

PLAYING THE LONG GAME PLANNING STREETS FOR A SUSTAINABLE FUTURE

AUCKLAND
DESIGN MANUAL
TE PUKA WHAKATAIRANGA I A TAMAKI MAKAUARAU

STREETS // STREETS CASE STUDY

Long Bay
Residential Streets, Auckland

OVERVIEW

Long Bay provides an exemplary case study of how to develop streets within a new green-field neighbourhood that respond to the natural context and create attractive residential environments.

Long Bay is a large master planned urban extension to Auckland's North Shore. It combines the development of a new community with an environmentally responsive approach to building in a sensitive and special environment.

PROJECT SUMMARY

Long Bay encompasses 162 ha and includes a village centre, 2500 houses and 28 ha of parks and areas given over to heritage protection. The development also has direct access to two existing schools. The site is part of a sensitive and valued natural landscape which includes the Long Bay Regional Park, and the wider Long Bay – Okura Marine Reserve. The coastline and beach form the eastern edge of the development. The site is bisected by Vaughan's Creek, and the Awaruku Stream forms the boundary between the new community and the existing Tor Bay suburbs.

Long Bay represents one of New Zealand's few examples where land use planning and catchment management planning have been developed simultaneously. The fundamental principle underlying all decisions was to build a new urban environment that struck the right balance between an efficient use of land, whilst maintaining and enhancing the natural environment.

The streets are designed as an integral part of a 'treatment train' where stormwater flows through more than complementary treatment methods before flowing into the wider environment. The streets incorporate water sensitive stormwater treatments such as rain gardens, which are an integral part of the landscaping.

Long Bay is also designed as a seamless, integrated extension of the northern end of the East Coast Bays. The streets are a connected network with a hierarchy of roads, each designed to fulfill a particular purpose.

The streets are designed as attractive public places that consider the needs of all road users. The street and pedestrian network ensures easy access to a wide range of amenities and open space, and will become a positive space where people will meet, play and travel.



Long Bay – looking over the development to Long Bay Regional Park and the beach.

KEY PROJECT INFORMATION

STREET TYPE

MIX OF LOCAL ROADS AND LANES

Beach Road (24m)
Preferred Street (18m)
Garden Street (15m)

PROJECT EXTENT

LONG BAY, PRECINCT 1

DESIGN TEAM

BOFFA MISKELL/WOODS - STREET DESIGN AND WSD

Construct/Surface Design - Master planning

Woods - Civil Engineering

PROJECT DATES

Construction 2012 - 2022

PROJECT COST

TBC

PROJECT TYPE

MASTERPLANNED URBAN DEVELOPMENT

Hierarchy of different road types, designed to facilitate a range of functions.

KEY PROJECT WORKS

WATER SENSITIVE DESIGN FOR STORMWATER

Streets are designed as part of a treatment train for stormwater – demonstration of best practice water sensitive design.

CLIENT

TODD PROPERTY GROUP

VEHICLE ACCESS

On street parking provided on all streets except Beach Road extension.

OTHER FACTS

TBC

PROJECT GOALS

1. Create an integrated urban extension to northern end of Auckland's East Coast Bays.
2. Integrated land use and catchment management planning – ensuring the development balances efficient land use with maintaining and enhancing a sensitive natural environment.
3. Development that makes the most of the unique characteristics of the site – slope, existing streams, views out to sea and the Long Bay Regional Park
4. Creation of a flexible, connected urban structure – central location of village centre and village green, higher density in close proximity to both, road network that allows easy access to both.
5. Primary road network that supports new main entry to the Regional Park, facilitate easy access to village centre and schools.
6. Secondary road network that has a high level of connectivity and permeability plus a comprehensive network of links for pedestrians and cyclists focusing on the Regional Park, village centre and park, schools, and other reserves and parks
7. Streets that demonstrate best practice in water sensitive design and form an integrated part of the treatment system for storm water.

(Source: Sustainable Development in General: Case Study of a Sustainable Development Initiative in Long Bay, North Shore City, New Zealand)



Looking across a shared space and into one of the parks.

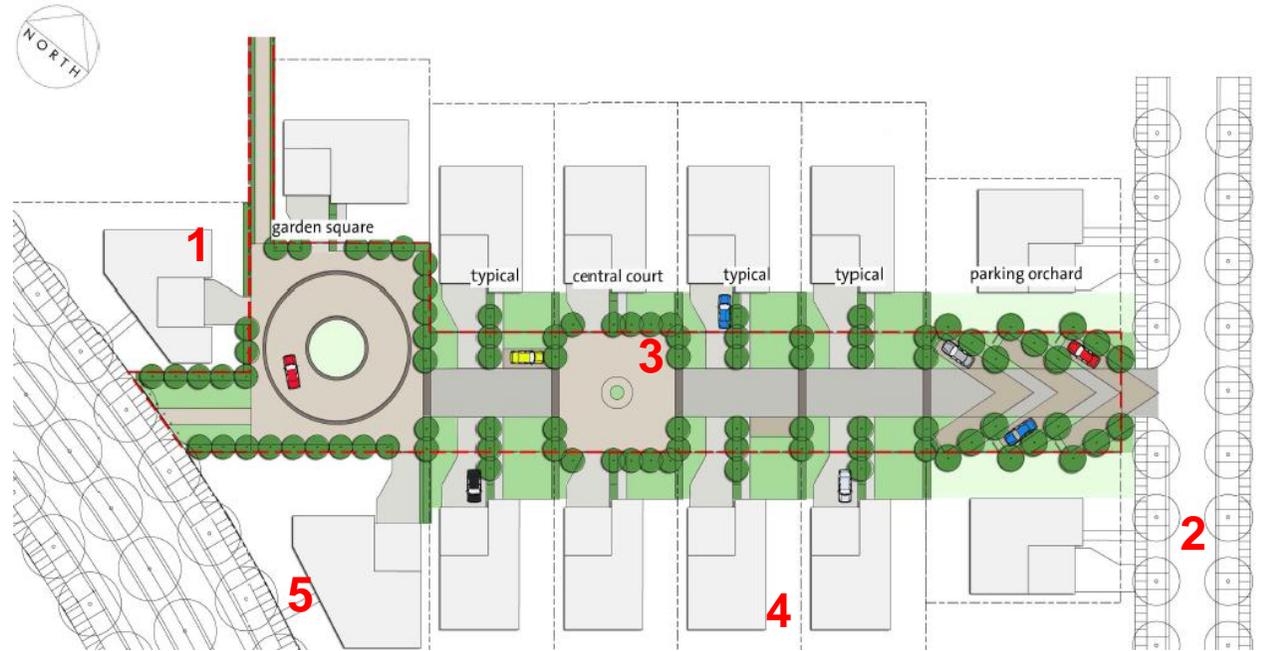
UNDERSTANDING THE DESIGN PROCESS



Beach Road Extension – showing the bridge, gateway into the development and extensive wetland remediation.

GETTING IT RIGHT 1. DESIGN STREETS AS PUBLIC SPACES

1. 'Garden Streets' are designed as shared spaces in low traffic environments. These use the principle of 'filtered accessibility' with limited vehicle through traffic and wide pedestrian/cycling connections at their ends.
2. Any drivers accessing the space will either be residents, or visitors of people who live there. The expectation is that these drivers are more likely to modify their driving in a shared space environment.
3. The concept has been to design a 'kit of parts' which includes visitor parking for each lot, stormwater treatment devices, amenity planting and multi purpose hard landscaping. These 'parts' can be arranged in a variety of ways depending on the context.
4. A key design approach is to blend the planting in the front yard and the on-street landscaping. This creates a more domestic scale for the street, and a clear point of difference to the other roads.
5. The design includes space for large vehicles to turn around. This is designed as a 'garden square' and includes a large rain garden in the centre of the turning circle and planting as a key design feature.



Garden Street design – illustrating the design as a 'kit of parts'.

GETTING IT RIGHT 1. DESIGN STREETS AS PUBLIC SPACES

1. A key design approach is to blend the planting in the front yard and the on-street landscaping. This creates a more domestic scale for the street, and a clear point of difference to the other roads. It also makes the road feel as if it 'belongs' to the houses.
2. The street design uses a range of techniques to indicate that drivers are entering a different environment to a normal road, and that pedestrians have priority. This includes having a continuous surface with no footpaths, using a range materials on the road surface and narrowing the carriageway width.
3. All Garden Streets incorporate water sensitive design devices for stormwater. This includes swales and rain gardens.
4. Most Garden Streets are cul-de-sacs and will have no through traffic. Repeated use by residents and visitors is more likely to reinforce positive behavior by drivers and pedestrians as each kind of road user learns how the street space is being used.



One edge of a Garden Street showing the blending between front yard and street planting.

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GETTING IT RIGHT 2. DESIGN FOR CONTEXT

1. One of the design principles is to maintain the natural landform – roads generally are located to go along the contour and minimise the cut and fill. High retaining walls are avoided, and any banked slopes are remediated with planting and reconditioned to ensure that permeability is maximised.
2. The roads are designed to respond to and reinforce the unique landform of Long Bay. Where possible, the road forms a public edge to the open space allowing easy access to the edge of the Long Bay Regional Park
3. Cul-de-sacs are only used where there are constraints from either landform, or where there are a restricted number of access points allowed onto the main, high traffic boulevard through the development.
4. High density development is located in the lower part of the catchment which has greater capacity to handle change. This allows more sensitive areas around the streams, upper areas of the catchment and areas of slope to have less development.
5. The town centre is located near Vaughan's stream to allow for high density near to open space amenity and passive recreation. A generous planted buffer provides protection for the stream.
6. Roads are aligned to capture long views out to the landscape and connect the public realm of the neighbourhoods to the wider amenity.



Birds eye view of Long Bay, showing roading layout responding to contours and the edge of the Regional Park.

GETTING IT RIGHT 2. DESIGN FOR CONTEXT

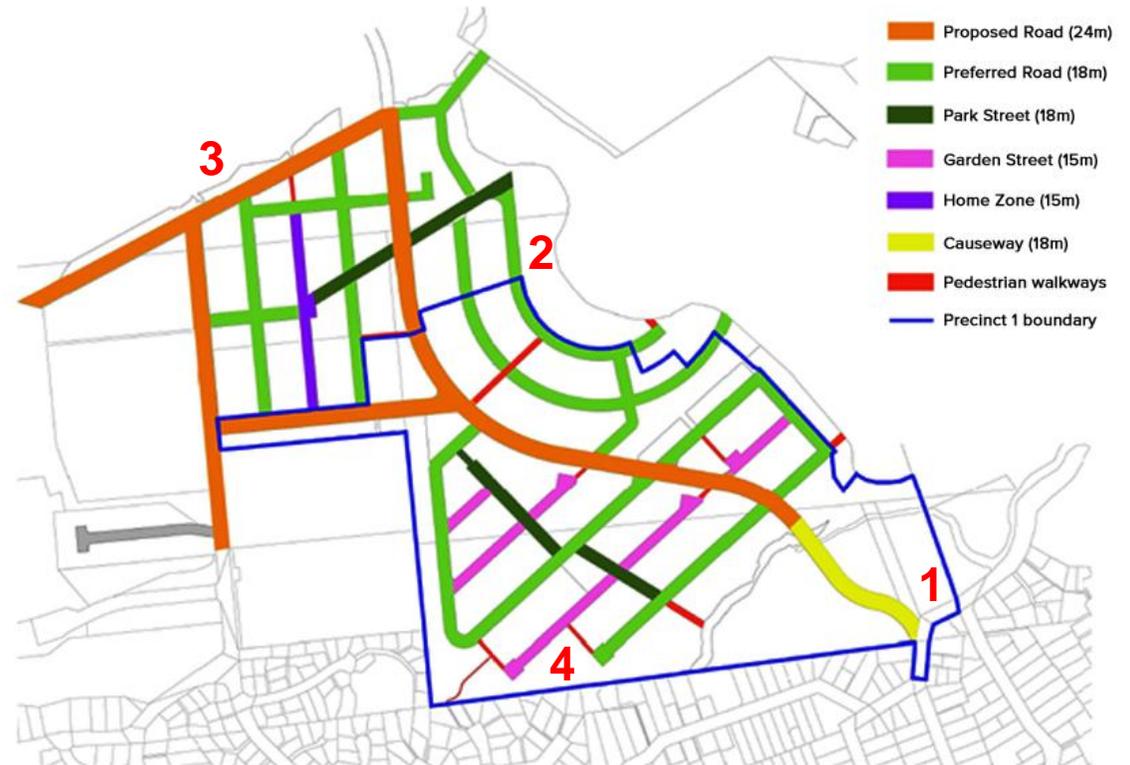
1. Road locations have been designed to work with the slope. Poor ground stability has meant the need for significant earthworks, but a return to a topography that reflects the natural landform. Mid-block batters are used to eliminate retaining walls. The banked slopes incorporate planting and remediation.
2. The slopes form an essential part of the onsite treatment of stormwater. The planting captures and holds stormwater, to allow it to permeate into them ground.
3. There is minimal requirement for any further modification of the land to allow the houses to be built. Any on site retaining is low, and where possible it is located behind the houses so it does not impact on the street.



View of the earthworks at the rear of the house lots.

GETTING IT RIGHT 3. DESIGN FOR CONNECTIVITY

1. Long Bay has been designed as an integrated extension to the existing North Shore suburbs. The roading network is connected at 3 locations, with a high degree of permeability within the site, ensuring easy access to the village centre, the green and the two existing schools.
2. The roading network allows public access to the edge of the Long Bay Regional Park which increases the amenity for residents of the new community, and the ability for visitors to access the park.
3. The streets are designed to be part of a clear hierarchy of streets, with a primary and secondary road network, and each type of road designed to fulfill a different function. All streets are designed to consider a range of road users, particularly cyclists and pedestrians.
4. Cul-de-sacs are only used where there are constraints from either landform, or where there are a restricted number of access points allowed onto the main, high traffic boulevard through the development.



Plan showing the street network and different street types.

GETTING IT RIGHT 3. DESIGN FOR CONNECTIVITY

1. The streets are designed as part of a connected hierarchy – each street designed to meet a certain need.
2. The main gateway to the Long Bay development is at the extension to Beach Road – this acts as a land mark and a clear signal that road users are entering a new community.
3. The primary connector road is 24m wide road allowing for bus use, cycle lanes and integrated bio retention.
4. The typical residential street is 18m wide and includes indented parking bays, rain gardens and extensive planting. It is designed to reduce traffic speeds, and to be a high amenity environment for the residents
5. Pedestrian walkways are used to create extra connections where road linkages would not work. All walkways are designed to be safe, attractive, well lit and overlooked from neighbouring homes.
6. Gardens streets are designed as low speed, shared space where pedestrians have priority.
7. Streets with no through traffic have wide access at the ends for pedestrians and cyclists. They include signage, lighting and extensive landscaping. Fencing is kept low and permeable (see-through) to ensure oversight from the houses.



4 images showing some of the different types of street and pedestrian connection in Long Bay.

GETTING IT RIGHT 4. DESIGN FOR SAFETY

1. All houses are designed to overlook and address the street. All front doors are clearly visible, and there is oversight from kitchen and living areas on the ground floors, and bedrooms and decks above. The sense of 'eyes on the street' makes the streets feel safe.
2. There is minimal front fencing, and the front boundaries are generally demarcated with landscaping. Any fencing is low and permeable (see through) maximising the connection between the houses and the street.
3. Streets use indented parking bays with planting in between to narrow the perceived width of the street. Narrower roads reduce traffic speed and increase pedestrian safety.
4. The intersections have been designed to consider safety for cars and pedestrians. Narrower turn radii slow down cars, and reduce the distance that pedestrians have to cross.
5. The landscape design of the front yards of the houses has been integrated into the design of the street. The streets have been designed to be an attractive, connected, high amenity public space – which encourages more people to use it. The more people using the street, the safer it is.



View down 18m wide residential road.

GETTING IT RIGHT 5. DESIGN FOR ENVIRONMENTAL SUSTAINABILITY

1. The streets are designed as part of an integrated treatment train for stormwater. A treatment train is a combination of sequential stormwater management devices beginning with stormwater runoff controls at-source, followed by other complementary treatment devices throughout the catchment to collectively deliver stormwater quality and quantity objectives. The final step in the Long Bay treatment train is a stormwater wetland at the bottom of the catchment.
2. The rain gardens are designed to hold the stormwater primarily from the private driveways. The rain gardens remove pollutants and allow the water to naturally filter into the ground, adding to groundwater recharge. In a storm event, it slows down water entering the piped system, reducing the total volume and peak flow. Swales will provide treatment of stormwater run-off from public roads and convey it to the piped network.
3. The rain gardens and swales are designed and constructed in accordance with the Auckland Council Low impact design guidelines (TP10) to ensure that they are able to meet the required treatment efficiency. For example, the curb is designed to avoid scouring – where the water entering the rain garden with such a pressure that it erodes the soil adjacent to the flow entry point. The garden is further protected by rocks which are under mesh – this acts as a tough ‘buffer’ and slows down water flows before it enters the planted area. It also acts like a sieve to remove the larger particles.

4. Houses also incorporate water sensitive design measures – including rain water tanks for re-use on site and in the building. Rain tanks are an at-source stormwater control that will help to further reduce peak flows.
5. The swales and rain gardens are designed as part of the landscaping and therefore serve a dual purpose. Apart from their stormwater function, they also act as important aesthetic features for the neighbourhood.



Image showing construction of a rain garden.

GETTING IT RIGHT 5. DESIGN FOR ENVIRONMENTAL SUSTAINABILITY

1. This wetland is the final stop for stormwater in this part of the catchment, and the last step in the treatment train approach, before it enters the Awaruku Stream and the sea. The development included significant remediation and re-vegetation to improve and enhance the natural qualities of the space.
2. The Awaruku wetland receives stormwater from the developed southern catchment, providing for improvement of the existing in-stream water quality.
3. The wetland has also been designed as a public park. It includes ramps that allow access for people of all ages and abilities, and becomes the outlook for housing. The parks and open spaces have been integrated with the street network to ensure they are well connected.
4. Higher density development has been concentrated at the lower end of the catchment which is a less sensitive environment and better able to handle change.



Looking down Fort Street – Gore Street end.

GETTING IT RIGHT 6. DESIGN AND PLAN STREETS TO BE FIT FOR PURPOSE

1. High level objectives were established at the beginning of the project between developer and Council to ensure materials and mechanism were effective and durable.
2. Auckland Council and the developer worked together in reviewing the design and construction of the roads - in particular the rain gardens and treatment devices. A 'whole of life' assessment was undertaken to ensure best return for investment, and ease of ongoing maintenance.
3. All sustainability measures are subject to ongoing monitoring to see how they will perform over time.
4. Education is an important component to the ongoing success of the WSD measures. Simple signage reminds people that the rain gardens are more than simple planting beds and need to be protected.



Signage in one of the rain gardens.

GETTING IT RIGHT BEACH ROAD EXTENSION (24M)



Oblique view of the main boulevard through Long Bay.

GETTING IT RIGHT RESIDENTIAL STREET (18M)



Oblique view of a typical residential street.

GETTING IT RIGHT GARDEN STREET (15M)



Oblique view showing the Garden Street in context.

GETTING IT RIGHT GARDEN STREET (15M)



Oblique view showing the different elements that make up a Garden Street.

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The Auckland Design Manual provides practical advice, best practice processes and detailed design guidance to enable us to design and build the world's most liveable city. The manual will enable us all to make informed choices, to build houses and develop our streets and neighbourhoods to not only look good but to ensure they are built to last, sustainable and give the best return on investment.

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