

# URBAN FORM

The physical layout and design of our cities should maximise economic opportunity, social wellbeing, cultural diversity and environmental health. These requirements encompass everything from transport infrastructure to landscaping. Most importantly, cities need to be good places to live.

## IN THIS SECTION

Integrating landscape into the built form

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Revised land development standard

Stonefields development (see pages 48–49)



# INTEGRATING LANDSCAPE INTO THE BUILT FORM

The landscape is more than just a complex natural system. It should be treated as part of the complex building support system, which can deliver a range of benefits.

By Craig Pocock, Director, Pocock design:environment Limited

**A**ny building, whether a house, apartment or a corporation's flagship headquarters, can be designed as a safe, functioning, beautiful, sustainable structure. The surrounding landscape can either strengthen or undermine these values.

## Often a neutral landscape

A landscape having a negative influence on the built form is obviously not desirable, but a neutral influence is not much better. A 'neutral' landscape benefits neither the building nor the greater environment. It does not add value or strengthen building systems, create positive micro-climates or help visually anchor the building to the land, city or region where it is located.

Neutral landscapes that lack integration with built form can often be identified because they clearly stop at the edge of the building – there is little relationship between inside and outside spaces. Landscape materials may have been selected for their aesthetic value and not their ability to deliver positive outcomes to the environment and building.

In public urban environments, these landscape-building combinations currently seem to take the form of minimalist concrete landscapes with clean lines and the occasional tree, heavy concrete or steel seating and sometimes a rain garden as a nod to sustainability. They would not be out of place in New York, London or Mumbai and follow international design styles with little focus on the place in which they sit.

## Much more than a style statement

The landscape has significantly more to offer than a design-style statement, with planting around the building and a path to the front door.

The landscape is the element that binds the building to the ground, the environment and the community. It is the first 'built space' your friends or clients see and they use it to judge your approach to the world. The landscape should create a safe space to inhabit and enhance safe street edges for the community.

A positive landscape improves the performance of building systems (heating and cooling) while reducing the building's impacts on the greater community infrastructure (stormwater, wastewater, power and potable

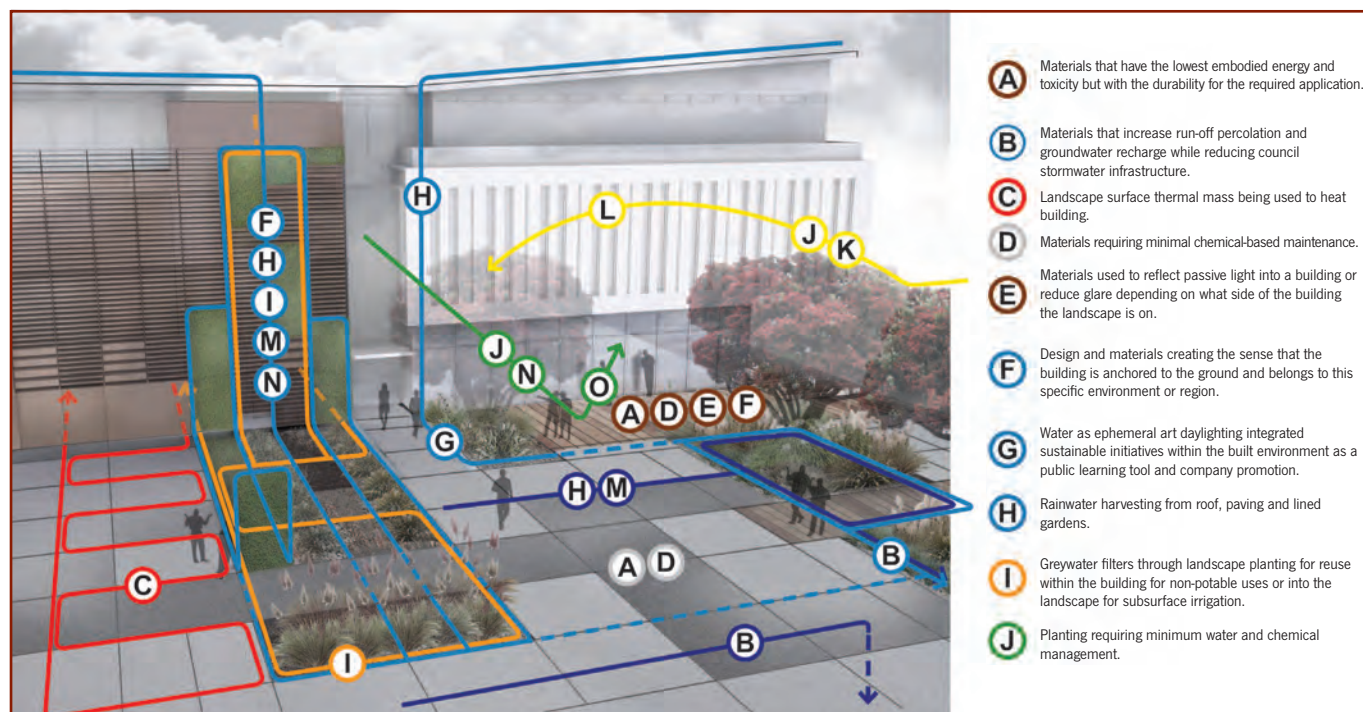


Figure 1: Landscape can be considered as a series of systems, with each element within the landscape delivering more than one positive outcome.

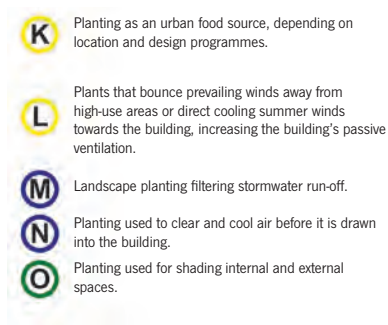
water consumption). It should also add value to the greater environment's fauna values (food and habitat source) and maybe provide food and learning opportunities for the public. The landscape should be built from materials and plantings selected for their low carbon and toxicity values, minimal carbon and chemical-based maintenance and low natural resource consumption.

With integrated design, the landscape can comfortably achieve all the above at most building scales. But how well are we doing this level of integration in New Zealand?

## What we currently deliver

A portion of the New Zealand building industry actively integrates architecture and landscape. They generally do a reasonable job at incorporating ecological values and stormwater run-off initiatives, mostly in the form of rain gardens, swales and biodiversity planting.

However, we continue to struggle with the integration of buildings into the streetscape and the role that landscape space and edge design can play in achieving safe public spaces. Many buildings turn their back to the street or use landscaping to buffer the building from the street.



It is still uncommon to see the landscape acting as a water harvesting and filtration device for the built form. This may be due to developer's concerns about meeting council requirements.

Finally, our landscapes still tend towards resource-heavy consumption of water, fossil fuel-based chemicals for maintenance and use of high-carbon and low-toxicity construction materials.

## Consider early in design

Landscape is typically seen as the last stage of a building's development. It often has the lowest budget amount and is the first part to be reduced during value engineering. Landscape designers normally only enter the design process at the end, when the opportunities to integrate architecture and landscape are mostly gone.

Compared with America and Europe, New Zealand has poor access to low-carbon, low-toxicity materials. Often there is only partial information on the environmental footprints of materials.

In addition, popular culture continues to reward high-profile sites and aesthetics over integrated and sustainable design – it only takes a couple of rain gardens within a carbon-heavy landscape to win design and sustainability accolades. This sends a confusing message to the design community and public.

All of these issues work against the development of integrated and sustainable landscapes and so it is hard to find good working examples in New Zealand.

## Environmental footprint important

Landscape design needs to be considered early within the design process, ensuring that it becomes an integrated part of a development.

New Zealand needs a transparent and agreed environmental footprint for materials so that designers and developers can make informed decisions on issues such as integrating water systems into the landscape or the carbon impact of landscape materials. Design institutes, the materials industry, government and non-government organisations need to provide the tools for such decision-making.

It would also help if design institutes reviewed their environmental-based awards to ensure that they consider the environmental footprint

of materials used within a design and ongoing environmental costs for maintenance.

## Future-proofing as environmental consumerism grows

Understanding of how the landscape can have positive or negative impacts is rapidly increasing within the professional and public realms. This is driving environmental-focused consumerism growth here and internationally, whether for clothing, food or the buildings we work or live in.

As environmental-focused consumerism gains momentum, companies will come under more pressure to publicise their environmental and social profiles. Accountability is important, whether for housing companies providing house and landscape packages, material producers or utility providers, so it makes sense to future-proof the buildings and landscapes we are designing today.

## Many opportunities with integrated design

Some of the opportunities that integrated design can offer are shown in Figure 1. This maps out individual opportunities within the landscape and also shows how one opportunity is linked to another. It shows how single individual items such as a garden within the landscape can deliver a range of positive outcomes while still filling the role of aesthetics and place-making. Although these outcomes are achieved within the detailed landscape such as the use of levels, materials and structure, the overall design style of the landscape is flexible to suit any aesthetic desired by the client.

## Work smarter not harder

It is not just a question of sustainability, integrated design or doing the right thing for the environment, the community or your market profile. It is simply allowing buildings and landscapes to work smarter, not harder, by integrating the landscape and the built form to gain maximum advantage for building systems.

To do this requires starting an integrated landscape and architectural design dialogue earlier in the development process. If done well, it should result in lower running costs and more environmentally efficient and user-friendly buildings and landscapes. ♦

# NEIGHBOURHOOD SUSTAINABILITY

**Improving sustainability at a neighbourhood level has positive knock-on effects in the wider community, and Beacon Pathway research has developed some practical tools to assist in this process.**

**By Kay Saville-Smith,** Neighbourhoods Research Team Leader, Beacon Pathway Ltd

**A**lthough small in both land area and population, New Zealand is an urbanised country. Over 80% of our 4.3 million residents live in urban areas, with over half of the total population concentrated in the 12 largest cities – 30% in the Auckland region. The majority of New Zealand's total population growth is projected to take place in these 12 cities, creating infrastructural, environmental and societal pressures.

## Why neighbourhoods are important

Most people's daily lives revolve around their neighbourhood. A neighbourhood's sustainability reflects both individual behaviour, such as walking and cycling, and the built environment that links people together locally and with the wider region.

Improving sustainability at a neighbourhood level contributes to more sustainable environments at a wider scale. Equally, the sustainability of a house depends partly on the built environment of the neighbourhood in which it is located. Therefore, given our large urban population, getting neighbourhoods right is important both for the people who live in them and the resources they consume.

Beacon's focus for neighbourhoods encompasses buildings, infrastructure and spaces – green and open spaces, connecting and dividing spaces. Neighbourhood sustainability is about how buildings and the spaces around them work together and the impact they have on the activities that take place there, for example, the state of infrastructure systems and services such as public transport. As well as the functional aspects of buildings and spaces, their design, quality and aesthetics all work together to shape the urban built environment and influence local social and cultural identity.



By understanding the nature of sustainable neighbourhoods, Beacon believes the industry will be more likely to design and build successful and lasting ones.

## Practical New Zealand tool developed

The task of Beacon's Neighbourhoods Team was to develop practical tools to guide the design, building, retrofitting and management of neighbourhoods. The outcome is the Neighbourhood Sustainability Framework. It assists users to identify and prioritise changes that will improve the sustainability of neighbourhoods.

The framework and tools are based on a systematic analysis of international research and has been developed, tested and refined in New Zealand for use here. It will be useful for:

- developers
- local authority planners, engineers, policy-makers or community developers
- designers
- planners

■ neighbourhood managers, for example, with Housing New Zealand Corporation or a housing trust.

## Assessment kit helps inform decision-making

The kit brings together the Neighbourhood Sustainability Framework and the tools needed to apply it. These tools provide an independent assessment of the sustainability of New Zealand neighbourhoods to inform decision-making. The goal is to show how to design, construct and manage neighbourhoods that:

- are adaptive and resilient
- allow people to create rich and satisfying lives
- respect the limitations of the environment.

The framework considers both residential and non-residential environments, including shops and community facilities, public and open space such as streets, walkways and parks and the state of the infrastructure systems and services available. It also looks at the way existing neighbourhoods are used, how people

in them behave and interact and how all these things work together.

The framework is also designed to assess sustainability of any neighbourhood, recognising that outcomes often result from decisions that are made by a range of stakeholders. For example, the tools will reflect the good outcomes achieved by a well designed and well located neighbourhood. Where a neighbourhood has been poorly sited, the tools make these deficiencies explicit, but also pick up good design that may optimise performance in that challenging location.

The tools collect comprehensive data that can be applicable to the activities of all stakeholders and highlight their collective responsibility to neighbourhood sustainability issues. This information will contribute to discussions on how to optimise the ongoing performance and sustainability of existing and new neighbourhood built environments and may encourage greater collaboration and partnership.

## Assessment kit

The assessment kit includes:

- an introduction to the Neighbourhood Sustainability Framework – it identifies six areas (or domains) crucial to sustainable neighbourhoods
- a guide to tool choice – for example, an existing neighbourhood has residents so the assessment uses both the observational tool and the resident self-report tool but the assessment of new neighbourhoods uses only the observational tool
- the observational tool
- the resident self-report tool.

### OBSERVATIONAL TOOL

Based on on-site observation by professionals trained in the assessment of built environments, this tool assesses the buildings and structures of the neighbourhood through measured data and scores. It weights this data into sustainability bands for each section (low, medium, high, very high). Core prerequisites fundamental to good neighbourhood outcomes are identified, the outcomes are listed and the report indicates whether or not they are met.

The tool itself is an Excel-based calculator, and guidelines for its use are provided.

### RESIDENT SELF-REPORT TOOL

This tool assesses what residents think of their neighbourhood through a survey process that analyses their behaviour and perceptions. The

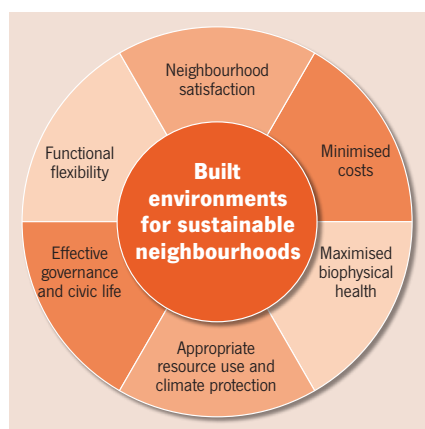


Figure 1: Critical outcome domains for sustainable neighbourhoods.

analysis relates to data collected through a national survey in 2009. Each report presents an overall neighbourhood sustainability band (low, medium, high) and states where the assessed neighbourhood lies in relation to national patterns.

The resident self-report tool comprises a survey and an Excel-based calculator. Detailed instructions for conducting the survey are provided, along with questionnaire templates for telephone, face-to-face and self-complete interviews.

## Framework is not a rating tool

Although the Neighbourhood Sustainability Framework provides the ability to assess a neighbourhood at a single point in time, it does not provide a comparative ranking or provide direction about what to do. Rather, the results provide an assessment to help think about the neighbourhood and how the built environment supports, or does not support, sustainable behaviours.

Its purpose is to identify and reflect on actual and potential changes and trade-offs that will improve performance around neighbourhood built environments.

*All information and tools associated with this kit are available free from [www.beaconpathway.co.nz](http://www.beaconpathway.co.nz).*

*This research was prepared as part of a contract with the Foundation for Research, Science and Technology by Beacon Pathway Limited, a research consortium working to find affordable, attractive ways to make New Zealand's homes more sustainable. ◀*



# MORE RESILIENT CITIES

**With most of us now living in urban areas, we need to find workable solutions in the transition to a low-carbon, sustainable society and economy.**

**By Professor Philippa Howden-Chapman**, Director NZ Centre for Sustainable Cities, University of Otago, Wellington, and **Associate Professor Ralph Chapman**, School of Geography, Environment and Health Science, Victoria University of Wellington

Over 80% of New Zealanders live in urban areas. Our cities now sprawl around the green belts set up in the 19th century by far-sighted forebears and spread into the suburbs. But cities face important environmental, social and economic issues from climate change to rising energy prices. There are also health issues associated with lack of physical activity.

Despite wide differences of view over policy solutions, some strong themes and conclusions are emerging. One is that smart solutions for tomorrow's cities should target active modes of transport, such as walking and cycling, and increased use of public transport. Another is that we can and should make our urban areas more resilient to the economic and social adjustment that climate change and associated policies will bring.

There is strong impetus for change, and solution-focused research is being developed to find workable answers. For instance, instead of building more roads, which reduces resilience by encouraging fossil fuel use, we can more judiciously use the roads we have. To reduce traffic, infill housing can be built near transport nodes. Safe cycleways can be separated from roads where possible. Helping people to 'level board' buses and light rail with greater safety and speed also matters.

## The 'traffic generation' effect

Our recently published book *Sizing up the city: urban form and transport in New Zealand* (available from [www.steeleroberts.co.nz](http://www.steeleroberts.co.nz)) collects and expands on papers presented at the New Zealand Centre for Sustainable Cities 2009 national symposium on sustainable transport and our built environment. It looks at the costs of urban sprawl and the co-benefits of compact cities.

The work of one contributor in particular has challenged us to ask critical questions about the plasticity of urban form and carbon emissions. Reid Ewing asks, in the US context, what reduction in vehicle miles travelled is possible with compact development rather than continuing urban sprawl and what reduction in carbon emissions would accompany such reductions?

Ewing has shown that, as more roads are built, more vehicle miles are driven – the so-called traffic generation effect. This has potentially disastrous consequences for reducing carbon emissions.

## Benefits with 'smart growth'

By contrast, people who occupy more intensive housing (a greater density of people per hectare) built near transport nodes are more likely to use public and other active modes of transport. In the US, people tend to prefer 'smart growth' communities that are close to places of work and local amenities, have mixed-use development and incorporate public transport and walkability.



Auckland is a city that has been designed around New Zealand's car culture.

Ewing and colleagues conclude that a 7–10% reduction in total transport CO<sub>2</sub> emissions by the year 2050 is possible with smart growth, under a plausible set of assumptions.

They also note that, in the US at least, more compact residential areas generate carbon savings of around 20% in primary energy for space heating and cooling. This saving is mainly due to less exterior wall area in attached and multi-family housing and less floor area consumed at higher densities.

This saving is one of the many co-benefits that, together, are likely to outweigh the costs of implementing a smart growth strategy.

## NZ survey of urban versus suburban living

Stimulated by this work, we carried out an online survey of New Zealanders' housing and locational preferences and attitudes towards council involvement in keeping growth within urban limits. The study's main focus was on preferences for urban or suburban living.

We found that over three times as many respondents see urban limits as necessary than not. Twice as many people thought that councils rather than market forces should have the key role in defining the form of cities.

The proportion of respondents identifying travel costs as a significant influence on their decision about where to live, either now or in a future with rising oil prices (61%), significantly outweighed the proportion (36%) for whom travel costs is not a significant factor.

Three times as many people as not favour mixed-use, smart growth communities, but most still want to live in a stand-alone house. Twice as many people (particularly those currently renting) prefer to live in a larger house further out than a smaller inner city apartment, with opportunities for gardening being just one reason.

These preferences for more land and space, even if it means more commuting time, were more marked when respondents were asked about their 'no constraints' preferences. We infer that real-world factors such as fuel prices are influential. It may also be that mixed-use developments that put housing within walking and cycling distance of offices, shops, parks, schools and transit stops are still fairly uncommon in New Zealand. Because of the leaky homes saga, those that do exist may not necessarily be of adequate quality.

Demography also matters. Relatively larger households with children prefer the suburbs whereas younger and older people with no dependent children prefer inner city living.

### Future research targets big issues

Our research agenda for sustainable urban development in New Zealand takes account of strategic and council interests and government concerns.

The big external issues are the price volatility and insecure availability of oil products and the inevitability of climate change. Weak signals from central government that a change in energy use is required mean many opportunities for incrementally refashioning our housing and cities are being overlooked and belated adjustment will be more painful as a result.

### People want better urban design

The nature of urban development in New Zealand is a major contributor to carbon emissions, and changes in urban form offer significant long-term potential to cut greenhouse emissions. In redesigning cities, it makes sense to choose investments that simultaneously reduce pollution and improve quality of life.

With the urban/suburban development model of the last 60 years being based on roads and cars, little attention was given to the quality of life in city or suburban centres, the needs of pedestrians and cyclists or our dependence on insecure liquid fuel supplies. Change is in the wind, but it won't happen overnight. For families with children, the suburbs and big cars will likely hold an allure until an external shock causes a painful realignment of ideas.

Our research has shown that some households are changing their values and there is a distinct interest in more liveable city centres with more accessible facilities. People don't want urban expansion to continue unchecked and are looking for better urban design. They also support councils to actively constrain urban development, thus enhancing the conditions for active travel and supporting better quality and design of intensified housing and urban centres.

*The New Zealand Centre for Sustainable Cities links the expertise of researchers in universities and Crown research institutes to undertake research on urban systems. This research reflects an ongoing partnership with urban stakeholders, particularly regional and local councils, to strengthen urban resilience and sustainability. ♦*

# COMMUNITY FOR THE FUTURE

**The development of the former Hobsonville Air Base in northwest Auckland into a sustainable coastal community highlights the benefits of a comprehensively planned urban development that takes a partnership approach.**

By **Katja Lietz**, Sustainability Manager, Hobsonville Land Company

In a rapidly changing world, we need to build communities that will stand the test of time. To succeed, we need resilient urban design, integrated transport and land-use planning, sound community infrastructure and homes that perform well into the future. Experience has shown that fixing past mistakes in the built environment is extremely difficult and costly, so we need to get it right from the beginning.

## Hobsonville Point overview

The Hobsonville Land Company is developing the former Hobsonville Air Base, approximately 167 hectares on the upper Waitemata Harbour in northwest Auckland. The scale and location of the site provides an opportunity for a comprehensively planned urban community (see Figure 1) that can accommodate some of Auckland's rapid population growth and provide local jobs.

Hobsonville Point will eventually accommodate some 3,000 households. Civil works for the first stage are now complete, and house construction is about to start.

## Well connected

Integration of land use and transport planning is a key to its success. A new ferry service from Hobsonville Point to downtown Auckland is planned, and local bus services will be improved for good access to the North Shore, Waitakere and central Auckland.

The urban design at Hobsonville Point builds on the amenity and existing features of the site. It is based around a main street concept to create a village feel.

Streets are designed to make walking, cycling and public transport logical choices for residents and visitors – 85% of homes will be within 400 m of a bus stop and all will be within 800 m. While car travel is the most common form of transport today, this will likely change in a carbon-constrained world, so it is important that alternatives are available.



Figure 1: Hobsonville Point master plan.

Around 4 km of harbour waterfront will be opened up to the public for the first time via easily accessed walkways and cycleways.

## Designed to attract diverse vibrant community

As part of the first stage, a detailed architecture and landscape design guide has been developed. Emphasis is on respecting and safeguarding the natural environment. Each house design is assessed and endorsed by a design review panel before plans are submitted to council for the consenting process.

Homes will be a mixture of traditional stand-alone and terraced houses and apartments. This will attract a diverse community and allow people to stay in their neighbourhood as their housing needs change. All houses are designed to be healthy, warm and water/energy efficient. Several affordable homes are included.

Master planning extends well beyond buildings and looks at the way people live – where they work, shop, play and learn and how they travel, interact and become involved in the community. Clearly, not all these are within

the control of the developer or any other single entity, but the design of the built environment, the establishment and support of community facilities, networks and management structures provide the foundations for a strong and vibrant community to emerge.

Land use includes provision for a leading-edge marine industry precinct, two schools and several mixed-use and retail areas. It is expected that 2,000 people will eventually work at Hobsonville Point.

## Sustainable development framework

To guide development activity from the outset, a performance measurement and reporting framework was developed. This document defines aspirational goals, objectives and indicators that support the Hobsonville Point vision. Like many sustainable development frameworks, it covers the environment, economic development and social and cultural objectives.

The purposes of the framework are to:

- guide development decisions by clearly articulating goals and objectives



- describe what success looks like (outcome-based indicators)
- explore the practical steps to ensure success
- allow performance to be measured (benchmarked indicators).

Each sphere is supported by aspirational goals and is further divided into several dimensions, each with its own objectives and indicators.

The full framework is available on the Hobsonville Point website and is reported against annually.

## Development model with public-private partnership

The Hobsonville Land Company is a Crown-owned delivery entity. Legally, it is a wholly owned subsidiary of Housing New Zealand and is responsible for the overall planning and facilitation of the project.

Following a competitive selection process, Australian-listed company AVJennings was chosen as the development partner for the first precinct (the Buckley precinct). The project is one of the first large-scale public-private partnerships in New Zealand.

In turn, AVJennings collaborates with local builders to deliver the finished dwellings. This model has been successful in delivering large-scale projects in Australia and has remained successful during the recent economic crisis.

## Maintaining genetic diversity

The coast at Hobsonville Point is clad in native bush. Work has already started on weed and pest management and revegetation to restore this area. The Hobsonville Land Company has partnered with Gecko Trust and EcoMatters Environment Trust to establish the Hobsonville Plant Network. The network will help facilitate the propagation of native plants from local seeds to ensure that genetic diversity is maintained. The project seeks to involve the community in caring for the environment, providing local environmental education and economic development opportunities.

## Future-proofed homes

All homes will be water and energy efficient, with rainwater tanks, solar or heat pump hot water systems, high levels of insulation, double glazing, washing lines and smart meters (see Figure 2).

A commercial partnership established with Vector in October 2009 will future-proof

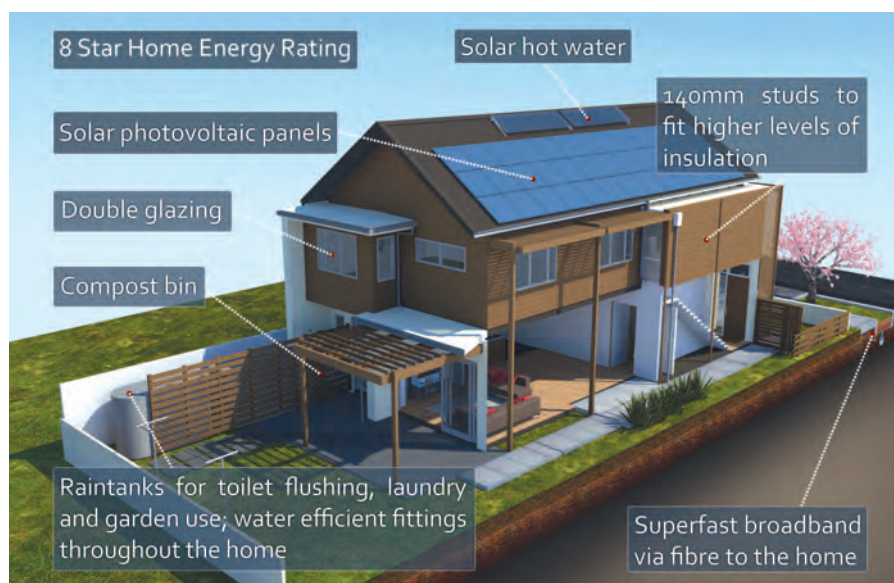


Figure 2: Some of the sustainability features in the Hobsonville Point information centre.

the electricity infrastructure for a time when embedded generation and smart appliances are commonplace. Superfast broadband will be a reality from day one via fibre to the home telecommunications infrastructure.

## Low-impact stormwater

Road design incorporates low-impact stormwater design principles. Rain gardens, tree pits and bio-retention swales ensure that stormwater run-off is pretreated before it enters wetlands and ponds for further treatment before discharge off site.

## Park and café open

Construction of the Hobsonville Point Park (see Figure 3) is complete and features a naturalistic

playground, artworks from notable artists, a community orchard and plenty of places to sit and chat. Neighbourhood shops are planned adjacent to the park, providing a local focal point. The Catalina Café and Community Space is up and running, where new residents and visitors can meet and enjoy good food and coffee.

The information centre is also open. A detailed digital model enables the local community and home buyers to explore Hobsonville Point's many features and housing options.

For more information, visit [www.hobsonvillepoint.co.nz](http://www.hobsonvillepoint.co.nz).



Figure 3: The newly completed Hobsonville Point Park.

# PLACE, IDENTITY, BELONGING

**The winning plan for a medium-density housing subdivision in Taupo models best practice urban design and challenges the conventional low-density urban form.**

By David Pronger and Marie Fleming, Antanas Procuta Architects, Hamilton

**T**aupo is no longer solely the domain of holiday baches and trout fishing. A sprawling urban population of 22,000 and the State Highway 1 bypass (Eastern Taupo Arterial) has provided a catalyst for Taupo District Council's vision of more cohesive urban growth.

In 1996, the council acquired a large tract of countryside on the eastern side of the town as part of the land purchase for the East Taupo Arterial route. Labelled the East Urban Land development (EUL), the 200 ha block is expected to accommodate around half of the town's predicted growth by 2026.

The Victoria Street subdivision developed by the council is seen as one of the gateways into this area. It comprises conventional 600–800 m<sup>2</sup> allotments, with the exception of 'Victoria Lot 60', a 1.9 ha parcel set aside for medium-density housing.

## Design competition for a sustainable neighbourhood

As a way of challenging the low-density urban form, the council launched an open urban design competition for Victoria Lot 60 in 2007. The two-stage competition fielded entries from around New Zealand as well as overseas.

Whilst looking for something imaginative, viable and with a suggested density of 20 dwellings per gross hectare (more compact than conventional development), designs had to fit into the existing suburban surrounds for purchasers and neighbours alike.

The Victoria Lot 60 brief called for a sustainable, environmentally low-impact development that modelled best practice urban design. It needed to incorporate green building and environmentally sustainable design principles such as energy efficiency, sustainable materials, waste management and water treatment and conservation. Located on a proposed collector road and major vehicle, pedestrian, cycling and public transport route, the site was well positioned for the creation of a sustainable community.

## Design all about connections

Taken in the broadest sense, a sustainable community is a place where people want to live and work, now and into the future. Meaningful connections are vital to support social cohesion and facilitate contact among people, for both commerce and recreation.

But you can put all this together and still not reproduce a sustainable neighbourhood; you need places for people to naturally bump into each other and say hello.

## The winning entry

At Antanas Procuta Architects, we didn't see the architecture of the houses as separate from the public realm. Instead, we imagined the future Victoria Lot 60 connected in a comprehensive greenway network linking the significant scenic, social, economic, recreational, historical and cultural values of the Taupo area. Preserving and accommodating views to the lake and the mountains – Tauhara in particular – were fundamental to connecting with the local history and geology.

A hierarchy of connections was developed, beginning with the home and spilling into small housing cluster neighbourhoods with shared green spaces. This grew into a public park threading through the lot – a green spine (see Figures 1 and 2).

Our approach was driven by a desire to respond to the natural attributes of the site and how the occupants of these houses would live. We wanted to build to the sun's trajectory and consider how the outdoor living spaces would integrate with the communal spine that traversed the site.



Figure 1: Victoria Lot 60 paths, nodes and residential clusters.



Figure 2: Antanas Procuta Architects design for Victoria Lot 60, stage two. The green pedestrian-only spine threads through the lot.

Local stone, pumice-grey plaster, timber window and door joinery, timber cladding and the dark cladding of the heat storage system reinforces connections with the local landscape and the lakeside creosote bach heritage.

## Warmth and privacy

Buildings are oriented with living areas facing the sun and turned away from the prevailing winds and cold southerly face. Creating sunny private outdoor living zones allows occupants to enjoy privacy when desired, while hedges and gabion walls create a soft threshold between shared community green spaces and private lots (see Figure 3).

Passive solar design incorporating high levels of insulation, thermal mass heat storage and stack ventilation contribute to a comfortable internal environment in the warm summers and cold winters. High-efficiency wood-burning fireboxes supplement the passive heating and contribute social warmth.

## Adaptable house design and safe walking environment

Another component of the house design is adaptability. People can 'make the place their own' by expanding or contracting the architecture as necessary to create sleeping and working spaces. A house could be adapted by infilling the indoor court or upper gallery or adjusting the living area.

A safe walking environment was prioritised. Narrowed thoroughfares, transitions between green space and roads, textured roading materials and verges signal shared traffic use. Pedestrians experience the small neighbourhood retail piazza, the communal green space at the heart of the site and eventually the future public reserve beyond.

## Food gardens and composting

Productive fruit trees along the internal streets and public spaces contribute to a sense of community ownership and local food production.

Within the yard of each dwelling, there is space for a food garden, composting of household organic waste and the potential to attach a greenhouse to extend the growing season. A rainwater tank to service toilet, laundry and garden demand is also proposed.

## Economic downturn delays project

Antanas Procuta Architects were engaged by Taupo District Council to progress the design to resource (planning) consent stage. In doing so, the council demonstrated a significant commitment to advancing sustainable communities as part of the New Zealand urban form. Unfortunately, the project was put on hold in late 2009 in response to tough economic conditions.

*For more information, go to [www.sb10presentations.co.nz/](http://www.sb10presentations.co.nz/) and look under Thursday, Stream 2c, 11.45–12.15. ◀*



Figure 3: Shared common spaces.

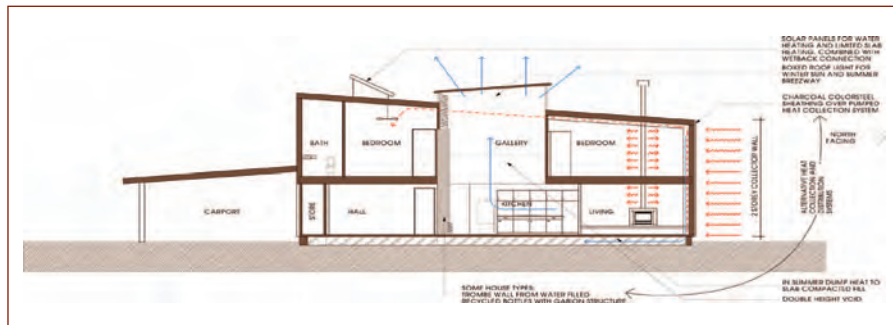


Figure 4: Typical section through house.



# DESIGN-ENABLED COMMUNITIES

**The Stonefields and Long Bay 'design-enabled communities' aim to be more than just new suburbs. Fostering social interaction within high-quality environments, they are looking to create a legacy of enduring quality.**

By Neil Donnelly, Manager of Strategic Planning, Todd Property Group

Planning places for people to live, work and play is nothing new. From Roman garrison towns through to purpose-built capital cities such as Saint Petersburg, Canberra and Brasilia, most cultures have examples of specifically designed settlements catering for the various needs of their inhabitants.

In today's context, this planned settlement model has evolved beyond satisfying basic needs such as security and shelter as is typical of many standard suburbs or subdivisions. Design-enabled communities are based on addressing a community's higher order needs such as the desire for excellence in amenity, sociability and sustainability.

To achieve this and provide an appropriate mix of land uses within a single site, 100 ha minimum of undeveloped land is required. Thus, opportunities of this type within New Zealand are limited, and the process is not well understood. However, two such communities are planned for the Auckland region.

## Much more than just new suburbs

The Todd Property Group is creating two design-enabled communities – Stonefields in Auckland's eastern suburbs and Long Bay at the top of the North Shore. While the two pieces of land have very different characteristics, the intent is the same – to create modern, high-quality environments with strong community links and a high degree of social interaction.

## Planning above and below ground

An integrated and coordinated approach is required to all aspects of the development, both above and below ground. A master plan is the culmination of a range of complex layers. These include:

- lot orientation
- street appearance
- location and size of schools
- accessibility to community focal points
- low impact stormwater treatment
- building type and design
- market demand for housing types
- reserve spaces and networks
- town centre services.

All of these aspects must be integrated to achieve the best possible outcome.



Aerial view of Stonefields development.

## Stonefields

Stonefields will eventually contain a population of approximately 6,000 residents within a 110 hectare site. Residential dwellings range from 5-bedroom homes to 1- and 2-bedroom apartments. There will be a town centre, a primary school, 10 neighbourhood parks and a wetland. The location of each component of the new community has been carefully positioned to maximise easy access to focal points for residents.

The town centre, school and wetland are contained within a central axis, unifying the main structural elements of Stonefields. No dwelling is more than 200 m from a neighbourhood park. All public facilities are connected via a coherent street network based on an orthogonal grid. The grid allows people to walk directly from one place to another within the site or, at a more leisurely pace, explore their neighbourhood on lower-scale streets.

## Long Bay

Long Bay adjoins Auckland's most popular regional park in a coastal environment. The 170 hectare site will be home to between 5,500 and 6,000 residents in predominantly 2-level houses of varying size. A full range of recreational opportunities will exist within an integrated open-space network, including a 20 hectare headland set aside for cultural protection. A town centre with a supermarket will overlook a significant riparian and ecological corridor, providing a focal point for the community.

## Challenges ahead

There are significant challenges to finalising and implementing a large-scale master plan that will allow a community to develop and thrive.

The first major challenge is for the local Building Consent Authority to approve the master plan itself. Because such planning for a single land holding is not well understood in New Zealand, 10 designers would likely come up with 10 different solutions for the same site. Designers engaged by the landholder are generally briefed to take market factors into consideration whereas designers engaged by councils aren't. Hence, much discussion is expected.

Another major hurdle relates to the provision and cost of infrastructure. Auckland has been notoriously poor in providing infrastructure in anticipation of population growth. The landholder must either provide infrastructure directly or fund the construction of upgrades to arterial roads and water reservoirs.

For Long Bay, the current total development contribution assessment is approximately \$65,000 per residential lot. This cost will have to be absorbed upfront between the landholder and future residents.

### Aiming for legacy of enduring quality

Despite the hurdles, a master-planned approach to community creation has significant benefits. As well as the social advantages for residents in creating a design-enabled community, there are commercial opportunities for the landholder in doing so.

'Better development for better living' has a direct correlation to the financial success of a long-term project. Enthusing people about living in a quality environment with opportunities for social interaction will generate specific demand for living in a master-planned locality. This demand translates to a premium price point when compared with adjoining, traditionally designed areas and creates a legacy of enduring quality. Despite current market conditions, the continued growth of sales at Stonefields (now in its third year) is testament to this. 🍷



Stonefields contains a mix of residential dwellings.



At Stonefields, no dwelling is more than 200 m from a neighbourhood park.

# REVISED LAND DEVELOPMENT STANDARD

**The recently revised NZS 4404:2010 Land development and subdivision infrastructure is about building better urban amenity and places for people to live.**

By **Rosalie Chamberlain**, Standards New Zealand

**S**tandards New Zealand recently published the revised NZS 4404:2010 *Land development and subdivision infrastructure*. The revised standard encourages sustainable development, modern liveable design, environmental quality, better land-use planning and integrated transport/land-use outcomes.

Urban design and sustainability were key drivers for the revision of NZS 4404, to help raise the quality of design for infill and new subdivisions. There's a new section on climate change and more flexibility in the selection and use of materials to create streets and establish infrastructure such as stormwater and utilities.

## Key changes to NZS 4404

There are some key changes from NZS 4404:2004:

- Road design needs to consider land-use 'context' and community liveability by emphasising 'place' in the road design process.
- Community-focused roads should achieve slower operating speeds to improve traffic safety.
- Stormwater is to be managed and treated 'before it gets into a pipe'.
- There is a new section on climate change and potential sea level rise.
- Grassed swales, natural or artificial waterways, ponds and wetlands may, in certain circumstances, be a preferred solution as well as being part of the stormwater system.
- Sections on landscaping and reserves have been combined and significantly rewritten.
- Section 8, on utility services, has been greatly advanced in accordance with the latest network authorities' codes.

## Sustainability and reduced environmental impact

The revised NZS 4404:2010 helps designers to place more emphasis on urban and low

impact design and sustainability. It will be beneficial during both the planning process and the detailed design and construction phase of establishing subdivision infrastructure.

NZS 4404:2010 is about building better urban amenity and places for people to live. It provides standards for good low-impact design of subdivision and land development infrastructure including roads, drains, water pipes and underground services. For example, the standard includes recommendations on how to treat and manage stormwater run-off from roads before it gets to rivers, streams and the ocean. The aim is to reduce contamination of our waterways and the impact of development.

This new approach to road design (generally narrower carriageways) and low-impact design for stormwater management reduces the quantity of construction materials required. Therefore, fewer non-renewable resources such as cement, gravel, bitumen and fuel will be needed to transport, make and maintain these infrastructure assets.

## Urban form emphasises connectivity and safety

NZS 4404:2010 considers urban form – how road networks connect and the form, width and amenity of carriageways and the road reserve – and encourages good environmental design.

The standard has established a strategic link between land use and the transport function. For example, designers need to understand the purpose for which land is to be used and demonstrate how they have selected a road type to match that land use by preparing a 'design and access statement'.

The standard also includes target road operating speeds. Roads should be designed to achieve these speeds through their alignment and landscaping.

There is more emphasis on connectivity for roading, walking and cycling and recommended

guidance for walking distance to a collector road (a road that carries passenger transport services). The aim is to help people reduce their carbon footprint.

Road design is no longer just about moving vehicles and providing a place for network utilities. A range of street users is considered. The new standard prioritises pedestrians, then cyclists, public transport users and the movement of freight and goods over the needs of motorists. The safety needs of the most vulnerable users and the most energy-efficient methods are priorities.

## Wide adoption of new standard encouraged

In July and August 2010, IPENZ ran nationwide seminars about NZS 4404:2010 for engineers, surveyors and planners. The New Zealand Planning Institute and the Urban Design Forum also ran workshops for planners and urban designers. The Institute of Surveyors is planning branch workshops to help members play their part in encouraging local authorities to adopt the new standard as the base for design of subdivision and land development infrastructure in their areas.

The NZS 4404 review committee included representatives from the Association of Consulting Engineers New Zealand, Ingenium, Institution of Professional Engineers New Zealand, Local Government New Zealand, Ministry for the Environment, New Zealand Institute of Surveyors, New Zealand Planning Institute, New Zealand Transport Agency, New Zealand Utilities Advisory Group, Plastics New Zealand, Road Controlling Authorities Forum New Zealand Inc, Urban Design Forum and Water New Zealand.

*NZS 4404:2010 is available from [www.standards.co.nz](http://www.standards.co.nz) or call 0800 782 632 during business hours.* ♦