

NEIGHBOURHOODS, LOCAL AUTHORITIES AND COMMUNITY DEVELOPMENT: OPPORTUNITIES FOR IMPROVED SUSTAINABILITY

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Summary

Over the last four years Beacon Pathway Ltd (Beacon) has been developing a Neighbourhood Sustainability Framework through which the sustainability of neighbourhoods can be assessed. In the development phase prototypes of the framework and tools have been tested. This has involved working with developers and local authorities. In doing so, opportunities to retrofit neighbourhoods for greater sustainability through active local partnerships have emerged. This paper reviews the way in which the prototype Neighbourhood Sustainability Framework and tools combined with some house level research into housing conditions opened up and assisted with opportunities for community development as well as improved environmental outcomes in a lower to middle income suburb in West Auckland at both the neighbourhood and house levels.

1. Introduction

Beacon Pathway Ltd (Beacon) is a research consortium that seeks to radically change the design, construction and renovation of New Zealand's homes and neighbourhoods. Beacon aims to bring about a significant improvement in the sustainability of the residential built environment in New Zealand through science-based New Zealand research.

To improve the sustainability of neighbourhoods both existing and new in New Zealand, Beacon has been developing a Neighbourhood Sustainability Framework which includes two tools to assess neighbourhoods and identify opportunities for improved sustainability. This reflects on the process, findings and outcomes of Beacon's participation in the West Harbour Project through which Waitakere City Council and Housing New Zealand Corporation are now actively considering options for the rejuvenation and retrofitting of West Harbour, an area in Waitakere City, part of the Auckland regional conurbation. Beacon's participation in the West Harbour Project has involved two key activities. Firstly, the application of the Neighbourhood Sustainability Framework and its prototype neighbourhood assessment tools. Secondly, an analysis of the condition of the housing stock to establish the nature and extent of house-based retrofit opportunities. These two components together highlighted, perhaps in a very unique way, the profound connections between dwelling sustainability and neighbourhood sustainability.

2. Beacon's Role in West Harbour

The West Harbour Neighbourhood Sustainability Project (now coined Tatou West Harbour) is part of the wider **Massey Matters Project**. Massey Matters was initiated by Council in 2006. This project has seen Waitakere City Council working alongside the local community and other partners to develop a programme for long term, community driven, sustainable neighbourhood renewal and development in the Massey area designed to deliver:

A Sustainable Urban Massey

- *Building community activity, networks, connectivity and sense of pride and identity.*
- *Improving current urban form and infrastructure (e.g. services, facilities, connectivity, natural environment)*

Four key principles continue to guide the development of Massey Matters:

- Working with the Massey community
- Sustainable suburban development
- Collaboration and partnership
- Concurrent planning and action.

The initial conversations between Beacon, Waitakere City Council and Housing New Zealand Corporation identified West Harbour as a site for neighbourhoods retrofit. There were opportunities for Beacon to test its Neighbourhood Sustainability Framework and to use that research as a key contributor to the development phase of Tatou West Harbour and a way of flagging local issues around sustainability and the identification of options to make the neighbourhood work better. The research has practically acted as a catalyst for ongoing discussion with local communities, Waitakere City Council and other stakeholders in the West Harbour area about the options and sequencing of retrofit work.

Beacon’s involvement in the West Harbour Project was prompted by Beacon’s recognition that its retrofitting packages at the house level and its Neighbourhood Sustainability Framework and associated tools must work for practitioners, investors and decision-makers. Beacon’s role was to provide the Tatou West Harbour stakeholders with: robust assessment of the sustainability of a neighbourhood in West Harbour; robust data on the house condition of the West Harbour housing stock; and a set of neighbourhood retrofit options for further consideration designed to optimise the sustainability of the neighbourhood as a whole and the dwellings within it.

3. The Neighbourhood Sustainability Framework

Beacon Pathway Ltd. (Beacon) has developed a Neighbourhood Sustainability Framework (NSF) and prototype tools to assess New Zealand neighbourhoods. That framework is developed around six critical domains and a specified neighbourhood goal (Figure 1).

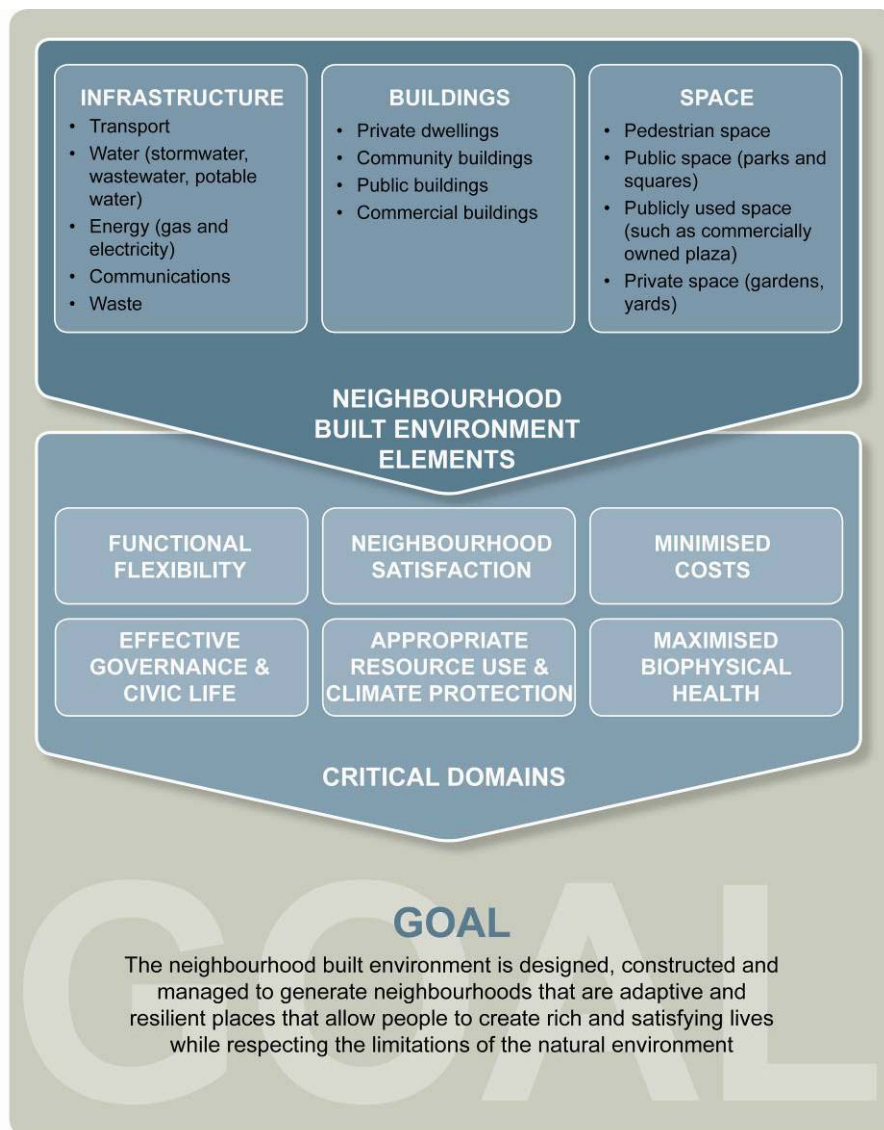


Figure 1: The Neighbourhood Sustainability Framework

The tools that support the Neighbourhood Sustainability Framework are the:

- Built Environment Observational Assessment Tool¹ which involves a structured, expert assessment of the built environment; and
- Resident Self-report Tool which involves collecting and analysing resident's behaviour and perception in relationship to the critical domains of the NSF.

The Observational Assessment Tool consists of a mixture of measurement and professional judgement structured through a set of well-defined requirements and guidelines. The Resident Self-report Tool is applied as a resident questionnaire that is delivered to householders. The results are reported as relative values to a baseline database of neighbourhood behaviours and perceptions. The aim of the tools is to pinpoint neighbourhood strength and weaknesses and assist in identifying the critical priorities for the management and retrofit of neighbourhoods.

Both tools are described in detail in the report *NH103a The Beacon Neighbourhood Tools* (Lietz et al, 2007). Broadly, however, they measure a series of critical sustainability issues that a substantial body of international research indicates affects, and is affected by, the built environment. Those are:

- *The use of motor vehicles, particularly private motor vehicles.* Greenhouse gas emissions, storm water pollution and air pollution are associated with vehicle emissions. Travelling time in motor vehicles has significant social and economic costs and presents the second highest direct costs to households. Those unable or unwilling to drive are at risk of social exclusion and marginalisation. Walking is associated with neighbourhood interaction and increased informal surveillance. Neighbourhood form impacts on both motor vehicle use and walking.
- *The provision and accessibility of quality and nature of public space.* Public space can generate interaction, provide local natural habitats. They also can be used to manage storm water. Well designed public space can increase walking and provide for creative and physical activities.
- *Neighbourhood built environments work when they are flexibility and adaptable.* Robust neighbourhoods stand the test of time. Key action pathways to ensure flexibility and adaptability include a mixture in building typology and dwelling size, mixed use, local facilities and the availability of public transport.
- *Higher density can reduce resource use and generate economies of scale.* Density intensification can reduce sprawl, reduce the amount of land that is taken out of natural ecosystems, generate population critical mass, affect travel and neighbourhood behaviours. Higher density therefore improves the viability of town centres and public transport and directly affects travel behaviour. Higher land prices inevitably encourage the market to reduce lot sizes. Intensification, whether through pricing or through regulation, is occurring in many neighbourhoods and presents challenges to current neighbourhood built environment design and the construction of the buildings in them.

Both the Observational Assessment Tool and the Resident Self-Report Tool are directed to measuring the extent to which neighbourhood plans and existing neighbourhoods respond positively to those challenges. Initially, a draft version of the United States Green Building Council's LEED-ND was tested as the observational assessment tool for the NSF. This was found to be unsuitable for New Zealand conditions, was very labour intensive, was directed at scoring designs rather than facilitating decision-making, was less useful in relation to existing neighbourhoods, and generated some quite contradictory outcomes. For instance, a number of existing New Zealand neighbourhoods on which the draft LEED-ND was applied had good surveillance although no had the features that would generate a good score in relation to surveillance. Consequently, an alternative Observational Assessment Tool was developed that measures:

- Access to basic every day facilities within walking distance
 - Schools
 - Reserves
 - Local shops
- Access to and adequacy of public transport within walking distance
- Quality of space
 - Streetscape, including but not limited to walkability
 - Public open space
- Efficient use of space and viability of local centres
 - Residential density
 - Previous use of the site
- Diversity
 - Mixed use

¹ Referred to as the 'Observational Assessment Tool'.

- Public space
- Housing Diversity (cost, size and typology)
- Protection and enhancement of the natural environment
 - Stormwater management
 - Protection and creation of habitat
 - Riparian, coastal and wetland management.

The Resident Self-Report Tool collects data related to:

- intention to move because of housing
- use of foot/bicycle/public transport for work/ study
- intention to move because of neighbourhood
- condition of house
- condition of garden
- perceptions of safety
- noise disturbance
- knowing neighbours
- perceptions of the neighbours
- identification with the neighbourhood and belonging
- car use
- composting
- provision for wildlife
- gardens and pools
- organic gardening
- participation in local groups
- use of public spaces
- dwelling energy efficiency
- dwelling water efficiency
- neighbourhood food expenditure.

Scores are currently banded as follows:

- Outstanding sustainability over 60 points
- High sustainability 46-60 points
- Medium sustainability 30-45 points
- Low sustainability under 30 points

For Tatou West Harbour, the Observational Assessment Tool was applied in the same manner as it has been for all previous case studies. The questionnaire used for the Resident Self-Report questionnaire, however, was accompanied by an additional set of questions to assist the Tatou West Harbour Project in collecting some additional data of interest without over-burdening residents with repeated social surveying. The questionnaire was distributed to the neighbourhood households through direct delivery. A 36 percent response rate was achieved. This is somewhat less than in previous case studies. The number of returns (149 responses), however, are adequate to drive the assessment calculator.

4. The House Condition Survey

The House Condition Survey undertaken in West Harbour involved surveying 100 houses to establish the physical condition of the dwellings in the area. The sample was stratified to ensure a selection of 75 privately owned houses (either in private rental or owner occupier) and 25 houses owned by Housing New Zealand Corporation. Houses were selected randomly and field surveyors were provided with a strict set of replacement rules and protocols to ensure that field surveyors did not undertake a biased sampling pattern. The surveying was undertaken using a slightly modified version of the BRANZ House Condition Survey which has been used for community-based condition surveying in low income communities. It provides data comparable to the data reported by BRANZ for the New Zealand House Condition Survey. Surveying was undertaken by Eco-Matters Environment Trust, a Waitakere-based organisation with considerable experience in dwelling energy and water retrofitting.

5. Results of the Neighbourhood Assessment

West Harbour achieved a medium sustainability rating using the Observational Assessment Tool, which can be seen as a positive result for a suburban neighbourhood, such as West Harbour. The Resident Self-report Tool however generated a low sustainability ranking. Table 1 puts West Harbour's results in context with the results from some of Beacon's earlier case study neighbourhoods. The different results generated by the two tools suggest that priority should be given to interventions that will improve resident experiences. Table 2 summarises the strengths and weaknesses of West Harbour.

Table 1: West Harbour Beacon Neighbourhood Assessment Results

Sustainability Rating	Observational Assessment	Resident Self-Report Assessment
High	46-60	15 +
	<ul style="list-style-type: none"> ▪ Blake St – Ponsonby ▪ Petone 	<ul style="list-style-type: none"> ▪ Petone ▪ Blake St – Ponsonby
Medium	30-45	10-14.9
	<ul style="list-style-type: none"> ▪ Aranui ▪ West Harbour ▪ Harbourview ▪ ChCh East Inner City 	<ul style="list-style-type: none"> ▪ Harbourview ▪ ChCh East Inner City
Low	<30	<10
	<ul style="list-style-type: none"> ▪ Waimanu Bay ▪ Dannemora 	<ul style="list-style-type: none"> ▪ West Harbour ▪ Aranui

Table 2: West Harbour Key Strength and Weaknesses

Key Strengths	Key Weaknesses
<ul style="list-style-type: none"> • Good walking access to local services and facilities (shops, school, early childhood centres, community facilities and parks). • Food shopping is highly localised. • Good quality of space (parks and streetscape). • Good passive surveillance of streets and quite good surveillance of parks and walkways. • Protection of riparian area along the Manutewhau Stream. • Proximity to Westgate. • Affordable Housing. • Smaller homes available (2 bedroom). • Convenient bus stops and access to five bus routes. 	<ul style="list-style-type: none"> • Serious concerns around safety when walking at night. • Noise considered to be a problem by many. • More than average number of people looking at moving because their house no longer suits them. • More than average people looking to move because of the neighbourhood. • Lower than average levels of neighbourhood interaction. • Low Public Transport usage. • No bus service after 7pm. • Low levels of walking and cycling. • Lack of stormwater treatment. • Disconnected street network.

6. Results of the House Condition Assessment

The results of the House Condition Survey can be summarised as follows:

- The condition of the West Harbour stock is slightly poorer than the national stock: The National stock, on average, is in the Very Good category while the West Harbour stock is, on average, in the Good category.
- Average costs of outstanding maintenance was 42 percent higher in the West Harbour stock than the cost of repair for stock nationally.
- West Harbour dwellings appear to be particularly vulnerable to issues associated with water damage, cold and damp. Indicators of those problems include:
 - 53.3 percent of West Harbour dwellings have Poor or Moderate ceiling insulation
 - 15.2 percent of West Harbour houses having mould to Serious or Poor levels compared to only 2.7 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 20 percent of West Harbour houses with rising damp compared to 8 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 7 percent of West Harbour houses with water ponding compared to 2 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 6 percent of West Harbour houses with timber decay compared to 1 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 4 percent of West Harbour houses with subsidence compared to 0 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 4 percent of West Harbour houses with cupped floor boards compared to 1 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 13 percent of West Harbour houses with fungi on the wall claddings compared to 6 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
 - 3 percent of West Harbour houses with leaks at the joints of wall claddings compared to 1 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.

- 33 percent of West Harbour houses with moss growth on the roof cladding compared to 24 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
- 11 percent of West Harbour houses with cracked roof tiles compared to 3 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
- 7 percent of West Harbour houses with rust in gutters compared to 1 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
- 15 percent of West Harbour houses with shower lining decay compared to 7 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.
- 8 percent of West Harbour houses with leaking kitchen outlets compared to 1 percent of dwellings in the BRANZ's 2005 New Zealand House Condition Survey.

7. Some Options for a West Harbour

Three key findings had emerged from the Neighbourhood Sustainability Framework application. Those were that:

- There were some critical built environment issues that inhibited neighbourhood satisfaction and interaction including:
 - concerns about safety associated with:
 - anxieties around walking at night
 - noise
 - dissatisfaction with and a desire to move because of the type of housing.
 - poor connectivity and some areas in which amenity values could be better optimised.
- The physical condition of the neighbourhood appeared to be affected by very wet ground conditions, with surface flows over footpath and properties in places.
- There was a strong foundation of attachment to the community with potential to promote this further through on-going improvement of the built environment and amenities.

The House Condition Survey found that the area did have a higher than average level of unmet house maintenance. It also found that many of the problems with houses appeared to be associated with higher than usual levels of damp. Those findings were consistent with and supported the findings of the Observational Assessment Tool and the Resident Self-Report Tool. That data and Waitakere City Council's and Housing New Zealand Corporation's own experience in West Harbour suggested that neighbourhood built environment projects should focus on providing opportunities for people to interact, on improving safety and on creating community pride and engagement. Community development and management initiatives were identified as an important investment in this neighbourhood. Built environment projects can be used catalyst for the community to come together around a practical and achievable initiative.

The findings emerging from the application of the Neighbourhood Sustainability Framework were the basis for the Beacon Neighbourhood Team's identification of retrofit priorities and options for West Harbour. Those findings alone were not sufficient to develop a set of retrofit options. The following data was also compiled to contextualise and inform the development of retrofit options:

- A summary of information about the houses in the neighbourhood contained in the Quotable Values New Zealand database held by Waitakere City Council;
- A summary of relevant 2006 census data for the closest matching mesh blocks;
- The locations of Housing New Zealand Corporation properties;
- Water use statistics from WCC; and,
- Observations from a night walking audit undertaken to pinpoint safety issues while walking at night.

Following discussions with the stakeholders the retrofit options set out in Table 3 were recommended for further investigation.

Table 3: Retrofit Options for West Harbour

Project	Contributes to
<p>Intersection of Moire Rd and West Harbour Drive as a neighbourhood focal point This could include HNZN neighbourhood office, WCC community broker, etc. Could have affordable accommodation above. This could be the beginning of a community/commercial hub.</p>	<ul style="list-style-type: none"> • Local focus point • Catalyst for other development • Neighbourhood management • Provision of local facilities
<p>Raintank retrofit Retrofit houses with rain/detention tanks and connect overflows to stormwater system.</p>	<ul style="list-style-type: none"> • Stormwater management • Water efficiency • Reducing dampness problems in homes and gardens. • More useable outside space for homeowners
<p>Stormwater retrofit of roads Possibly concentrating on Moire Road</p>	<ul style="list-style-type: none"> • Stormwater management • Quality of Space
<p>Household sustainability retrofit Retrofit homes with</p> <ul style="list-style-type: none"> • energy and water saving measures • replace unsafe/unhealthy heating • ventilation measures • Compost bins • Smoke alarms • Washing lines 	<ul style="list-style-type: none"> • Energy efficiency • Water efficiency • Occupant health • Waste minimisation • Fire safety • Increased pride in individual houses and the neighbourhood
<p>Reclaiming the road reserve Provide planting, seating, art, play opportunities.</p>	<ul style="list-style-type: none"> • Community interaction • Sense of place
<p>Lighting Improvements Improve street lighting by better maintenance, etc</p>	<ul style="list-style-type: none"> • Safety while walking at night
<p>Manutewhau Stream clean up Clean up stream and improve walkway</p>	<ul style="list-style-type: none"> • Access to Moire Park • Recreation
<p>Develop walkway from 19a West Harbour Drive to Manutewhau Stream Formalise this walkway</p>	<ul style="list-style-type: none"> • Access to Moire Park • Recreation
<p>Disused Reserve at 19a West Harbour Drive Develop into community managed neighbourhood reserve that could include a community building or hub</p>	<ul style="list-style-type: none"> • Community engagement • Visibility of Tatou West Harbour • local community workers

8. Houses, Neighbourhoods and Pathways to Sustainability – Some Reflections

From Beacon's point of view, this project was designed to:

- Test the nature and limits of the contribution that the Neighbourhood Sustainability Framework and its tools could make to stakeholders concerned with the rejuvenation and retrofitting of neighbourhoods.
- Establish the extent of retrofit need at the house-level in an ordinary, 1970s, entry-level subdivision and options to address those needs.

With regard to the latter, the House Condition Survey is a well-tested tool and it provided a strong indication of the major patterns of condition problems and repair/maintenance needs in the area. That data was critical to identifying the types of retrofit options that were most likely to generate the greatest performance benefit while minimising costs. Given that the two key stakeholders, Waitakere City Council and Housing New Zealand Corporation, are involved in existing energy retrofit programmes, this provided the ability to assess likely demand for and adequacy of programme coverage.

Perhaps more importantly, however, this project demonstrated an unexpected synergy between the results of applying the Neighbourhood Sustainability Framework's tools and the results of the House Condition Survey. Both indicated issues around housing. The Neighbourhood Observational Assessment indicated issues around storm water management. The Resident Self-Report Tool identified issues around a desire to move because of housing dissatisfaction. The House Condition Survey indicated house-level problems, particularly associated with damp and poor managed water in and around dwellings. The resolution of storm water issues at the neighbourhood level became indicated as both a pathway to improved neighbourhood performance and improved dwelling performance.

This connection between neighbourhood and housing sustainability has, in recent years in New Zealand, at least, has been largely forgotten. It is also largely absent from the discussion about the continuum of sustainability that reaches from individuals to households to neighbourhoods to settlements to regions and, eventually, to nations. The latter continuum is often conceived of as simply a matter of aggregation. That is, neighbourhoods, cities and regions are seen as not being sustainable if individuals are not, collectively, living sustainably. Similarly, there is acceptance that households can not act sustainably if the form of settlements and if city system infrastructure such as transport fail to support low-resource styles of living. This is a sort of 'nesting' conception of sustainability in which individuals are seen as needing to be 'nested' in sustainable

houses, and sustainable houses 'nested' in sustainable neighbourhoods and so forth. This research, however, demonstrates the iterative impacts on house-level and neighbourhood sustainability of the quality of sub-divisions and the quality of the housing placed on those sub-divisions.

The results of applying the Neighbourhood Sustainability Framework also prompted some very real and practical responses. Waitakere City Council secured a Low Impact Design grant from the Auckland Regional Council to investigate retrofit options aimed at improvements in storm water quality. This work is currently being completed. It is hoped that this will result in some demonstration rain gardens to improve local storm water quality. . In addition, the concerns about neighbourhood safety prompted some immediate Council responses such as tree trimming, fixing broken street lighting and graffiti removal. Research results also continue to feed into ongoing discussions at street level and within Council, with the need for long term 'master' type plan for the area now acknowledged *Tatou West Harbour* is fast becoming a successful demonstration of community based action aimed at positive changes to make the West Harbour a better place to live for both current and future generations.

Community development practitioners that have been working in *Massey Matters* and in *Tatou West Harbour* see the NSF as having limited usefulness in the neighbourhood retrofit context unless it is integrated and applied within the context of community development processes. This is absolutely consistent with both international best practice and the NSF itself. The NSF is designed to assist practitioners. It is a tool to assist with planning, reflection and decision-making. It does not replace practitioners or processes. Just as 'green building' tools such as the LEED-ND in the United States or Beacon's NOW Home[®] or New Zealand's recently released Lifetime Design guidelines do not replace the designer or architect, nor does the NSF and its tools replace the myriad of practitioners that make neighbourhood rejuvenation and retrofit a pathway to liveability and sustainability. The NSF tools do not replace the processes of stakeholder and community engagement. The application of the NSF will not bring change nor the resources needed to generate change. What the NSF does do is identify a variety of built environment adjustment options. Indeed, in some circumstances, it can indicate whether the critical focus should be on built environment change or on community engagement. For instance, West Harbour, like Aranui, another of our case studies, shows a 'split' pattern in which the observational assessment of the built environment generated a higher sustainability score than the resident self-report. It is relatively early in the application of the NSF, so it the precise conditions that generate this split pattern are unclear. But it appears to emerge where residents feel somewhat marginalised. Community engagement is critical in those communities, even when, perhaps especially, when the focus of action is on the built environment.

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