neighbourhood design. This baseline of knowledge could be expanded to better understand what building for wellbeing means in an Aotearoa New Zealand context and how this knowledge could be utilised to improve wellbeing outcomes for current and future generations.

Current wellbeing research

To date, some research regarding building for wellbeing has been completed in Aotearoa New Zealand that either directly or indirectly addresses the relationship between wellbeing and the built environment. This covers research topics such as housing, climate change, mental health, ageing in place and indoor environmental quality. Opportunities exist, however, for further research based on user experience or lived experience to inform any building for wellbeing initiatives (The Urban Advisory, 2020).



Knowledge gaps

The analysis of literature reviewed identified a number of knowledge gaps regarding the relationship between wellbeing and the built environment in Aotearoa New Zealand. These gaps are summarised below. Addressing these knowledge gaps may assist in the achievement of national wellbeing objectives and contribute to the intergenerational wellbeing of all New Zealanders.



Summary

The breadth and depth of the key findings emergent from this literature review signal significant potential for wellbeing to be at the heart of building design and performance and to see the advancement of wellbeing outcomes for all New Zealanders.

It could be considered that the timing of further research into building for wellbeing has never been better for New Zealanders and the building and construction industry in a post-COVID-19 world and the social and economic repercussions that are likely to follow. Greater knowledge of the impact of the built environment on the wellbeing of inhabitants and the wellbeing of the building and construction industry will be instrumental in informing effective government, industry and community responses to improve living standards.

Huge opportunities exist to work with stakeholders to position any building for wellbeing research to be as useful as possible across multiple sectors and organisations.



1. Introduction

1.1 Project aims and objectives

We conduct most of our lives in or around buildings and the built environment. In Aotearoa New Zealand, research has established that young children and the elderly spend close to 90% of their time indoors (Baker et al., 2007). How we interact with buildings has the ability to impact our quality of life, including our wellbeing and health (Heerwagen, 1998).

Accordingly, there is increased interest in the relationship between wellbeing and buildings (Hanc et al., 2018). This includes a growing movement within the building and construction industry towards optimising the experiences of building inhabitants with a focus on personal wellbeing (Watson, 2018). In Aotearoa New Zealand, optimising wellbeing has emerged as a defining element within recent government initiatives such as the 2019 Wellbeing Budget (The Treasury, 2019), which moved away from a typically economic focus on prosperity to allocate spending according to wellbeing priorities.

This literature review represents a preliminary investigation into the relationship between the built environment and wellbeing. It seeks to understand how wellbeing is defined, the current policy framework for wellbeing in Aotearoa New Zealand and emerging themes regarding the relationship between wellbeing and the built environment. It also outlines what research has been completed or is under way regarding wellbeing and the built environment and what knowledge gaps may exist that could translate into an industry need for wellbeing-centric building research.

To reflect these research aims, this literature review has been structured as follows:

- Section 2 looks briefly at definitions of wellbeing both generally and in relation to the built environment.
- Section 3 explores the current policy framework applicable to wellbeing in Aotearoa New Zealand to understand any implications on the built environment.
- Section 4 summarises the key themes identified through the literature reviewed in relation to wellbeing and the built environment.
- Section 5 provides a summary of recent research initiatives regarding wellbeing and the built environment.
- Section 6 highlights the knowledge gaps identified through the literature review.

It is intended that this literature review will assist Te Hotonga Hapori to identify what research may be necessary to effectively contribute to the current evidence base regarding wellbeing and the built environment. This will assist in overall national efforts to achieve higher living standards and intergenerational wellbeing for all New Zealanders (The Treasury, 2017).

1.2 Methodology

This literature review contributes to an understanding of the relationship between wellbeing and the built environment with a focus on the Aotearoa New Zealand context. It involved a review of materials that included relevant books, journal articles, conference papers, reports, consultation documents and central and local government policy and strategy publications. The literature was synthesised to identify key themes, which were then analysed and discussed in relation to the built environment.



2. What is wellbeing?

In order to understand the relationship between wellbeing and the built environment, it is first necessary to understand how the concept of wellbeing has been defined. This includes general definitions of wellbeing, wellbeing as a performance metric, Māori concepts of wellbeing and how wellbeing has been articulated specifically in relation to the built environment. The following subsections explore the key themes arising from the literature reviewed on these topics.

2.1 General wellbeing

The literature reviewed identified that the word 'wellbeing' remains a contested concept. Even with its origins as far back as ancient Greece (Disabato et al., 2016), there is still limited agreement around an overarching definition of wellbeing (Dodge et al., 2012; Hird, 2003; Lupo 2014).

There is, however, general agreement that wellbeing is a multi-dimensional concept (Hone et al., 2015). The literature reviewed also identified an emerging theme in the consideration of wellbeing as "optimal psychological functioning and experience" (Ryan & Deci, 2001). This encompasses a number of people-focused and experiential-focused definitions of wellbeing:

- The conditions under which people live, and people's own thoughts, interpretations and experiences (Hird, 2003, as cited in Milligan et al., 2006).
- A positive and sustainable state that allows individuals, groups or nations to thrive and flourish (Helliwell & Putnam, 2004).
- Take the terms wellbeing, utility, happiness, life satisfaction and welfare to be interchangeable (Easterlin, 2003).

In Aotearoa New Zealand, few specific definitions for wellbeing could be identified within the literature reviewed. Definitions that were available, however, were those provided predominantly by government agencies. For example, the Wellbeing Budget 2019 defined wellbeing as when "people are able to lead fulfilling lives with purpose, balance and meaning to them" (The Treasury, 2019). Elsewhere, the concept of wellbeing was considered to encompass the physical, mental and emotional, social, and spiritual dimensions of health (Mental Health Foundation, 2024).

2.2 Wellbeing as a performance metric

Despite the fact that there is no general consensus on a definition of wellbeing, it has increasingly been used as a performance metric for society in general. Much work has been completed both in Aotearoa New Zealand and internationally around establishing and measuring the key drivers of wellbeing. This includes initiatives such as the United Nations Sustainable Development Goals, which set targets to achieve a world "where physical, mental and social well-being are assured" (United Nations, n.d.).

Measures of wellbeing are explained further by McAllister (2005, p. 7):

Objective measures of wellbeing consist of survey data related to material and social circumstances that may foster – or detract – from wellbeing, e.g. housing standards, income and employment, educational attainment, poverty etc. These are often referred to as 'social indicators' of wellbeing.

However, McAllister also emphasises that these objective measurements of wellbeing, while being a critically important source of evaluative information, do not provide information on how individuals actually perceive and experience living in their area – the experiential aspects of wellbeing. Therefore it is also important to consider experiential or subjective measures of wellbeing such as surveys and research based on user experience and lived experience.

In Aotearoa New Zealand, government agencies have begun to consider how wellbeing can be used as a performance metric. For example, initiatives such as the Treasury's Living Standards Framework (The Treasury, 2022) and Stats NZ's Indicators Aotearoa New Zealand (Stats NZ, n.d.) delineate between areas of wellbeing that can be evaluated and measured, including life satisfaction, finances, health, housing, human rights and relationships. These initiatives are discussed further in section 3.2.3.

2.3 Māori concepts of wellbeing

Māori concepts of wellbeing were also discussed in the literature reviewed. It is evident that the concept of wellbeing is understood in different ways, with a clear demarcation between western and indigenous understandings of the term (Durie, 2006). For example, Māori have a specific approach to wellbeing – *mauri ora* – that focuses on the interconnectedness of all aspects of life, not just human beings (Yates, 2019).

Māori understanding of wellbeing is tied directly to the environment. The interaction between people and the environment is what ensures the wellbeing of both groups (Afoa & Brockbank, 2019). Health and wellbeing is also strongly connected. In the 1980s, the Māori health perspective became represented by *Te Whare Tapa Whā* (four-sided house). The characteristics are identified in Figure 1 and remain relevant today. Each of these four dimensions influences and supports the others (Durie, 1994).



Source: Mental Health Foundation, 2024.

Figure 1. Te Whare Tapa Whā.

Finally, the literature reviewed also identified that it is critically important not to 'splice' elements of Māori wellbeing into a model that fragments the dimensions of wellbeing, as this would be poorly received by the Māori community (McMeeking et al., 2019). Current Māori wellbeing frameworks provide an important structuring element for discussion regarding building for wellbeing and are explored further in section 3.1.



2.4 Wellbeing and the built environment

Wellbeing is considered to encompass many domains of a person's life, with the physical environment (including the built environment) being just one (Allen & O'Donnell, 2019). As well as being people-focused, wellbeing also has an inherent relationship to place and liveability (Fuller, 2016).

This notion is borne out by Butterworth (2000, p. ii):

The built environment provides the setting and backdrop by which we live our lives, and impacts on our senses, our emotions, participation in physical activity and community life, our sense of community, and general wellbeing.

The majority of research in the area of defining the relationship between wellbeing and the built environment has had a strong focus on aspects of human health (Allen & O'Donnell, 2019). As noted by Watson (2018), there are plentiful opportunities for both research and practice to drive learning about wellbeing outcomes in buildings.

Opportunities therefore exist to specifically define what wellbeing means in relation to the built environment in an Aotearoa New Zealand context. This is likely to increase understanding across the building and construction industry and related professions (such as developers, architects, planners and regulators) in order to clarify and centralise efforts to improve wellbeing outcomes for all New Zealanders.

2.5 Key findings

These key findings have been distilled from the preceding subsections in relation to defining what wellbeing is and how it may relate to the built environment.

Defining wellbeing



- Internationally, there is no overarching definition of the term 'wellbeing', although there is general agreement that wellbeing is a multi-dimensional concept.
- What international definitions of wellbeing do exist appear to be focused on people and experiences.
- In Aotearoa New Zealand, very few definitions of wellbeing exist, and those that are available are provided primarily by government agencies.

Māori concepts of wellbeing



- Māori wellbeing reflects the interconnectedness of all aspects of life, not just human beings, and the importance of the environment. Māori wellbeing is also strongly linked to health as reflected in Te Whare Tapa Whā model.
- Concepts of Māori wellbeing need to be carefully considered and articulated to inform and shape any further research into wellbeing and the built environment.

Wellbeing and the built environment



- The majority of research on building for wellbeing in Aotearoa New Zealand has had a focus on human health.
- Opportunities exist to specifically define what wellbeing means in relation to the built environment in an Aotearoa New Zealand context.



3. Current policy framework

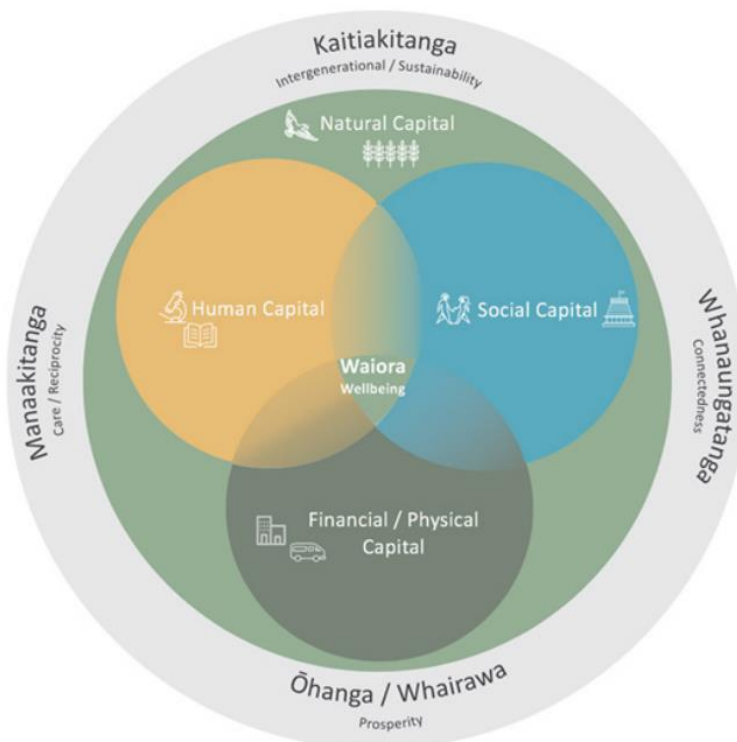
In recent years, the concept of wellbeing has become ingrained within the policy frameworks of central and local government in Aotearoa New Zealand (Olsen & Kiernan, 2019). This shift can be observed in key government initiatives that are designed to support better wellbeing outcomes across the Aotearoa New Zealand policy landscape.

This section explores the current policy framework applicable to wellbeing in Aotearoa New Zealand to understand its implications for wellbeing and the built environment. It first introduces Māori wellbeing frameworks as a structuring element for later discussion regarding central government, local government and building and construction industry frameworks and initiatives as they relate generally to wellbeing in Aotearoa New Zealand.

3.1 Māori wellbeing frameworks

3.1.1 He Ara Waiora

He Ara Waiora is a framework that reflects a mātauranga Māori-sourced approach to the concept of wellbeing with a focus on intergenerational wellbeing. It was originally designed to articulate Māori concepts of wellbeing in relation to Aotearoa New Zealand's Tax Working Group. However, extensive Māori engagement that supported and guided the development of He Ara Waiora signalled that the framework should have a broader application across all government policy (McMeeking et al., 2019). The Treasury considers He Ara Waiora to be a pathway towards wellbeing (Figure 2).



Source: O'Connell et al., 2018, p. ii.

Figure 2. He Ara Waiora – a prototype framework.



Waiora speaks to a broad conception of human wellbeing grounded in water (wai) as the source of all life. The foundations for wellbeing come through kaitiakitanga (stewardship of all our resources), manaakitanga (care for others), ōhanga (prosperity) and whanaungatanga (the connections between us). These foundations support the development of the four capital stocks: financial and physical capital, human capital, social capital and natural capital. Wellbeing depends on the sustainable growth and distribution of these four capitals, which together represent the comprehensive wealth of New Zealand.

3.1.2 Whānau Ora

Whānau Ora is an approach that supports whānau and families to achieve their aspirations in life (Te Puni Kōkiri, n.d.). It is a multi-layered policy framework that aims to transform how government and the community sector support family wellbeing (McMeeking et al., 2019). At the heart of Whānau Ora is an outcomes framework that describes the dimensions of individual and family wellbeing against seven pou (Figure 3) that were developed through extensive engagement with Māori and are supported by a comprehensive suite of outcome indicators (McMeeking et al., 2019):

Whānau are self-managing and empowered leaders
Whānau are leading healthy lifestyles
Whānau are participating fully in society
Whānau and families are participating confidently in Te Ao Māori - the Māori world
Whānau and families are economically secure and successfully involved in wealth creation
Whānau are cohesive, resilient and nurturing
Whānau and families are responsible stewards of their living and natural environments

Source: Te Puni Kōkiri, 2022.

Figure 3. Whānau Ora outcomes

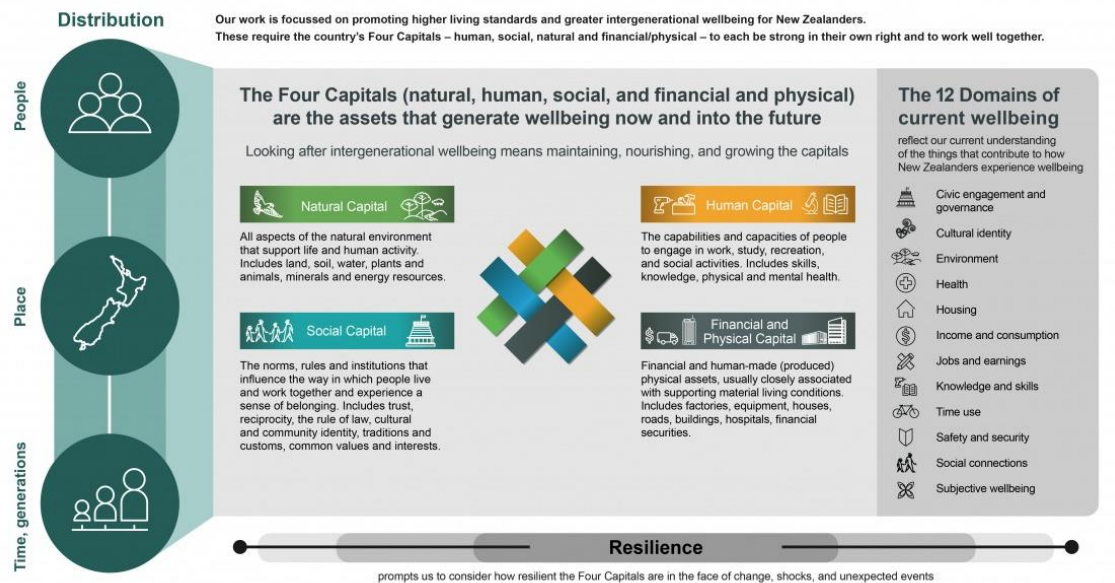
Whānau Ora outcomes aim to articulate dimensions of Māori wellbeing and have been recommended by Te Puni Kōkiri as an overlay to the Treasury's Living Standards Framework. Further research on Māori wellbeing frameworks would be beneficial to align any future wellbeing-centric building research to Māori wellbeing approaches.

3.2 Central government

3.2.1 Living Standards Framework

Attempts to define and measure wellbeing in Aotearoa New Zealand are represented by the Living Standard's Framework (LSF). The LSF was developed by the New Zealand Treasury as a tool to support government ministries in applying a wellbeing approach across a range of policy advice and activity (The Treasury, 2022). It provides a high-level framework for measuring and analysing intergenerational wellbeing, covering current wellbeing, future wellbeing, and risk and resilience across a range of economic, social and environmental outcome domains (McMeeking et al., 2019).

The LSF drew on the approach used in the Organisation for Economic Co-operation and Development's How's Life? initiative (McMeeking et al., 2019). It sets out 12 domains of wellbeing outcomes and takes an intergenerational approach by focusing on four capitals that drive future wellbeing. These capitals encompass natural assets such as flora, fauna and energy resources, social assets such as cultural identity and human connections, human assets such as people's knowledge and health and financial/physical assets such as roads and buildings. The Treasury states that long-term wellbeing is supported by "the growth, distribution and sustainability of the Four Capitals" (The Treasury, 2017). The LSF is depicted in Figure 4.



Source: The Treasury, 2022

Figure 4. The Living Standards Framework.

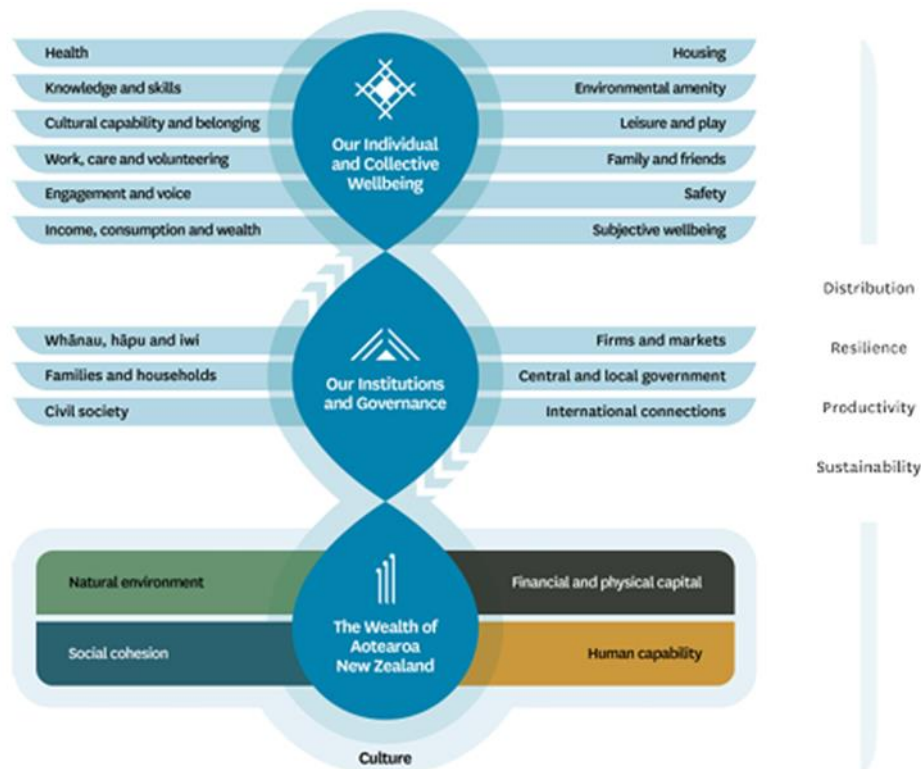
The LSF references the built environment through its description of 'physical capital', which includes a number of elements of the built environment (refer to Figure 4). For example, 'human-made physical assets, factories, houses, buildings, and hospitals'. The twelve domains also identify housing as a key contributor to how New Zealanders' experience wellbeing (The Treasury, 2022).

3.2.1.1 New Living Standard Framework

In 2021, the LSF was revised to move away from an individual-based understanding of wellbeing to a more collective one. The revised LSF has three main levels:

- **Our Individual and Collective Wellbeing:** This level of the framework captures those resources and aspects of our lives that have been identified by research or public engagement as being important for the wellbeing of individuals, families, whānau and communities.
- **Our Institutions and Governance:** This level captures the role our institutions play in safeguarding and building our wealth, as well as facilitating the wellbeing of individuals and collectives.
- **The Wealth of Aotearoa New Zealand:** This level captures how wealthy we are in aggregate as a country, including sources of wealth not fully captured in the system of national accounts, such as human capability and the natural environment (The Treasury, 2021).

Similar to the previous version of the LSF, there are a number of levels, as can be seen in Figure 5.



Source: The Treasury, 2021

Figure 5. Revised Living Standards Framework.

The LSF makes references to the built environment, which provides a clear mandate for a greater focus on wellbeing in the building and construction industry. It would be timely for industry to consider how it could frame its activities and built outcomes to respond to the language and intent of the LSF as other organisations have done. This would better position the building and construction industry, and associated professions and regulators, to contribute to the realisation of the LSF in terms of achieving higher living standards for all New Zealanders and support intergenerational wellbeing (The Treasury, 2017).

3.2.2 Wellbeing Budget 2019

In 2019, the Government framed its annual Budget in terms of wellbeing with the release of the Wellbeing Budget (The Treasury, 2019). Typically, the Budget outlines how much money the Government expects to earn in the coming financial year and how it intends to spend it (New Zealand Parliament, 2024).

The Wellbeing Budget 2019 moved away from a typically economic focus on prosperity to allocate spending according to wellbeing priorities. It sought to make the best choices for current and future generations by looking beyond economic growth on its own and considering social, environmental and economic implications together (The Treasury, 2019). The Wellbeing Budget document indicates that it does this in three ways:



- Breaking down agency silos and working across government to assess, develop and implement policies that improve wellbeing.
- Focusing on outcomes that meet the needs of present generations at the same time as thinking about the long-term impacts for future generations.
- Tracking our progress with broader measures of success including the health of our finances, natural resources, people and communities (The Treasury, 2019).

Clear priority areas were identified in the Wellbeing Budget 2019:

Taking mental health seriously



- A new frontline service for mental health with a \$455m programme providing access for 325,000 people by 2023/24.
- Suicide prevention services get a \$40m boost.
- Reaching 5,600 extra secondary students with more nurses in schools.
- Tackling homelessness with 1,044 new places – Housing First will now reach 2,700 people.

Improving child wellbeing



- Specialist services as part of a \$320m package to address family and sexual violence.
- Breaking the cycle for children in state care, including helping 3,000 young people into independent living.
- Taking financial pressure off parents by increasing funding to decile 1–7 schools so they don't need to ask for donations.
- Lifting incomes by indexing main benefits and removing punitive sanctions.

Supporting Māori and Pacific Peoples' aspirations



- Major boost for Whānau Ora, including a focus on health and reducing reoffending.
- Ensuring te reo Māori and Pacific languages survive and thrive.
- An additional 2,200 young people in the Pacific Employment Support Service.
- A \$12m programme targeting rheumatic fever.

Building a productive nation



- Bridging the venture capital gap with a \$300m fund so start-ups can grow and succeed.
- \$106m injection into innovation to help the transition to a low-carbon future.
- Nearly \$200m set aside for vocational education reforms to boost apprenticeships and trade training.
- Opportunities for apprenticeships for nearly 2,000 young people through Mana in Mahi.

Transforming the economy



- Over \$1bn boost in funding for KiwiRail.
- Helping the farmers with the climate change challenge by investing in scientific research.
- Encouraging sustainable land use with a \$229m package.
- Freshwater focus improving water quality in at-risk catchments.








Investing in New Zealand

- \$1.7bn to fix hospitals over the next 2 years.
- 10-year \$1.2bn investment in schools starting with \$287m this year for new buildings.
- Bowel screening programme extended to five more DHBs.
- Investing in better and more healthcare with \$2.9bn for DHBs.

The Wellbeing Budget 2019 has a number of intersections with the building and construction industry that may influence thinking regarding potential wellbeing-centric building research. Table 1 summarises initiatives that may impact wellbeing and the built environment based on each of the priorities identified above. It also suggests possible areas for increasing knowledge for those Budget initiatives that relate wholly or partially to the built environment or the building and construction industry.

Table 1. Wellbeing Budget 2019 initiatives impacting wellbeing and the built environment.

Priority area	Initiatives	Built environment knowledge requirements
Taking mental health seriously 	Expanding access and choice of primary mental health and addiction support	Access barriers for building and construction sector employees to mental health and addiction support, further to the BRANZ research on mental health in the construction sector outlined in section 4.2.2.
	Housing support products: expansion to help more people access and maintain tenancies	Tenancy characteristics (duration, barriers, opportunities, design for rental properties).
	Maintaining and strengthening the Housing First programme	Influence of the built environment on homelessness. Opportunities for the built environment and building industry to assist in homelessness reduction.
	Funding for the continued provision of transitional housing	Transitional housing demand and supply. Transitional housing supply international case studies.
Improving child wellbeing 	Multiple family and sexual violence reduction initiatives	Family and sexual violence rates and the built environment; links, trends and themes.
	Improving the condition of school property	Monitoring building quality for schools as a result of this investment.
	School property programme to deliver the National Education Growth Plan	Opportunities for the building industry to innovatively and effectively deliver education facilities. Case studies of how rapid construction of education facilities has been undertaken abroad.
Supporting Māori and Pacific Peoples' aspirations 	Enhancing relationships between local government and iwi/Māori to improve partnerships	Opportunities for local government and iwi/Māori to strengthen relationships around regulatory building processes and wellbeing initiatives.
	Kāinga Rua; Oranga Whānau: Marae resilience and whānau development	Understanding marae resilience challenges and opportunities. Stocktake/case studies of marae building quality and maintenance challenges.






Priority area	Initiatives	Built environment knowledge requirements
Building a productive nation 	Papakāinga development and rural housing repairs	Papakāinga build quality; challenges and opportunities.
	Treaty Settlement Landbank: ensuring the Crown provides warm, dry and safe homes. This initiative will increase the quantity and quality of housing, address health and safety risks on Landbank properties and ensure properties are maintained in a state that is suitable for use in a Treaty of Waitangi settlement	Application of findings from the BRANZ <i>Warm, dry, healthy</i> programme to Treaty Settlement Landbank properties. Potential partnership with the Energy Efficiency and Conservation Authority regarding insulation and home heating improvements for Treaty Settlement Landbank properties.
	Mana in Mahi: Employment programme to support successful transition into sustainable work	Monitor the impact of the Mana in Mahi programme on the building and construction industry. Case studies to distil Mana in Mahi lessons learned for the building and construction workforce.
	Transition to a low-emissions economy	Leverage BRANZ research on transition to a low-emissions economy to support this initiative.
Transforming the economy 	Reform of Vocational Education (RoVE)	Monitor developments in the implementation of RoVE to understand potential impact on building and construction workforce pipeline.
	New Zealand Census of Population and Dwellings: Complete the 2018 Census and commence the 2023 Census	Partner with Stats NZ to understand dwelling and built environment Census questions and reporting.
	Improving New Zealand's resource efficiency by reducing waste	Leverage BRANZ research on construction and demolition (C&D) waste to support this initiative.
Investing in New Zealand 	Reforms to the Resource Management Act (RMA)	Impact of the RMA on the built environment. Options to promote wellbeing in the built environment through RMA reform.
	Provincial Growth Fund (PGF)	Monitor the impact of the PGF on the building and construction industry. Options to promote wellbeing in the built environment through the PGF.
	Increasing the refugee quote	Refugee housing demand and supply; opportunities and challenges. Designing homes for refugees (culturally appropriate residential design).
	Residential earthquake-prone building financial assistance scheme	Monitor the impact of this financial assistance scheme to understand overall costs and implications of residential earthquake-prone building. (Leverages existing BRANZ research on earthquake strengthening.)
	Supporting the infrastructure pipeline through a multi-year approach to the capital allowance	Monitor the infrastructure pipeline to determine impact on the building and construction industry.



Table 1 indicates numerous overlaps between initiatives within the Wellbeing Budget 2019 and the built environment and building and construction industry. Positioning any future research to assist in the achievement of these initiatives would support government efforts and contribute to the wellbeing of all New Zealanders. It should be noted, however, that the Budget is vulnerable to political cycles. Priorities and initiatives within the annual Budget may change and therefore any research to support such priorities should remain flexible. As stated by Anderson and Mossialos (2019), there is no guarantee that national wellbeing will remain on the political agenda.

3.2.3 Ngā Tūtohu Aotearoa – Indicators Aotearoa New Zealand

Ngā Tūtohu Aotearoa is a source of measures for New Zealand's wellbeing developed by Stats NZ (n.d.). These indicators look beyond traditional economic measures to include wellbeing and sustainable development. Ngā Tūtohu Aotearoa were developed based on international best practice and tailored to reflect the Aotearoa New Zealand context. They support cross-government initiatives and international reporting requirements, including the LSF and the UN Sustainable Development Goals.

Ngā Tūtohu Aotearoa is structured to include four dimensions (current wellbeing, future wellbeing, transboundary impacts and contextual indicators) and 24 topics:

- For current wellbeing: air quality, cities and settlements, climate, culture, economic standard of living, ecosystems, governance, health, identity, knowledge and skills, land, leisure, safety, social connections, subjective wellbeing, waste, water and sanitation, and work.
- For future wellbeing: financial and physical capital, human capital, natural capital, and social capital (reflective of the LSF).
- For transboundary impacts: climate, economic standard of living, financial and physical capital, human capital, natural capital, and waste.
- For contextual indicators: population and production.

There are also 135 indicators mapped by topic and 135 measures, one for each indicator with 34 yet to be developed at the time of writing (Stats NZ, 2019).

Of the 24 topics within Ngā Tūtohu Aotearoa, roughly 12 could be considered to be relevant to building for wellbeing. These include cities and settlements, climate, health, knowledge and skills, safety, subjective wellbeing, waste, work, financial and physical capital, natural capital, population and production.

Stats NZ is reporting on some, but not all of Ngā Tūtohu Aotearoa at the current time (Stats NZ, n.d.). It may be beneficial for further, in-depth research to be completed on opportunities to utilise Ngā Tūtohu Aotearoa to inform understanding of wellbeing for the built environment. This may necessitate a partnership with Stats NZ regarding the release of reporting on Ngā Tūtohu Aotearoa and the development of any additional indicators that may be of relevance to the built environment.

3.3 Local government

Local government in New Zealand has a clear mandate to promote the wellbeing of its communities (Cheyne, 2008). Historically, the purpose of local government in New Zealand provided for the promotion of the social, economic, environmental and cultural wellbeing of communities through the Local Government Act 2002 (LGA). This wellbeing focus was removed by amendments to the LGA in 2012 but reintroduced through the Local Government (Community Well-being) Amendment Act 2019.



The New Zealand Cabinet Social Wellbeing Committee (2019) noted that:

local government's contribution to intergenerational community wellbeing is essential because, above certain basic needs, different communities will need different outcomes to maximise their wellbeing, and ensuring communities themselves are driving the mix and nature of services that contribute to these outcomes is critical for community resilience and social inclusion... [and the means of achieving these aims includes] better use of data and more specific wellbeing priorities [and supporting indicators] in council planning.

Local government across Aotearoa New Zealand has responded to wellbeing in a variety of ways. One example is Masterton District Council, which adopted its wellbeing strategy *He Hiringa Tangata, He Hiringa Whenua: My Masterton, Our People, Our Land* in 2018 (Masterton District Council, 2018). It sets out the long-term strategic direction for the Masterton district across four development areas – social, cultural, environmental and economic. Each development has a specific definition and priorities, supported by a suite of strategic directions. Within the framework, these strategic directions could be considered applicable to wellbeing and the built environment:

- Social development – supporting a better standard of living; enhancing community safety; creating spaces, places and opportunities for people to connect; building resilience and working together in times of crisis; and curating the built environment as a place to explore and engage with.
- Cultural development – supporting iwi, hapū and Māori communities in the long-term sustainability and wellbeing of local marae.
- Environmental development – preparing for climate change adaptation by planning ahead to build resilience
- Economic development – creating a supportive regulatory environment that enables sustainable infrastructure development and growth.

It may be useful to complete further in-depth research into wellbeing initiatives currently being undertaken by local government across Aotearoa New Zealand to understand how such strategic frameworks translate into action and track their impact on building for wellbeing.

In addition to the Local Government Act 2002, local government within Aotearoa New Zealand is also charged with responsibilities under a variety of other legislative measures. This includes the Building Act 2004, under which local authorities perform the functions of a building consent authority, and the Building (Earthquake-prone Buildings) Amendment Act 2016, under which building owners in high-risk seismic areas have up to 15 years to remediate earthquake-prone buildings, including public buildings owned by local government such as libraries and swimming pools. As noted by Nuth (2020), the wellbeing of communities is often interwoven with the bricks and mortar of public assets, and decisions to temporarily close public buildings can cause immediate disruption to social and economic life.

The relationship of local government with wellbeing and the built environment is therefore evident across a number of its legislative and regulatory functions. In addition to the further research into wellbeing initiatives currently being undertaken by local government across Aotearoa New Zealand, it may also be timely to complete a legislative scan of local government functions in relation to building for wellbeing in order to understand the regulatory (and potentially non-regulatory) levers to encourage building for wellbeing.

3.4 Stakeholders

A range of stakeholders within Aotearoa New Zealand's policy landscape are undertaking functions and activities that already or potentially influence building for wellbeing (Figure 6).

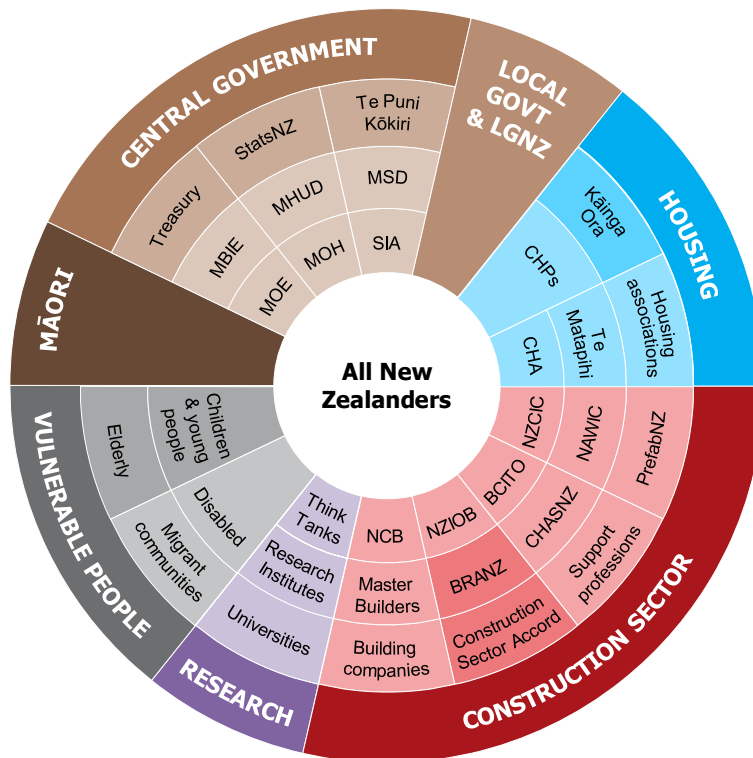


Figure 6. Potential stakeholders in building for wellbeing.

It would be useful to undertake further scoping work regarding the mandate and current wellbeing activities of stakeholders. This would enable an understanding of the potential for mutually beneficial collaboration opportunities to progress any wellbeing-centric building research and ensure it is as useful and multifunctional as possible.

3.5 Key findings

These key findings have been summarised from the preceding subsections in relation to Aotearoa New Zealand's current policy framework applicable to wellbeing and how this may relate to the built environment.

Māori wellbeing frameworks

- He Ara Waiora and Whānau Ora both reflect a Māori approach to wellbeing. Further research on this topic would be useful to align any future wellbeing-centric building research to Māori wellbeing approaches.



Central government

- The Living Standards Framework (LSF) provides a New Zealand-specific framework for measuring and analysing intergenerational wellbeing. The LSF includes components of the built environment and could be considered to provide a mandate for a greater focus on wellbeing in the built environment.





- It may be beneficial for the building and construction industry to consider how it could frame its activities and built outcomes to respond to the LSF as the guiding government document regarding the achievement of intergenerational wellbeing for all New Zealanders.
- The Wellbeing Budget 2019 includes a number of initiatives and financial allocations that intersect with wellbeing and the built environment. A number of opportunities exist to frame and provide research to support Budget initiatives.
- Ngā Tūtohu Aotearoa provides a series of measures of wellbeing to support the LSF and international reporting obligations. Roughly half of the topic areas could be considered of relevance to building for wellbeing. Opportunities exist to better understand the ability and appropriateness of Ngā Tūtohu Aotearoa as a reporting structure for metrics regarding building for wellbeing.

Local government



- Local government in New Zealand has a clear mandate under the Local Government Act to promote the wellbeing of its communities. Other regulatory functions also have the potential to impact wellbeing and the built environment such as the Building Act and the Building (Earthquake-prone Buildings) Amendment Act.
- It would be beneficial to understand local government functions in relation to building and wellbeing in order to identify any regulatory levers that could be utilised to promote building for wellbeing.
- In addition, a stocktake of current local government initiatives to promote wellbeing (such as Masterton District Council's Wellbeing Strategy) could be useful to understand their impact on building for wellbeing.

Stakeholders



- The literature reviewed indicates that there are a myriad of stakeholders active in the building for wellbeing policy landscape. Deeper understanding of the wider spectrum of stakeholders, their role and their mandate in progressing wellbeing initiatives would be beneficial in ensuring the integration of any future wellbeing-centric building research.



4. Key themes from literature

The literature reviewed identified three key themes with associated subthemes in relation to wellbeing and the built environment. As documented within research on housing and health (Ticleanu et al., 2015; Howden-Chapman et al., 2017b; Molyneux et al., 2005), office environments (Alhorr et al., 2016; Lamb & Kwok, 2016) and the design of neighbourhoods (Allen & O'Donnell, 2019; Dixon & Woodcraft, 2013; Haarhoff et al., 2019), the built environment is widely deemed as key to the optimisation of inhabitant wellbeing in a variety of settings. This section discusses each of these themes to provide a broad understanding of emerging opportunities and challenges in relation to wellbeing and the built environment.

4.1 Housing

4.1.1 Healthy housing

Given the purpose of housing to meet the basic human need for shelter, it is unsurprising that the discourse around building for wellbeing has primarily focused on designing and building healthy homes. Previous research on the relationship between wellbeing and the built environment has focused on the physical health component of wellbeing, with indoor and outdoor housing conditions, the material and social aspects of housing and local neighbourhoods all identified as impacting on the health of building occupants (Howden-Chapman, 2004). There is also a broad understanding that houses and community buildings with poor-quality indoor environments can negatively affect the health and wellbeing of occupants (Taptiklis & Phipps, 2017).

Other notable work on housing and health in Aotearoa New Zealand has been undertaken by Philippa Howden-Chapman, including research into the health implications of damp and mouldy homes, social housing and equity, and insulation and energy efficiency. Howden-Chapman's work confirms a strong link between the built environment and physical and mental health outcomes in Aotearoa New Zealand (Howden-Chapman & Carrol, 2004; Howden-Chapman & Preval, 2014; Howden-Chapman et al., 2009, 2017a, 2017b).

Also investigating the basic human requirements needed to support housing and health in New Zealand, Bennett (2010) concludes the six basic requirements in the residential built environment that provide healthy, comfortable, safe and liveable built environments and enable occupants to enjoy the high standards of health are:

- access to amenities such as public buildings, swimming pools and entertainment venues
- connection to the outdoors, including access to green spaces
- good indoor environments that provide visual, thermal, aural and spatial comfort
- privacy and sanctuary as opposed to crowded and inadequate space allocation
- quality buildings, including airtightness and orientation
- social capital and interaction.

This work is important as it includes a wider spectrum of criteria in which to explore the relationship between the built environment and wellbeing. It also moves wellbeing-focused research away from a specific focus on housing and health and towards a broader understanding of wellbeing in relation to the built environment in Aotearoa New Zealand.



4.1.2 Housing an ageing population

The relationship between wellbeing-centric building research and ageing in Aotearoa New Zealand is also important with increasing pressure on the housing market to accommodate an ageing population (Davey et al., 2004). This is particularly true for the rental market, which indicates that the number of people aged 65 or above living in rental accommodation will double between 2013 and 2038 (Curtis & Brunsdon, 2017).

The current housing stock in Aotearoa New Zealand is also likely to require improvement in order to adequately meet the needs of the elderly. There have been several studies worldwide on the housing needs and effect of design on the wellbeing of older people. Two such reports discuss the housing needs and wellbeing benefits of extra care housing on people with physical, mobility, sensory or cognitive impairments, which are more likely among older people (East Sussex County Council, 2015; Walker, 2019). Common themes include the importance of increasing accessibility design and specialist care options while maintaining residents' independence and reducing social isolation for residents.

4.1.3 Housing affordability

Another significant theme within the built environment and wellbeing literature reviewed was the perceived lack of affordable housing in Aotearoa New Zealand. With the home ownership rate decreasing since 1991 (Curtis & Brunsdon, 2017), there has been much discussion around the affordability of buying a house for the average New Zealander. This has been the driver for home ownership subsidy initiatives such as the First Home Grant, rent to own and shared ownership schemes (Witten et al., 2018).

Housing affordability is recognised globally as vital to tackling health inequalities and providing wellbeing outcomes for communities (Community Housing Cymru and Welsh NHS Confederation, 2019; Pineo, 2016; Balestra & Sultan, 2013; Molyneux et al., 2005). Furthermore, systemic housing issues have been found to affect Māori and Pacific Peoples in particular (Johnson et al., 2018). It is therefore critical that Māori and Pacific Peoples are represented in any wellbeing-centric building research in Aotearoa New Zealand.

Stats NZ (n.d.) identifies housing affordability and quality as indicators of self-determination and social capability, which are vital to wellbeing. These ongoing issues could provide incentives for the building and construction industry to also shift towards a stronger focus on wellbeing outcomes.

4.2 Wellbeing in the workplace

4.2.1 Internal environments and employee wellbeing

A large amount of literature is also available regarding the optimisation of wellbeing in the workplace. Various factors within the indoor environment of an office have been identified as contributing to employees' physical and mental health (Alhorr et al., 2016; Elzeyadi, 2011). For example, the concept of sick building syndrome, a term first defined by the World Health Organization in 1983, is used to describe negative symptoms experienced as a reaction to certain indoor environments (Jaakkola, 1998). Headaches, lethargy, blocked nose and dry or itchy skin remain commonly reported symptoms of sick building syndrome (Ghaffarianhoseini et al., 2018).



In a comparative survey of office workers in New Zealand and England, Phipps et al. (1999) found that “80% of both populations experienced some building-related symptoms and that this finding was sufficiently prevalent to warrant concern.

Furthermore, businesses have become increasingly aware of the importance of employee wellbeing, as this can affect not only sick leave but also motivation and work performance (Lamb & Kwok, 2016). The relationship between wellbeing and workplace design is therefore another key area for consideration in New Zealand. For example, Richardson et al. (2017) identify that the relationship between wellbeing and workplace design has significant public health implications for the New Zealand workforce. With a research focus on the increasing provision of open-plan workspaces as opposed to individual offices, they found that shared and open-plan work environments adversely affect the health and productivity of their occupants.

4.2.2 Mental health in the construction industry

Wellbeing and mental health are intrinsically related (Kvalsvig, 2018). BRANZ and Site Safe have completed notable research into mental health in the Aotearoa New Zealand construction industry (Bryson & Duncan, 2018) and suicide in the construction industry workforce (Bryson et al., 2019).

International research identifies that the construction industry suffers from higher rates of suicide and mental health issues compared to the general population or other industries. This is borne out in New Zealand, where the construction industry has the highest proportion of suicides across all sectors (Bryson & Duncan, 2018). This research identified that this was due to personal factors (such as relationships, family violence and financial strain), professional help-seeking factors (seeking help for their mental distress in the past) and work-related factors (such as job insecurity and stress) (Bryson et al., 2019).

Opportunities exist to undertake further research into mental health and wellbeing in the Aotearoa New Zealand construction industry to expand on the baseline provided by the research referenced above. This is particularly relevant given the strong mental health focus of the Wellbeing Budget 2019 and the fact that mental health is now a component of health under the Health and Safety at Work Act 2015 in New Zealand (Bryson & Duncan, 2018).

4.3 Wellbeing and neighbourhood design

In the past, low-density urban sprawl and stand-alone housing was the norm for New Zealanders and “central to [our] sense of place and wellbeing” (Schrader, 2014, p. 756). However, a current challenge for New Zealand urban centres is how to keep pace with population growth and achieve more sustainable urban developments without compromising the wellbeing and sense of place that we associate with urban sprawl (Boarin et al., 2018).

Neighbourhood design is central to this and recognised as one of the key areas of work that can positively support the social and cultural wellbeing of a community (Public Health Advisory Committee, 2010). The importance of developing a strong sense of community has been prevalent in many reports throughout the current discourse on wellbeing and is recognised by the New Zealand Treasury as contributing to social capital (McMeeking et al., 2019).



One tool to measure the level of wellbeing achieved through neighbourhood design is post-occupancy evaluation (POE). POE refers to the assessment of how buildings are used to support their environmental performance and occupant wellbeing and productivity (Hay et al., 2017). In New Zealand, POE has been found to encourage the development of a design process that takes into consideration the final users' perceptions and experiences in the built environment (Boarin et al., 2018). POE can also compare levels of wellbeing achieved through different housing typologies. For example, POE of higher-density housing has shown a high level of occupant satisfaction with design and a strong sense of community (Witten et al., 2018; Haarhoff et al., 2019).

In addition to POE, various programmes exist internationally to measure the impact of the built environment on wellbeing. For example, optimising wellbeing in building design led to the establishment of the International WELL Building Institute (IWBI) in 2014. IWBI developed a universal WELL standard to improve health and wellbeing through the built environment and established 10 core concepts of building performance that support human wellbeing – air, water, nourishment, light, movement, thermal comfort, sound, materials, mind and community (McCormick, 2018). Outcomes of the WELL standard have the ability to inform future research on the topic of wellbeing and the built environment, and its uptake within Aotearoa New Zealand would be useful to understand.

There was also a strong focus on urban wellbeing research in Aotearoa New Zealand through the Building Better Homes, Towns and Cities National Science Challenge. This research programme identified urban wellbeing as one of four key areas of research needed to respond to New Zealand's changing lifestyle needs and aspirations. Publications of relevance to wellbeing and the built environment include research on participatory urban design with youth (Carroll et al., 2019), walkable neighbourhoods (Austin et al., 2019) and environmental sustainability at the neighbourhood scale (Boarin et al., 2019). These publications illustrate that research falling under the umbrella of wellbeing and neighbourhood design and/or urban wellbeing is broad and covers a multitude of research areas and topics. While it would appear beneficial that the concept of wellbeing can be investigated across multiple research topics and areas, it also raises a number of difficulties in translating this research into policy objectives and evaluative measures of success. More research to design key performance indicators for wellbeing in relation to neighbourhood design in order to provide a framework for further evaluation could be beneficial.

4.4 Key findings

These key findings have been summarised from the preceding subsections in relation to key themes emerging from the literature reviewed regarding the relationship between wellbeing and the built environment.

Housing

- There is a considerable volume of existing housing research completed in Aotearoa New Zealand in relation to the physical health aspects of wellbeing.
- Broader consideration of the relationship between wellbeing and housing such as the six basic human requirements could be explored to provide a greater depth of understanding regarding non-health-related aspects of housing and wellbeing.
- Greater knowledge of wellbeing challenges associated with housing an ageing population would be beneficial as the number of people aged 65 and over in Aotearoa New Zealand increases.





- Housing affordability is recognised as an important factor in providing wellbeing outcomes for communities, particularly for Māori and Pacific populations.

Wellbeing in the workplace



- A large amount of literature is available regarding the optimisation of wellbeing in the workplace, particularly in indoor environments and with regard to the relationship between wellbeing and workplace design. The importance of employee wellbeing has also been linked to productivity.
- Research has identified that mental health and wellbeing in relation to Aotearoa New Zealand's construction sector workforce is an issue and provides a baseline from which to undertake further investigation. This is particularly pertinent given that the Wellbeing Budget 2019 signalled mental health as a priority area for government investment.
- Although not identified in the literature reviewed, it is timely to consider the impact of Aotearoa New Zealand's lockdowns in response to the COVID-19 pandemic in terms of wellbeing in the workplace. Current challenges and opportunities for wellbeing arising from the necessitated movement of the workplace to a home environment may signal the need for further research in this area.

Wellbeing and neighbourhood design



- Literature identified neighbourhood design can positively support the social and cultural wellbeing of communities. The Treasury's Living Standards Framework recognises a strong sense of community as a contributor to social capital.
- A number of tools exist to measure wellbeing in the built environment, including post-occupancy evaluation and the universal WELL standard to improve health and wellbeing through the built environment. Uptake of the WELL standard in Aotearoa New Zealand would be useful to understand.
- Further consideration and analysis of how existing research regarding wellbeing and neighbourhood design (including urban wellbeing) could be translated into key performance indicators to evaluate wellbeing outcomes would be instructive.



5. Relevant research

A variety of research initiatives are currently under way or have recently been completed in relation to wellbeing and the built environment. This research is summarised briefly here in order to complement earlier discussion regarding definitions of wellbeing, our current wellbeing policy framework and key themes emerging from the literature reviewed. This high-level understanding of current research initiatives will provide the context necessary to understand any knowledge gaps in relation to building for wellbeing (see section 6).

5.1 BRANZ research of relevance to building for wellbeing

BRANZ has invested in a substantial amount of research that overlaps or can influence building for wellbeing related to warmer, drier, healthier buildings; exceeding the minimum Building Code requirements; eliminating quality issues; and medium-density housing. Additional research of relevance to building for wellbeing includes studies on mental health in New Zealand's construction industry (Bryson & Duncan, 2018; Bryson et al., 2019). This research provides a useful baseline that researchers can use for further wellbeing-centric building research

5.2 Stocktake of building for wellbeing research

BRANZ commissioned The Urban Advisory (2020) to complete a stocktake of building for wellbeing research underway or planned in Aotearoa New Zealand, involving almost 40 organisations across the country, including ministries, local government, research institutes, Building Better Homes, Towns and Cities National Science Challenge, think-tanks, Crown entities and research consultancies. These key themes emerged:

Production of housing/delivery (supply)

- Housing, physical health and energy.
- Case studies of neighbourhoods (medium-density housing).
- Housing tenure (current and future models).
- Construction technologies and physical health (as a component of wellbeing).

Vulnerable people

- Child-focused research (including co-design).
- Vulnerable people and housing deprivation.
- Climate change and vulnerability.

Consumption of housing (demand)

- Cultures of housing.
- Dynamic demand.
- Intermediate housing market.
- Māori housing.

Wellbeing, government and decision making

- Data, digital tools and decision making.
- Social impact/wellbeing economics.
- General wellbeing.



These high-level trends also emerged from the stocktake:

- Past research has thoroughly considered the physical aspects of wellbeing related to housing, from healthy housing programmes looking at the impact of housing on physical health to regulatory consenting, housing quality (such as rentals) and topics such as indoor air quality.
- There is a focus on vulnerable people across numerous research projects from climate change, housing affordability and children to people with complex needs or experiences such as accessibility or homelessness. This is an important trend that could be considered further.
- Understanding lived experiences in the intermediate housing market and the impact of different and potential housing tenures is a small but rapidly growing focus area.
- There is growing interest and value placed on qualitative research based on user experience or lived experience (such as interviewing or co-design with children).
- In the past, priorities have leaned towards quantifying the economic dimensions of wellbeing and social impact in urban development such as through monetisation, particularly where research is applied to policy making or decision making.
- Understanding dynamic demand for housing is an emerging field of research related to wellbeing.
- Researchers are increasingly highlighting the need to consider neighbourhoods as well as housing, particularly in the context of wellbeing and how it can be achieved in New Zealand's towns and cities.
- Similarly, research trends reflect a desire and need to move away from qualities of housing to considering the home as a building block of community.

It is interesting to note that the majority of these findings from the independent stocktake of building for wellbeing research are borne out by the discussion included in preceding sections of this literature review:

- A key finding of this literature review is that there is a considerable volume of existing housing research completed in Aotearoa New Zealand in relation to the physical health aspects of wellbeing. This correlates with the similar high-level trend identified in the stocktake.
- A key finding of this literature review is that international definitions of wellbeing appear to be focused on people and experiences. This links to the high-level trends that identified lived experiences in the intermediate housing market is a small but rapidly growing focus area and that there is a growing interest and value being placed on qualitative research based on user experience or lived experience.
- this literature review identified initiatives such as the Living Standards Framework (LSF) and Wellbeing Budget 2019 that move policy making and decision making away from solely relying on economic measures. This accords with the high-level trend that identified that, in the past, priorities have leaned towards quantifying the economic dimensions of wellbeing and social impact in urban development.
- This literature review identified neighbourhood design as central to supporting the social and cultural wellbeing of communities. This correlates with the high-level trend highlighting the need to consider neighbourhoods as well as housing in the context of wellbeing and how it can be achieved in New Zealand's towns and cities.

High-level trends included in the stocktake that have not been observed in the literature reviewed highlight areas where potential knowledge gaps in wellbeing-centric building research are currently being addressed or could be further addressed. These include:



- building wellbeing for vulnerable people (including children, deprived populations and communities vulnerable to climate change)
- understanding dynamic demand for housing in relation to wellbeing
- research trends reflecting a desire and need to move away from qualities of housing to considering the home as a building block of community.

Overall, the information provided in this stocktake imparts valuable insight into current building for wellbeing research underway or planned in Aotearoa New Zealand. Key themes and knowledge gaps identified throughout this literature review can be checked against the research included in the stocktake to identify any knowledge gaps in relation to wellbeing-centric building research.

5.3 Key findings

These key findings can be summarised in relation to current research initiatives into building for wellbeing.

Current research

- BRANZ has invested in a substantial amount of research that overlaps or can influence building for wellbeing outcomes in Aotearoa New Zealand. This provides a useful baseline for further wellbeing-centric building research.
- A stocktake of building for wellbeing research identified four key areas of current research – production of housing (supply), vulnerable people, consumption of housing (demand) and wellbeing, government and decision making.
- The majority of high-level trends identified in the stocktake of building for wellbeing research correlate to the themes outlined in this literature review.
- This stocktake of current research, when benchmarked against the knowledge gaps emergent from the literature reviewed, provides a sound understanding of any future wellbeing-centric building research that could benefit the achievement of wellbeing outcomes in the built environment in Aotearoa New Zealand.





6. Knowledge gaps

The summary and analysis of literature has identified a number of gaps in our collective knowledge regarding the relationship between wellbeing and the built environment in Aotearoa New Zealand. This section outlines these knowledge gaps based on the literature reviewed and events in relation to the COVID-19 pandemic.

Defining wellbeing

A knowledge gap exists both internationally and within Aotearoa New Zealand regarding an agreed definition of wellbeing. This includes wellbeing in general, and also wellbeing in relation to the built environment. A definition of what wellbeing means in relation to the built environment in Aotearoa New Zealand would provide clarity and add common purpose to any wellbeing-centric building research or initiatives across the country.

Wellbeing needs of Māori

A strong theme throughout the literature reviewed is the need to understand what wellbeing in the built environment means from a Māori perspective and what implications higher (or lower) levels of wellbeing in the built environment mean for Māori.

It was noted in the stocktake of existing building for wellbeing research that Māori and Pacific wellbeing in Aotearoa New Zealand is poorer, with over-representation in housing deprivation statistics, a lack of data on Māori housing and recent housing policies failing to address systemic housing problems affecting Māori and Pacific Peoples.

Research to increase knowledge regarding the wellbeing characteristics, needs and opportunities for Māori would therefore be beneficial in relation to promoting such wellbeing within the built environment.

Building within a wider wellbeing framework

A strong policy framework regarding the achievement of intergenerational wellbeing for all New Zealanders has emerged in Aotearoa New Zealand over recent years. Greater knowledge regarding the implications of this policy framework on the built environment and the building and construction industry would assist in developing responses to efficiently and effectively achieve wellbeing objectives within this operating environment. Specifically, this could include knowledge regarding how the building and construction industry could:

- frame its activities and built outcomes to respond to the language and intent of the Living Standards Framework
- position itself to support the initiatives included in the Wellbeing Budget 2019 and any subsequent iterations
- utilise relevant indicators from Ngā Tūtohu Aotearoa to monitor and report on wellbeing in the built environment at a national level.

Contextualising building for wellbeing within the current policy framework could highlight the value of the building and construction industry and its ability to assist the Government to achieve its wellbeing outcomes. There could also be opportunities to work with stakeholders such as the Treasury and Stats NZ to develop this knowledge.



Building wellbeing with local government

This literature review highlights the role of local government in achieving wellbeing for communities in Aotearoa New Zealand. Increased knowledge regarding the functions of local government in relation to wellbeing and the built environment could assist in identifying any regulatory levers that could be utilised to promote joint objectives in relation to building for wellbeing. In addition, greater knowledge regarding the current wellbeing activities of local government across Aotearoa New Zealand and how these may intersect with the built environment could realise opportunities to partner to deliver building for wellbeing outcomes. This could include a stocktake or case studies of current or planned wellbeing initiatives of local government.

Working together to achieve wellbeing

The literature reviewed indicates that there are a myriad of stakeholders active in the building for wellbeing policy landscape. Deeper understanding of the wider spectrum of stakeholders, their role and their mandate in progressing wellbeing initiatives would be beneficial in ensuring the integration of any future wellbeing-centric building research.

Understanding wellbeing and housing beyond health aspects

A considerable volume of existing housing research completed in Aotearoa New Zealand has examined the physical health aspects of wellbeing. However, further knowledge of the non-health-related aspects of housing and wellbeing would be useful to obtain a broader understanding of this relationship. This is particularly relevant given the prominence given to housing in the Living Standards Framework as a key contributor to the wellbeing of New Zealanders.

Building for the wellbeing of vulnerable groups

The stocktake research into building for wellbeing in Aotearoa New Zealand identified that, although some research into building for the wellbeing of vulnerable groups is in progress, greater knowledge on this topic would be valuable. This includes more knowledge regarding climate change, housing affordability, ageing populations, children and young people and those with complex needs or experiences such as accessibility or homelessness.

Building for mental health and wellbeing

The literature reviewed identified that mental health and wellbeing in relation to the Aotearoa New Zealand construction workforce is an issue. While existing research has provided a baseline understanding of this topic, greater knowledge could be extremely advantageous in improving mental health and wellbeing outcomes. This is particularly pertinent given the strong focus on mental wellbeing in the Wellbeing Budget 2019, indicating this as a priority area for government investment and attention.

Building for wellbeing in times of pandemic

Although not identified in the literature reviewed, it is timely to consider the impact of Aotearoa New Zealand's lockdowns in response to the COVID-19 pandemic from a building for wellbeing perspective. These unprecedented times of enforced social isolation are likely to have implications for how we use and interact with the built environment and on the sustainability of the building and construction industry as it navigates an uncertain economic future. Greater knowledge of the consequences of COVID-19 on both of these aspects would be instrumental in positioning industry to respond to current conditions and any similar events in the future.



In particular, more in-depth knowledge of the following impacts of social isolation on wellbeing and the built environment would be advantageous:

- Increased prevalence of working from home.
- Shared spaces in medium-density and high-density housing typologies (for example, elevators and access points, ventilation systems, outdoor space).
- Opportunities to design community spaces for use during social isolation.
- Lived experiences of social isolation by location, age, gender and residential typology.
- Usage rates of public open space networks during lockdowns.
- Ageing in place during social isolation.
- Social isolation and vulnerable groups.

Greater knowledge of the following impacts of social isolation and lockdown on the wellbeing of the building and construction industry would also be invaluable:

- Business longevity and lived experiences of business management.
- Mental health.
- Post-lockdown recovery strategies.
- Perceptions and attitudes of the building and construction industry to enforced lockdown.

It is possible there may be no better time than the present to address knowledge gaps in relation to the impact of COVID-19 on building for wellbeing. This may assist not only the building and construction industry but the current all-of-government response to recovery from the social and economic challenges of the COVID-19 pandemic.

6.1 Key findings

These key findings can be summarised in relation to current knowledge gaps regarding building for wellbeing in New Zealand.

Knowledge gaps

- There are a number of knowledge gaps regarding building for wellbeing in an Aotearoa New Zealand context.
- Addressing knowledge gaps regarding the relationship between wellbeing and the construction industry will position the building and construction industry to assist in the achievement of national wellbeing objectives and contribute to the ongoing wellbeing of all New Zealanders.





7. Summary

This literature review has provided a preliminary investigation into the relationship between the built environment and wellbeing and explored how wellbeing is defined, the current policy framework for wellbeing in Aotearoa New Zealand and emerging themes regarding the relationship between wellbeing and the built environment. This literature review has also outlined what research has been completed or is under way regarding wellbeing and the built environment in Aotearoa New Zealand and what knowledge gaps may exist that could translate into an industry need for wellbeing-centric building research. The key findings identified in the literature review are summarised below. It is hoped this will provide a considered baseline of information regarding building for wellbeing and how any future research on this topic could contribute to the achievement of the Government's current wellbeing aspirations to achieve higher living standards and intergenerational wellbeing for all New Zealanders.

Defining wellbeing



- Internationally, there is no overarching definition of the term 'wellbeing', although general agreement that wellbeing is a multi-dimensional concept.
- What international definitions of wellbeing do exist appear to be focused on people and experiences.
- In Aotearoa New Zealand, very few definitions of wellbeing exist, and those that are available are provided primarily by government agencies.

Māori concepts of wellbeing



- Māori wellbeing reflects the interconnectedness of all aspects of life, not just human beings, and the importance of the environment. Māori wellbeing is also strongly linked to health as reflected in Te Whare Tapa Whā model.
- Concepts of Māori wellbeing need to be carefully considered and articulated to inform and shape any further research into wellbeing and the built environment.

Wellbeing and the built environment



- The majority of research on building for wellbeing in Aotearoa New Zealand has had a focus on human health.
- Opportunities exist to specifically define what wellbeing means in relation to the built environment in an Aotearoa New Zealand context.

Māori wellbeing frameworks

- He Ara Waiora and Whānau Ora both reflect a Māori approach to wellbeing. Further research on this topic would be useful to align any future wellbeing-centric building research to Māori wellbeing approaches.

Central government



- The Living Standards Framework (LSF) provides a New Zealand-specific framework for measuring and analysing intergenerational wellbeing. The LSF includes components of the built environment and could be considered to provide a mandate for a greater focus on wellbeing in the built environment.
- It may be beneficial for the building and construction industry to consider how it could frame its activities and built outcomes to respond to the LSF as the guiding government document regarding the achievement of intergenerational wellbeing for all New Zealanders.



- The Wellbeing Budget 2019 includes a number of initiatives and financial allocations that intersect with wellbeing and the built environment. A number of opportunities exist to frame and provide research to support Budget initiatives.
- Ngā Tūtohu Aotearoa provides a series of measures of wellbeing to support the LSF and international reporting obligations. Roughly half of the topic areas could be considered of relevance to building for wellbeing. Opportunities exist to better understand the ability and appropriateness of Ngā Tūtohu Aotearoa as a reporting structure for metrics regarding building for wellbeing.

Local government



- Local government in New Zealand has a clear mandate under the Local Government Act to promote the wellbeing of its communities. Other regulatory functions also have the potential to impact wellbeing and the built environment such as the Building Act and the Building (Earthquake-prone Buildings) Amendment Act.
- It would be beneficial to understand local government functions in relation to building and wellbeing in order to identify any regulatory levers that could be utilised to promote building for wellbeing.
- In addition, a stocktake of current local government initiatives to promote wellbeing (such as Masterton District Council's Wellbeing Strategy) could be useful to understand their impact on building for wellbeing.

Stakeholders

- The literature reviewed indicates that there are a myriad of stakeholders active in the building for wellbeing policy landscape. Deeper understanding of the wider spectrum of stakeholders, their role and their mandate in progressing wellbeing initiatives would be beneficial in ensuring the integration of any future wellbeing-centric building research.

Housing



- There is a considerable volume of existing housing research completed in Aotearoa New Zealand in relation to the physical health aspects of wellbeing.
- Broader consideration of the relationship between wellbeing and housing such as the six basic human requirements could be explored to provide a greater depth of understanding regarding non-health-related aspects of housing and wellbeing.
- Greater knowledge of wellbeing challenges associated with housing an ageing population would be beneficial as the number of people aged 65 and over in Aotearoa New Zealand increases.
- Housing affordability is recognised as an important factor in providing wellbeing outcomes for communities, particularly for Māori and Pacific populations.

Wellbeing in the workplace



- A large amount of literature is available regarding the optimisation of wellbeing in the workplace, particularly in indoor environments and with regard to the relationship between wellbeing and workplace design. The importance of employee wellbeing has also been linked to productivity.
- Research has identified that mental health and wellbeing in relation to Aotearoa New Zealand's construction sector workforce is an issue and provides a baseline from which to undertake further investigation. This is particularly pertinent given that the Wellbeing Budget 2019 signalled mental health as a priority area for government investment.



- Although not identified in the literature reviewed, it is timely to consider the impact of Aotearoa New Zealand's lockdowns in response to the COVID-19 pandemic in terms of wellbeing in the workplace. Current challenges and opportunities for wellbeing arising from the necessitated movement of the workplace to a home environment may signal the need for further research in this area.

Wellbeing and neighbourhood design



- Literature identified neighbourhood design can positively support the social and cultural wellbeing of communities. The Treasury's Living Standards Framework recognises a strong sense of community as a contributor to social capital.
- A number of tools exist to measure wellbeing in the built environment, including post-occupancy evaluation and the universal WELL standard to improve health and wellbeing through the built environment. Uptake of the WELL standard in Aotearoa New Zealand would be useful to understand.
- Further consideration and analysis of how existing research regarding wellbeing and neighbourhood design (including urban wellbeing) could be translated into key performance indicators to evaluate wellbeing outcomes would be instructive.

Current research



- BRANZ has invested in a substantial amount of research that overlaps or can influence building for wellbeing outcomes in Aotearoa New Zealand. This provides a useful baseline for further wellbeing-centric building research.
- A stocktake of building for wellbeing research identified four key areas of current research – production of housing (supply), vulnerable people, consumption of housing (demand) and wellbeing, government and decision making.
- The majority of high-level trends identified in the stocktake of building for wellbeing research correlate to the themes outlined in this literature review.
- This stocktake of current research, when benchmarked against the knowledge gaps emergent from the literature reviewed, provides a sound understanding of any future wellbeing-centric building research that could benefit the achievement of wellbeing outcomes in the built environment in Aotearoa New Zealand.

Knowledge gaps



- There are a number of knowledge gaps regarding building for wellbeing in an Aotearoa New Zealand context.
- Addressing knowledge gaps regarding the relationship between wellbeing and the construction industry will position the building and construction industry to assist in the achievement of national wellbeing objectives and contribute to the ongoing wellbeing of all New Zealanders.

As illustrated by the breadth and depth of the key findings emergent from this literature review, it can be concluded that there is a high level of potential for wellbeing-centric building research to inform and assist the current all-of-government approach to the advancement of wellbeing outcomes for all New Zealanders. It also presents an opportunity for leadership in the area of building for wellbeing research, particularly experience-based research. As the building and construction industry navigates the impact of the COVID-19 pandemic and the social and economic repercussions that are likely to resonate for some time, greater knowledge of the impact of the built environment on the wellbeing of inhabitants alongside the wellbeing of the building and construction industry will be instrumental to informing effective government, industry and community responses to build resilience and improve living standards.



Working with stakeholders will also assist in the development of any building for wellbeing research topics and position such research to be as useful as possible across multiple sectors and organisations. This will support Aotearoa New Zealand as we draw on our resilience to nurture collective wellbeing in a post-COVID-19 world.



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