

Outstanding Park: Extending the Potter Children's Garden

The Potter Children's Garden was first opened in 2005. This application is for a project that significantly extends that garden, which more than doubles it in size and will be completed in spring 2010.

The primary objective of the garden is to engage children with the wonder and importance of plants. It demonstrates conservation and sustainability practices that can be adopted in the school or home environment.

The new extension features replica habitats ranging from extremely dry (desert) to permanently wet (bog). A tropical area and a meadow complete the four main habitats. These demonstrate how and why plants adapt to their natural environment.

The four habitats have been designed to stimulate children's imagination and to inspire a sense of wonder at plant diversity and the incredible adaptations to their environments. How living things have adapted to their environments is a key concept in the Living World strand of the NZ Science Curriculum. Kitchen gardens enable children on 'Learning through Experience' programmes to experience growing their own food. The low impact design components show students that there are alternative ways of designing houses and gardens.



School children about to enter the Potter Children's Garden

1. INNOVATION

The Potter Children's Garden is unique. It clearly articulates ecological, cultural and environmental themes that underpin all aspects of the garden including the design brief, art content, interpretation and educational objectives.

The original garden (opened in 2005) explores the relationship between the kereru (native wood pigeon) and the pururi tree. It is used to deliver curriculum-based education programmes to around 9,000 students annually. It provides opportunities for young people to learn about plants, birds and insects in a fun environment. Activities include a themed maze ('Mythological Maze of Maui'), areas for digging up bugs and an interactive sun dial.



Young child learning the story of the kereru

The new children's garden explores how and why plants adapt to different habitats and to other influences such as pollinators. It also has a strong sustainability focus with all aspects of the design underpinned by low impact design (LID) components like a vegetated swale and filter strip that show how plants can be used to filter impurities from grey water, a rain garden to show how stormwater flow can be slowed down and a courtyard paved with permeable paving to show how driveways and patios need not channel large amounts of rain water straight to drains.

In particular, the new garden demonstrates conservation practices that can be implemented in schools or at home. It was also designed to complement the original garden which, apart from the vegetable garden, is planted almost exclusively with native species. Students, teachers and visiting public can view sustainable practices in action and learn how to utilise these at school and at home.

Innovative structures include two buildings with green roofs (entry shed and toilet block) and the construction shed. The latter is a covered space for practical activities for Learning through Experience education programmes related to gardening and LID. It is further described under 'Sustainability' (below).

Huge limestone rocks and distinctive timber piles have been used as signature elements throughout the garden.

Community engagement

Extending the children's garden was driven by feedback from the community and user groups. Educators in particular expressed their desire to have the environmental education programmes expanded. The opinions of school children were canvassed and their ideas fed into both the design of the garden and into the interpretation. Extensive consultation with tangata whenua was undertaken over a two year period with Saul Roberts of Te Kawerau a Maki as the designated contact person.

The contribution of the children's garden to the popularity of the Auckland Botanic Gardens is reflected in the annual visitation reports. Total visitor numbers were 485,000 in 2004/05 when the children's garden was first opened. Thereafter there has been a significant increase in visitor numbers to around 969,000 visits in 2009/10.



The desert habitat is already popular with young visitors

This is by far the greatest increase in visitation to any of the parks in the Auckland regional parks network.

The Potter Children's Garden has shifted the perception that botanic gardens are destinations mainly for older people rather than children, entrenching the Gardens as a major family destination. It is also intensively used by schools from across the Auckland region, particularly Enviroschools.

2. EXCELLENCE

The Potter Children's Garden is the first reference point for many educators in the region looking for ideas and information that they can implement in their own schools. This includes plant selection and horticultural techniques. Increasingly schools are taking away ideas on LID devices appropriate to their situations.

Low Impact Design included in the garden has been developed in close consultation with leading experts from the University of Auckland, Landcare Research, Auckland Regional Council Stormwater Action Team and the University of Maryland. A programme has been established with the University of Auckland for the monitoring of the LID devices so that their effectiveness can be measured.

Extensive research and consultation was undertaken when selecting the plants that were appropriate for the particular habitats. These plants were carefully chosen to demonstrate different types of adaptations, and numerous others have been planted because they demonstrate how reliant we are on plants for food and fibre. The plants are used as part of education programmes focussing on plants, fibres, adaptations, pollination, seed dispersal and the relationship between plants and animals.

Achievement

Visitor satisfaction with Auckland Botanic Gardens measured by the annual visitor survey has increased significantly since the Potter Children's Garden opened and now exceeds 98%. Satisfaction with facilities is currently 95%. Feedback from visiting schools is overwhelmingly positive, with surveys of educators using the facility showing an almost 100% satisfaction rating.



Learning in the shadehouse and kitchen garden

The edible garden is extensively used by hundreds of school students attending Learning through Experience programmes. It is a model of sustainable gardening practices where students experience growing food and realise it is an enjoyable healthy way of living. Many of these students have never previously experienced growing food.

The new edible garden has a large purpose built greenhouse/shade house space for a full class of students to comfortably practice plant propagation. The work benches have been built at different heights to accommodate different age students and are wheelchair accessible.

The LID components of the garden are meeting the expectations of the various user groups that assisted with these innovations. The garden has become a model 'stormwater theme park' where interested parties can view best practice examples of cutting edge stormwater management technology.

3. EFFICIENCY AND EFFECTIVENESS

The total budget for the project was \$342,000. Most of the funding was raised externally, with the Auckland Regional Council (ARC) contributing \$60,000 towards the development. The major contributor was the Potter Masonic Trust who contributed most funding towards the original garden and was granted naming rights.



Learning how to grow and care for vegetables

Funding

Potter Masonic Trust	\$150,000
ARC	\$60,000
Friends of the Botanic Gardens	\$30,000
Lion Foundation	\$28,000
Other donations/contributions	\$74,000
Total funding	\$342,000

Expenditure

Design, architecture	\$42,000
Site Preparation (8,800) Earthworks (13,000)	\$21,800
Paths (23,000) Permeable Paving (15,000) Boardwalk (4,000)	\$42,000
Construction shed	\$29,000
Entrance Shed and green roof	\$19,000
Fencing (34,000) Trellis (3,000)	\$37,000
Courtyard	\$7,000
Water feature (8,000) Reticulation (6,000)	\$14,000
Habitats: Desert (41,000) Tropical (34,000) Bog (17,000)	\$92,000
Meadow	\$8,000
Services	\$8,000
Interpretation (13,000) Artwork (9,000)	\$22,000
Total expenditure	\$341,800

All funds, except for the ARC contribution, were held in the accounts of the Friends of the Auckland Botanic Gardens. A budget was prepared as part of the project plan with development of the habitats granted the largest share of the funding. Expenditure was tracked throughout the project and the Friends executive committee were updated at their monthly meetings.

4. SUSTAINABILITY

Adequate resources, including operating expenditure for maintenance and allocation of labour, are included in the Auckland Botanic Gardens long term financial plan. Additional support for the project will be provided by volunteers and school children will also be involved in caring for the garden.

Careful planning will ensure that the garden will mature in a sustainable manner. This includes selection of plants that will endure the impact of heavy use by children. The garden has also been planned so that that natural environment within the garden and beyond is enhanced. Bird and insect life will be attracted; invertebrates will find a safe haven on the green roofs and water treatment will reflect best current practice.

All aspects of the design and construction of the children's garden are underpinned by LID principles, particularly in relation to the management of stormwater. Also included are power generation devices and LID devices that optimise stormwater quality such as green roofs, vegetated swales, a filter strip, and permeable paving.



Under construction, the new garden is twice as big as the original

A vegetated swale has been installed to treat overflows from the toilet roof and adjacent surfaces during heavy rainfall. This involved considerable research into selecting plants able to cope with conditions that fluctuate regularly between waterlogged and dry that also enables water to filter rather than block water flows.

Two green roofs will manage runoff and look attractive. They can absorb up to 70 per cent of rainwater and provide excellent insulation properties. One is an extensive green roof on the entrance shed which has a shallow depth of substrate allowing plants such as small succulents and grasses to be grown. The green roof on the new children's toilet is semi-intensive with a slightly greater depth of substrate. Stormwater planter boxes are an innovation that demonstrates to children how waste recycling systems actually work. They enable children to witness the process of filtering grey water by pouring dirty water in and watching clear water emerge once it has passed through the system.

The largest structure in the garden is 'The Construction Shed'. This is effectively an outdoor classroom used for practical activities about recycling waste materials in creative ways. Its primary use will be for construction projects related to gardening and LID activities include adobe brick making, weaving with various natural materials such as flax and the use of reclaimed materials to make functional objects and junk sculptures for the garden. Bins have been built at the rear of the shed to act as the recycling collection point and will be used to store materials for future use.

Irregular walls to the side of the construction shed will be used as support structures to model different types of shelter and screens that can be used in gardens. They are designed to be accessible from both sides so that a full class of students can be accommodated at one time. Students will use recycled materials and material they have constructed such as adobe bricks to fill the gaps in the walls. For example plastic bottles may be used to create walls which can serve as a demonstration of how to use waste material to create a mini green house. Sections of the walls can also be planted up with different types of plants to model green wall construction.



Waterways connect habitats throughout the garden

The support structures will be constantly changing as different groups of students work on them and could also include student's artwork, empty spaces to act as windows, samples of trellis and other manufactured materials, to inspire ideas for use in school gardens.

Recycled materials have been extensively used in garden construction, the most notable being the timber piles from the Okahu Bay wave screen. The wave screen was installed around 1940 and is being gradually removed. The timber is believed to be turpentine tree (*Syncarpia gummitera*) and was certified as being structurally sound and suitable for all purposes including main structure support.

Solar panels enable education programmes to focus on alternative energy and, with energy conservation initiatives; they provide models of good practice for schools and community alike.