- *Clivia miniata* (syn. *C. grandiflora*)
- *Camellia sasanqua* 'Setsugueka'
- *Griselinia littoralis* and *G. lucida*
- *Cordyline australis*
- Nikau (*Rhopalostylis sapida*)
- *Iresine herbstii*
- *Trachelospermum jasminoides*
- *Phormium cookianum* green dwarf flax

COMMUNICATION

It's very difficult to do business when you cannot talk to people. A good phone system is critical. Personally I don't mind if I can only phone you on a cell phone, as long as you are always available on it. Milne's Plant Link communicates with its two top supplies almost exclusively by cell phone.

DELIVERY

The distribution of your plants to market in an efficient manner, which suits both you and your client, is fundamental. Personally, we try to be as flexible as possible to accommodate deliveries, but please understand that your plants may be just a fraction of a whole job, so time frames are very significant. Thank you for the opportunity to speak at your conference, and I trust the above comments will help in this ever-changing market.

Replanting for the Future: Environmental Restoration and a Look at What Is Happening in Tauranga City©

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INTRODUCTION

Tauranga City Council has been committed to a programme of restoring native vegetation and developing wetlands for a number of years. This has been done in association with its storm water programme, where ponds have been built to control flooding. As Tauranga has a number of valley systems cutting through the city into the harbour, this has become a major on-going programme.

Naturally Native New Zealand Plants Ltd first grew plants specifically for revegetation in 1983. These first plants were planted into Johnson Reserve, Welcome Bay, a suburb of Tauranga City. Since the early 1990s Tauranga City has purchased and planted revegetation-grade plants each year.

In 2001 Naturally Native developed a set of plant standards. This was done to set a production standard for the nursery staff to help improve quality. However it was soon realised that the Naturally Native Plant Standard was a sound marketing tool when Councils started adopting it to use in their plant purchase contracts, as a means of defining the standard of plant they required.

It was as a direct result of developing the Plant Standard that Tauranga City signed a contract with Naturally Native to supply and install (plant) revegetation plants each year. Much of this is being done in the extensive wetland areas around the city.

REVEGETATION PLANTS

The City requires that all its plants are eco-sourced. Naturally Native has developed a protocol for eco-sourcing so that seed material is sourced as close as possible to the site in which it will be planted. All eco-sourcing is based on the Department of Conservation ecological regions and districts. All the seed for Tauranga City projects are collected in the Tauranga ecological district. Staff record the source of all seed in the field using a field record sheet developed by the nursery and all seed data is also recorded onto the nursery computer database. This includes recording the GPS location of all the trees seed is collected from and entering this data onto a computer-based mapping programme.

CASE STUDY 1: MATUA SALT MARSH

Matua Salt Marsh (Fig. 1) is located in Tauranga City in the suburb of Otumoetai on the edge of an inlet facing to the west. Immediately adjacent to the estuary, an area of approximately 5 ha, comprising unused rank paspalum pasture and weeds, was developed into two storm water retention ponds. The ponds were designed to filter storm water through two wetlands before it entered the rather delicate estuarine environment in Tauranga Harbour.

This project commenced in 2001 when seed was first collected. The ponds were constructed during January and February 2002 (summer). Once the earthworks had been completed in May 2002 the planting contractors that were employed by the nursery started work spreading mulch made from chipped waste wood. This was first spread over the site using a small excavator, as the soil was so wet it was difficult for other machinery to move over the site. Planting was done through the mulch. Wetland plants were placed in drifts along the edges of the two ponds. Apart from problems with Pukekoes (swamp hens) pulling out the newly planted rushes, the wetland plants established very easily and grew quickly. An island created in

Figure 1. Matua storm water pond 1 year after planting.

Figure 2. Mauao (Mount Maunganui) and beach.

Figure 3. Planting above the cliffs on Mauao's north face.

the middle of the main pond as a wildlife refuge proved to be a planting headache. Water levels rose faster than anticipated, cutting access, which necessitated the use of a boat to transport plants to the island. Children from the three local schools were invited to participate in the planting in an effort to reduce vandalism. This strategy worked well and the project experienced few such problems. One year later the wetland plants had established very well. By Winter 2004 the two ponds were starting to take on a very natural effect with a variety of wildlife present.

CASE STUDY 2: REVEGETATION OF MAUAO

Mauao (Mount Maunganui) (Fig. 2) is an iconic extinct volcano standing prominently at the entrance to Tauranga Harbour. Several fires over the past 20 years have destroyed vegetation on the Northern slopes of Mauao. Naturally Native New Zealand Plants Ltd was contracted to supply and plant on a very steep section of the upper northern face in 2003. A particularly devastating fire in January 2003 had destroyed a large area of both revegetation planting from previous years and gorse and bracken in areas previously not planted. The area to be planted was clear of vegetation at the time.

Access was a major problem (Fig. 3). Plants were taken to the top of Mauao by four-wheel drive vehicle to the summit and then sent down a chute that was constructed to slide the plants to the various levels at which they were to be planted. On a planting site such as this safety is a major issue and ropes were rigged to aid the forestry planters, who were used to plant over 3000 plants in 2 days. A similar operation has seen the company plant 20,000 plants on the eastern face of Mauao this year.

Figure 4. Before Millbrook wetland development 2003–2005.

CASE STUDY 3: RE-CREATING A WETLAND—MILLBROOK

In 2003 Tauranga City storm water engineers constructed a retention pond in a gully that was previously filled with grey willow. The willow was cleared using an excavator and the logs were buried during the construction process. Earthworks disturbed much of the site during the building of the pond, which made planting and subsequent plant establishment difficult (Fig. 4). However 2 years later the site has already established vegetation and wetland species successfully line the fringes of the pond (Fig. 5).

Tauranga City is experiencing very rapid growth and developers are building subdivisions at an alarming rate. Currently it is estimated that just over 50 people are moving into the city per week on average. Prime land is being used for housing while the valleys with their streams that flow into the harbour estuaries and wetlands

Figure 5. After Millbrook wetland development 2003–2005.

Figure 6. Kopurererua Valley.

are given as a reserve contribution to the city. This leaves the city with a problem as to how to utilise these areas. Walkways are being constructed as parts of an extensive development programme to both promote alternative transport within the city — walking and cycling — and to create a network of parks throughout the city.

In addition a construction programme is underway to develop storm water retention ponds within the city. These ponds usually have a low constructed earth dam with various overflows so that water is restrained during times of flood. Planting of native species, both terrestrial and wetland, is done around the ponds on completion of the earthworks.

Figure 7. Vegetation types in the Kopurererua Valley.

KOPURERERUA VALLEY WETLANDS

The Kopurererua Valley (Fig. 6) was purchased by the city to provide land for the construction of a new arterial highway, which was completed in 2003. In the valley there are 350 ha of land that was once extensive wetlands but during the mid 20th century was drained for farming. This poor quality farmland is now to be restored to as near its natural state as possible by re-creating wetlands and retorting native vegetation along its margins. In addition an extensive network of walking tracks, cycle ways and boardwalks will enable the public to use the area.

Naturally Native New Zealand Plants Ltd has entered into a City Partnership programme with the Tauranga City Council to help develop the Kopurererua Valley wetlands. This programme will involve council, business, schools, community groups, and organisations in a 10-year project to develop the valley into a 350-ha park.

Currently the valley has a variety of eco-systems including very degraded willow infested areas, open wetlands that have been grazed by stock for many years, and dry margins where tree ferns grow freely (Fig. 7).

Community Involvement. Children are being involved in the project through a Rotary sponsorship of the Trees for Survival programme where children grow seedlings and then plant them out. Seedlings are grown from eco-sourced seed at the nursery and given to the six participating schools to grow on over the summer for planting during conservation week in August (winter).

Specialist Wetland Plants. Plants for wetlands are being grown for this project in specially constructed wetland beds at the Naturally Natives' nurseries in Tauranga and Whakatane. These beds allow the water level to be controlled throughout the growing process (Fig. 8).

Figure 8. Wetland beds for growing wetland species.

Figure 9. Spinifex production at Whakatane Nursery.

COASTAL DUNE RESTORATION

Naturally Native is also involved in supplying spinifex (*Spinifex sericeus*) plants for coastal dune restoration throughout the North Island. The spinifex production is done at our Whakatane Nursery (Fig. 9). Methods for growing spinifex were developed in a co-operative research project with Forest Research from 1996–2000.

Spinifex has the ability to trap sand and so build beaches thus combating beach erosion. The effects of planting spinifex are quite dramatic. Some Tauranga and Bay

Figure 10. Replanted spiniflex dune at Papamoa — south east of Mt. Maunganui.

of Plenty beaches now have a significantly different profile since spinifex has been restored to the dune system (Fig. 10). Council sponsored community Coast Care groups receive the plants grown at the Naturally Native nursery and plant them out into the dunes during winter. Growth is fast and the results are dramatic.

CONCLUSION

Extensive programmes of revegetation and restoration of wetlands are being carried out in Tauranga City. Many of the plants being used are being grown and planted by Naturally Native New Zealand Plants Ltd under a partnership programme with Tauranga City Council. The success of this planting programme has been dramatic and planned future planting will see the work being continued over the next ten years.