may have helped to hold the soil. This rimu, a large miro above the path, and the large totara further down were each about 1.5m tall when brought from my previous residence and planted early in 1995. Several *Pittosporum* and other plants at Site 1 and above the landing were also brought, as well as a cabbage tree. This latter later seemed to have died, but when dug up it was found to have several shoots underground; three of these grew.

Neal Utting
54a Urlich Avenue
Hamilton
Ph: 07 843 4421
Email: edent@ihug.co.nz

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Fig. 9: Tanekaha growing from a ponga

Gully Restoration and Native Planting Area

Neal Utting
54a Urlich Avenue
Hamilton

Carving (wheki-ponga trunk) by Roger Thomas, Glen Massey

GULLY RESTORATION AND NATIVE PLANTING AREA

NEAL UTTING, 54A URLICH AVENUE, HAMILTON

I began work on this property, of almost 2000 m², soon after taking up residence in November 1994. At that time the "paved, lawn, gardens" area on the sketch map (p5) was in lawns and some gardens; the remainder (about 75% of the total, and which generally slopes steeply) was an impenetrable tangle of blackberry, honeysuckle, convolvulus, and other weeds (Fig. 1), with some tree ferns (mainly ponga), some flax, and a couple of cabbage trees.

Fig 1: Initial blackberry, etc. where the vegetable garden is now

The first part cleared and planted was the area which rises at the north-east, from the edge of the lawn (Fig. 2). Planting initially was largely of poroporo — I had quite a number of seedlings of this — in the hope that these would grow quickly and establish shelter for other plantings. This occurred as planned, and most of the poroporo were removed after two or three years. The planting on this slope was mainly shrubs, as large trees would block the morning sun from the east in winter.

Fig 2: Hill above lawn, cleared (early 1995)

The initial method of clearing was to crawl under the blackberry with hedge-clippers, cutting as I went; this resulted in many scratches and prickles. For further clearing I used Grazon spray, which worked quickly and effectively. However, clearing the dead blackberry vines was a further painful procedure.

As areas near the top were cleared and planted, retaining walls were put in place for a garden/ lawn, extending the lawn area to the east, and the "landing" below this. These were filled progressively with soil removed when the garage was erected (1995), and from the areas in front and behind this when they were leveled.

Fig 3: Dead gum tree down gully behind house, before felling

The next area cleared and planted was at the south edge of the lawn at the back of the house, with a row of green and purple akeake grown from seed from plants at my previous residence, and trees and shrubs below this. In the winter of 1997 a large crack appeared in the ground just below the akeake, across my section and my neighbour's; agapanthus was planted along this crack. Below this was a large dead gum tree, about 10m down the bank

Site (3) Above the "East slip". My neighbour has begun clearing the blackberry, honeysuckle, etc. from his property, and intends planting with natives. A large wattle tree which crashed across about three properties early in 2005, with the ends of the top branches falling across the edge of my property, can be seen from here. The floods in 1998 resulted in the "East slip", running down from the path which goes across to the viewing point. Novaflow drains were laid across the slip area, which was thickly planted with kahikatea; these had been grown on in the shade house from seedlings (about 2cm tall) obtained from under a tree in Te Aroha St (possibly spread to there from Claudelands Bush by birds) in about 1996. Some of these are now over 4m tall. A tawa, which had been planted earlier at the top of the slip, is now over 6m, and is growing much more quickly than other tawa planted in sunnier positions further along.

Site (4) The branches were removed from a very large wattle here in mid-2004; some further planting is still to be done in this area. The "East slip" can be seen, with a large log which was about 5m further up the hillside before the slip. The bottom of the slip area is now largely the bare soft underlying rock. There was soil and plants on this until 2004, but several large bamboos from the other side of the stream bent onto the bank and were washed along during periodical floods, removing the soil cover. These bamboos have now been removed.

Site (5) The "Pool" is very deep (probably about 2m). The Mangakotukutuku stream flows from peat swamp soil in the Collins Road area. The colour of the rust-coloured water is due to the high iron content of this soil (the colour can become lighter during floods, due to increase in cleaner surface water run-off).

Site (6) Partway along the walkway from the pool, part of the cliff slipped in 2004; colonising mosses can be seen (the cliff face past here was similarly bare about two years ago).

Site (7) This is at the bottom of the "Main slip". Immediately after the slip occurred a number of large logs were removed from between the Pool and here by the City Council, and the toe of the slip was stabilised with a quantity of large rocks being put in place by a digger brought down the opposite side. As I proceeded with restoration with posts and half-rounds across the slip, I covered the entire area with weed mat (some is seen in Fig. 5), then planted with ground cover, shrubs and trees. Most of the weed mat was lifted in early 2005, but some had been lifted earlier.

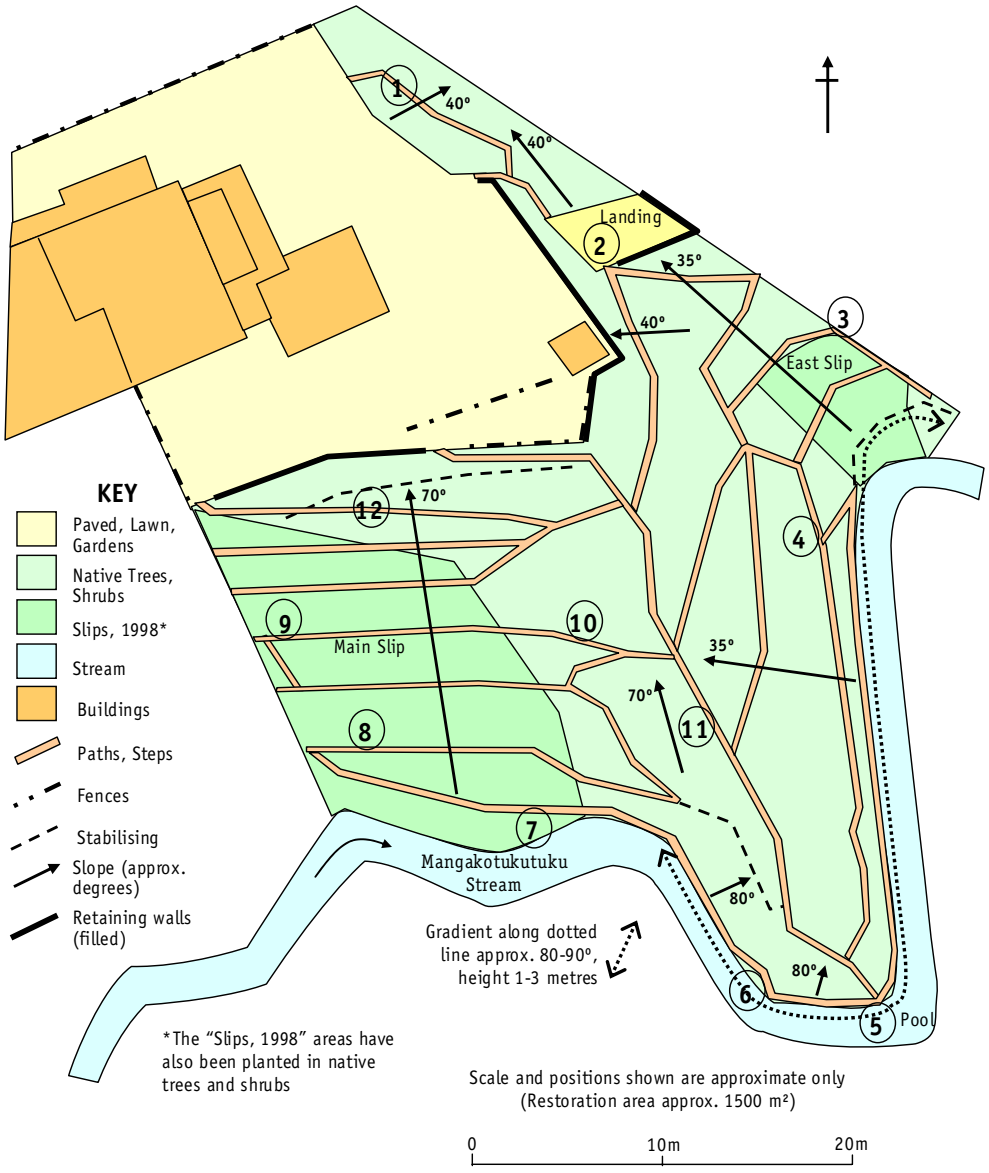
Site (8) Weed mat was lifted from here about 2002. The bank at this site is now thickly covered with mosses and ferns, which have all appeared naturally since then.

Site (9) The slip extended about 30m across the neighbour's property. The regrowth in blackberry, honeysuckle, convolvulus and wattle has been since mid-1998, and is now as much of my property was before restoration began. Natural growth of ferns (including several ponga) is also noticeable at the top of the "staircase", but these are to be removed for replanting elsewhere.

Site (10) A large dead gum tree (see Fig. 3) was removed late in 1995. Steps down to this from the left were built to give access, and some steps going further down across the slip area were added later, but before the slip occurred. The pegs and half-rounds at the side of these steps prevented blocks of soil slipping during the slip (see also Site 12 notes); this gave the idea for stabilising the slip using posts and half-rounds.

Site (11) A ponga, which seems to have grown naturally at the top of the cliff, has a tanekaha growing from it (Fig. 9, next page). Where this came from is a mystery.

Site (12) The pegs holding these steps held soil during the slip, but a crack about 10cm wide along the side of the steps indicated that another block of soil would have gone but for pegs holding a line of steps further down. The large rimu was on this block, and its roots



SKETCH MAP OF GULLY RESTORATION AND NATIVE PLANTING AREA NEAL UTTING, 54A URLICH AVENUE, HAMILTON

(Fig.3). I put in steps down to this to allow a tree-feller access (two large wattle trees further down, and a large pussy willow just below the "landing", were later also professionally removed, and the branches of a very large wattle removed in mid-2004).

By the middle of 1998 I had cleared and planted about 25% of the gully area, with paths (mainly steps) having been added further down as small areas were cleared progressively and planted. Floods came that winter.

Fig 4: The "Main slip" with some stabilizing (early 1999)

The first indication was a small part which slipped at the bottom of the "East slip". This was inspected by a City Council engineer, who assured me that nothing further was likely to happen, and that during the summer I could be supplied with some plants to help stabilise this.

About two weeks later the "Main slip" at the south occurred across my property and my neighbour's. The City Council responded prompt-ly, clearing logs from the bottom and placing a quantity of large boulders at the foot of this slip (these can be seen in Fig. 4). The "Main slip" reached the top in my neighbour's section, but on my section the upper part was held in place (precariously) by pegs used to hold steps which had been put in place. A little later the main part of the "East slip" came down, with a large log moving down about 10 metres with it (see Fig. 5).

Fig 5: The "East slip" during stabilizing (early 1999)

Work began immediately on stabilising the slips, with assistance initially from members of South Hamilton Lions Club. The method adopted was to use a hand post-hole borer to dig at about 45° to about 800mm, then an extension was fitted with holes drilled to about 2100mm. Drilling was carried out from temporary platforms of half-rounds across pairs of pipes driven into the bank below the post-hole level. Holes for about 160 posts were drilled in this way; however, later near the stream soft rock was encountered, and a heavy crowbar, and later a spiked weeder, were used to break this up before drilling further (1800mm posts were generally used here). Three half-rounds, with the inner of these buried into the bank, were nailed across each pair of posts (diagrams next page).

Fig 6: The "Main slip" stabilised and planted (October 2003)

About 240 half-rounds were used for this purpose, with probably about twice this number for the retaining walls, about 200 steps, and the sides of other paths in less steep (and more stable) positions. Steps and the sides

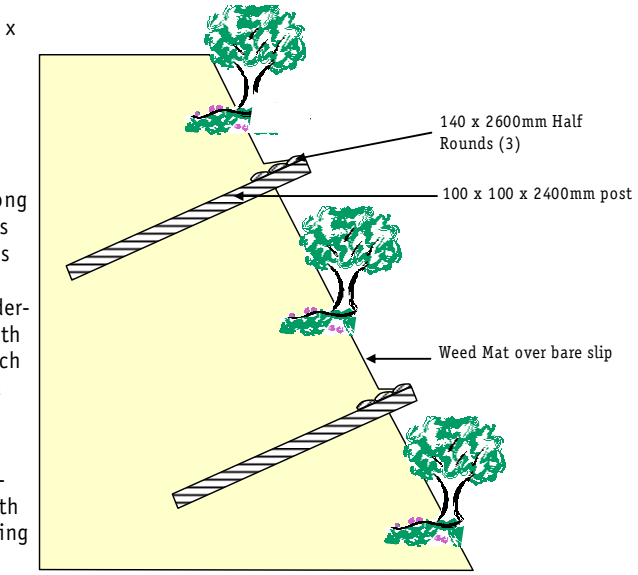
of paths are held in place with 50 x 50mm pegs, cut from the larger posts. The paths and steps total about 400m, with almost 150m of handrails at steeper parts.

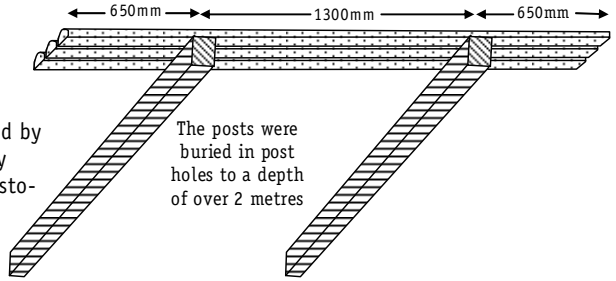
Weed mat was laid across the slip area, below the "landing", and along part of the stream, secured by pins formed from wire. Trees and shrubs were planted through this. When weed mat is removed, the soil underneath quickly becomes covered with colonising mosses and ferns, (which have also become well established on paths and other banks).

A shade house was erected on the south side of the garage, and consists of a timber frame covered with shade cloth. Clear corrugated roofing has been added over a potting bench. Many plants were purchased when small, and grown on in this shade house before being planted out. I would estimate the survival rate of planting at about 70-80%.

Planting of all areas was completed by the time I attended the first 2-day seminar organised by the Gully Restoration group. It was then too late to put into practice the use of appropriate eco-sourced plants. Rather, my intention had been to include a wide range of natives.

After the slips, drainage to reduce the possibility of further water-logg-ing of soil was laid through the lawn areas, and also in the boggy ground at the lower part of the "East slip". This latter part has been planted with many kahikatea, which have also been planted along the stream's edge. Pukatea have also been planted near the stream on the south side.





STABILISATION OF SLIP FACE

Three half rounds were placed over pairs of posts inserted in holes dug over 2 metres deep, 1300mm apart.

The inner of these half rounds was buried into the slip face.

Soil was placed over the outer two for a walking path.

Lines of these were placed across the slip face about 2 metres apart

The bare slip face was covered in weed mat, and planted with native trees and shrubs; weed mat has since been removed.

Other large trees include totara, rimu, miro, matai, kauri, tanekaha, tawa, and rewarewa, as well as "foreigners" to this area: silver beech, pohutukawa, karaka, and puriri. Smaller trees and shrubs include houhere and wineberry (there are now many seedlings of these), titoki, kowhai, kaka beak, kanuka, korokia, putaputaweta, rangiora, horopito, puka, several species of *Pseudopanax*, *Coprosma*, *Pittosporum*, *Hebe*, and others. There are many tree ferns — mainly ponga, but also mamaku and wheki — occurring naturally; wheki-ponga and *Cyathea smithii* have been planted. One path has been planted on both sides with nikau. Several native grasses and sedges

— especially swamp sedge and toetoe — have been planted.

Weeds have always been an ongoing problem. The initial blackberry, honeysuckle, and convolvulus have now been eradicated, although seedlings of blackberry, woolly nightshade, gorse, and privet are common. *Tradescantia* has been a large problem, but is now under control through hand pulling (it was common earlier to fill about four rubbish sacks over a weekend; a half-filled bag might be the result of searching now). Smaller weeds include dock, milkweed, buttercup, and a small cress (*Cardomine heterophylla*?). Most weeding is through hand pulling, although glyphosate is used sparingly in barer areas.

Fig 7: Part of the "Main slip" stabilised (early 1999)

Fig 8: The same part stabilised and planted (October 2003)

A considerable amount of rubbish has been removed from the gully — bottles, cans, plastic, roofing iron and spouting, toilet bowls, parts of bicycles, washing machines, tyres, etc.

The following pages include:

- **Street map** showing location of 54a Urlich Avenue (below, right)
- **Sketch map of the section**, showing Gully Restoration and Native Planting areas (next page)
- **Information about the restoration and planting** (pp 5 - 8), at each of the sites (1) - (12) shown on the sketch map.

Site (1): The hill above the lawn. This was the first area cleared and planted (see Fig. 2). It seems that, before the house was built (1960s), the right-of-way from Urlich Avenue was formed with a culvert across a side stream, then built up with soil removed from the front of this hill. Plants are now well established (paths and steps on this hill are virtually impassable in places).

Site (2) The "Landing". Tree-ferns here include the naturally-occurring ponga (*Cyathea dealbata*), mamaku (*C. medullaris*), and wheki (*Dicksonia squarrosa*), and a planted specimen of wheki-ponga (*D. fibrosa*).