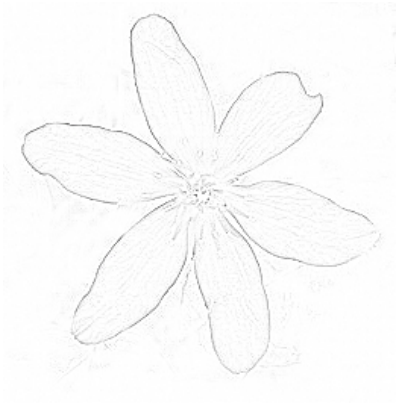
GULLY

CHRONICLES

“The gully represents the defining concepts for our times in that of ecology and that of sustainability. Ecology recognizes the dependence of all organisms including man on each other. Sustainability identifies all practices starting with nature but extending through to our everyday habits of going about our business in a way that will sustain our way of life and prevent degrading the natural supports of our existence”



Introduction to an Adventure and Learning Resource

Imagine in the Kelburn School Gully in pre European times. There would be no playground, just a steep gully. A small stream would run down the centre. On the lower slopes there would be tall kahikatea, fuchsia and pukatea.

The stream would be ferny and in the winter glow worms would shine in the dark under the damp overhanging banks.. On the upper levels there would be tall rata with kiekie and astelia epiphytes festooning their branches. Hiding among the epiphytes would crawl peripatus and Bush Weta.

Occasionally Maori would visit from the Pipitea or Kumutoto settlements hunting pig or birds. Maybe they would be collecting fire wood, cutting the black maire the best firewood of all. There would be women foraging perhaps for berries from tawa, titoki and karaka or perhaps kiekie for weaving, or kawakawa for medicinal purposes.. Their children would be paddling in the stream fishing for Kokopu or koura. Building materials could be obtained here such as totara for carving and supplejack for binding.

Above them would be bellbirds, tui and grey warbler and even Kokako creating the birdsong whose glory can only be heard nowadays in such privileged places as Kapiti island .

To children a gully can be a special place. A mother can say “go play in the gully but don’t wander off”. The child will know exactly what she means because the gully will have boundaries in the form of the spurs an either side. A gully can be a comforting place of solace or refuge from the threats or interruptions of everyday life. One can hide in the gully but at the same time hear the mothers call from above. There is adventure to have in games in the gully but to the Maori this could also be a place of learning. As parents and older children are off gathering or hunting, elders could safely sit with the younger children and teach them about the plants and animals and the stories of the streams and the bush.

Gully planting began because the Kelburn Normal School had a piece of land that was a burden. The land was unsafe, unstable and a bed of noxious weeds that needed regular clearing. It has subsequently been found to be contaminated, the result of the years general fill being used to extend the playground.

One suggestion that has been made was that it or part of it should be sold old off. (Presuming it could be built on) The capital raised in some way for a school project. The downside of this idea is that there are many ways to raise capital but this way will mean that the school loses something. That something is unique. Kelburn, unlike most New Zealand primary school does not have extensive grassed areas. The gully can bring a difference that is attractive to potential students, if used to its full potential.

Another suggestion is therefore to create a resource for school pupils that was fully useable and would remain sustainable in perpetuity. Capital raised, like all capital raised, is a short term solution. It would be spent and in the constant on going process of raising capital for school projects just another source of finance and in the process land and its resource lost forever.

The second suggestion required a vision that the parents and staff of the school could see as worthwhile. As time goes on, the inner city of Wellington will become more and more subject to higher density living. Along the way the green spaces of our parks and attached to our schools will become more and more valuable. Lacking in an inner city are adventure and outdoor learning environments that are safe and easily supervised.

Kelburn was a suburb that was built when the idea of the garden city and the house and garden were fashionable. It is located adjacent Wellington's Botanic garden and on the road to Karori and now, in particular, Karori Sanctuary.

Kelburn was once composed of bush covered hills. The legacy of these are the roads and features that bear the names of the trees that once dominated that bush such as Pukatea stream, Pukehinau ridge, Rimu Road, Ngaio Road and Kowhai Road. These including rata are reflected in the Kelburn Normal School house names.

What better vision than to create a permanent wilderness of restored bush to bring confidence, adventure and learning experiences to inner city "Kelburn Kids".

The gully in year 2000 before work began

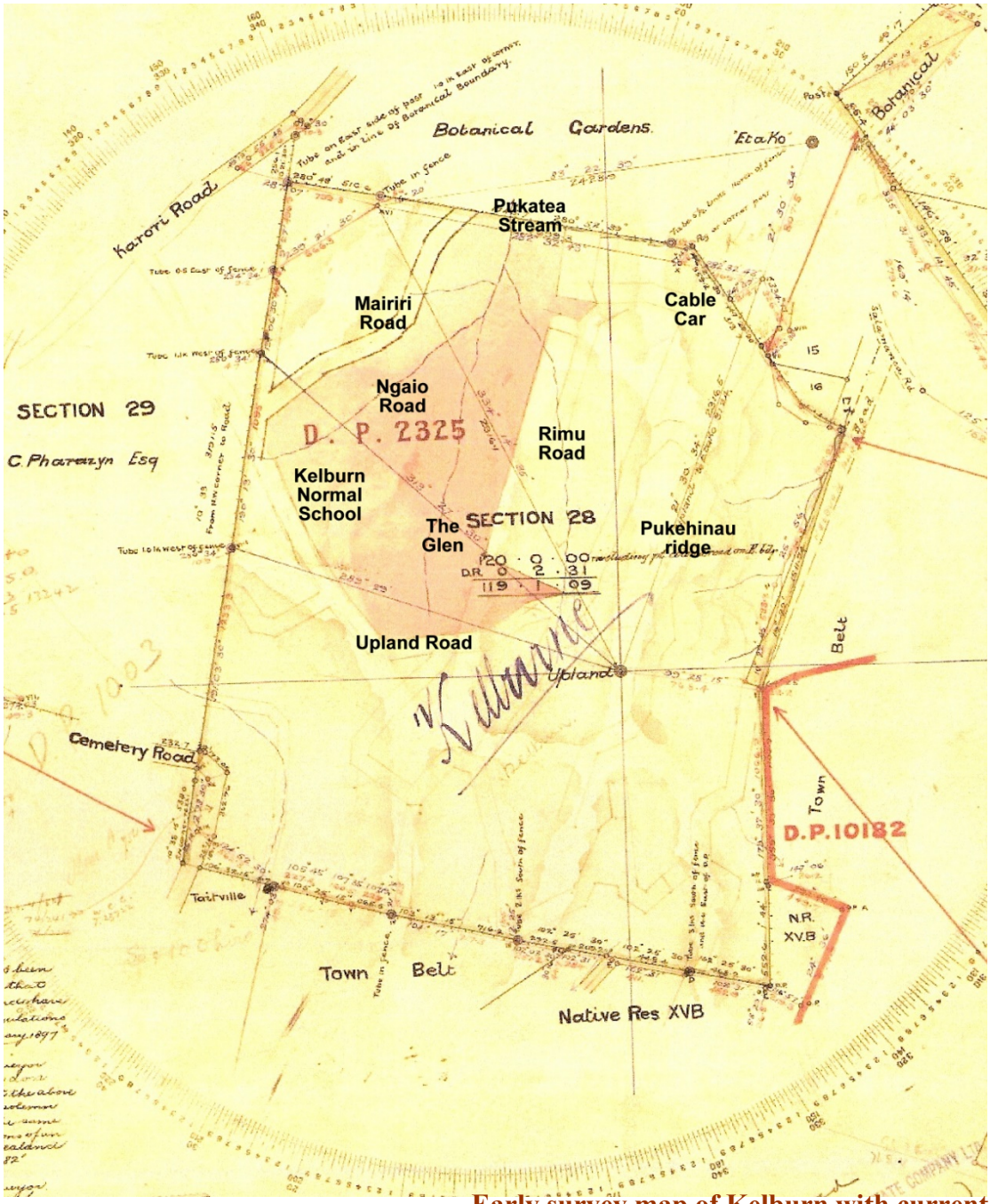
Painting Charles Decimus Barraud 1858
Alexander Turnbull Library

Beginnings

A print held by the Alexander Turnbull Library was an inspirational factor in commencing the Gully project. The print is of an 1858 painting by Charles Decimus Barraud and clearly shows the future site of Kelburn Normal School.

To the right of the painting the ridge line now occupied by the observatory and met office. At the time of settlement in 1840 this would have been forested with manuka and kanuka much as the bushland area that is present today, immediately below the Met office. An early English name for this ridge is Green Hill. The Maori name is Pukehinau. Translated this would imply that the hill was home to numerous Hinau which now seem to be confined to two specimens off Devon Street at the opposite end of the ridge.

To the centre of the painting is what is now known as “The Glen” and is clearly covered in the original native bush that is now confined to a patch in the Botanic Gardens below Magpie lawn. The Glen is now relatively undulating but before development it was composed of a series of ravines. The principal stream was the Pukatea Stream which can still be seen running through the Botanic Gardens. Presumably the stream was named after trees present in bush as they still remain in the Botanic Garden remnant surrounding it.



Early survey map of Kelburn with current locations marked in
Alexander Turnbull Library

An arm of this stream ran up the Ngaio Road valley and had its headwaters on the site of the Kelburn Normal school Gully. It is interesting to note that three of the Glens Roads are also named after trees that can still be found in the bush remnant i.e. Ngaio, rimu, and kowhai. As Ngaio Road follows the arm of one of the tributaries so does Rimu follow the arm of another so logically the road names may well be derived from stream names with Kowhai derived perhaps from the short arm just below the Visual Resource Centre.

The entire breadth of the painting describes what was called “Upland Farm”. It was the Upland Farm block that eventually became the Suburb Kelburn. There is no direct evidence of organised pre European Maori activity on this patch, however there would have been foraging, hunting and the taking of timbers. The nearest habitations would have been at Kumutoto and

Pipitea. There were for a time some Maori gardens at the cable car site but this had been a swap with the Pakeha for land on the Terrace. Another Maori name associated with Kelburn is Ahu-Mairangi as attached to the Maori name for Victoria University. However this applies to the sacred mountain which in this case would be the ridge now known as Tinakori Hill which overlooks Kelburn. (This was covered in Rata trees when the Settlers arrived and the entire hill was described as ablaze with red when the Rata flowered.) Ahu-mairangi translated is whirlwind.

Upland Farm was owned by William Moxham who began farming there in about 1860. It was Moxham who would have been responsible for clearing the bush shown in the painting. Moxham was not the first to farm the land for as the painting shows the land was partially cleared and there was live stock there in 1858. It is not possible to tell how formal this farming was but this area along with the town belt created a problem for the local authorities with people unlawfully grazing animals and taking timber. The land at the time was most probably owned by John Ellerker Boulcott who was a director of the New Zealand Company. The land was what was developed by the New Zealand Company as "country acres" and was separated from the town acres by the town belt which ran along the Wellington Terrace side of Kelburn. Boulcotts son Almon farmed in the Hutt. Almons farm was the site of the famous engagement with the Maori in 1846.

The farm's Western Boundary was what is now, BoundaryRoad. In Barraud's painting there is what appears to be a road in this and the Mariri Road area. It is likely that this was a farm track at the time. The road to Karori wound up the gully where Glenmore Street is now. There was branch at Orangi kaupapa Road but other than that, it followed the valley to its head at the Rigi. Another road was built as access to the water works from the top of Aro Street. This was later formed into "Cemetery Road", the road to the Karori Cemetery (Now Raroa Road) This was located at the Southern Boundary of Upland Farm while the Botanic gardens was located the Northern Boundary.

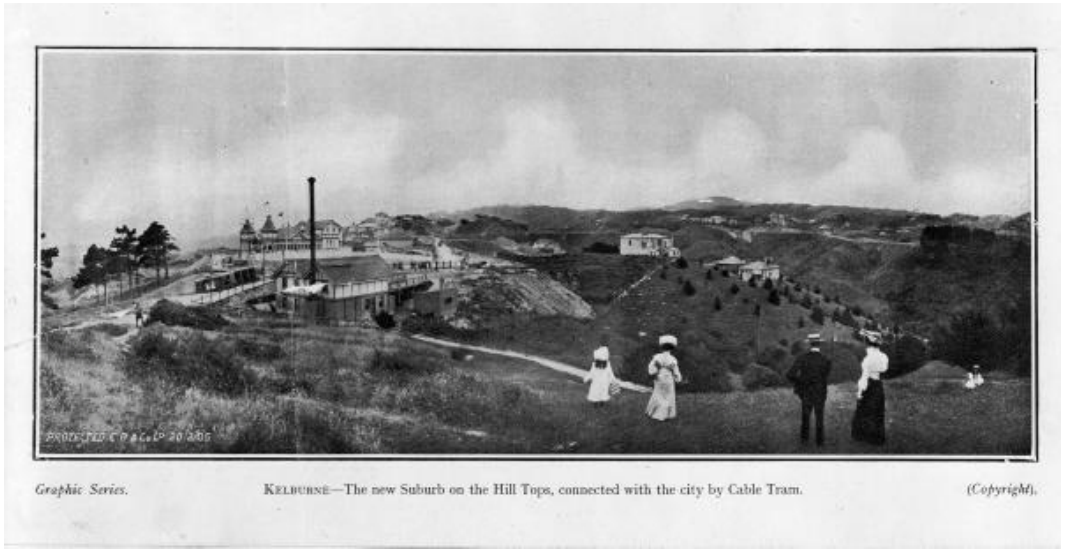
The naming of Mariri Road is a mystery. Although it is Maori, it is out of keeping with other names in the area. It could be derived from the name of a personality, or in fact be a misspelt name as often happens. However the word does apply to the unripe fruit of the tawa tree so perhaps, again, there are botanical connections. At the outset of establishing Kelburn, there was a movement by local residents to have Maori names leading to the creation of Rawhiti Terrace and an attempt to have Upland Road renamed Taumata Road

The Kelburn area was developed slightly later than the suburbs surrounding it. Taitville had been developed with access from Aro Street and the area between Boundary road and Glenmore Street developed with access from that route. Upland Farm formed an odd pocket of land which was actually administered as part of the Melrose Borough rather than the adjacent Wellington or Karori Boroughs which probably contributed to its the late development. Its inclusion in Melrose may also have been as a result of Moxham's influence as he had a farm also in the lower Haitaitai area.

The Glen from Boundary Road

The Kelburm suburb was developed and subdivided by a company called the Upland Estate Company. Kelburn was rugged and to construct the streets including Upland Road required massive earthworks. It was Wellingtons first cut and fill subdivision. Knolls were levelled and valleys filled by means of cable ways. The spur was levelled at Kowhai Road enabling the school and teachers college to be built. It was the Upland Estate Company that was responsible for attracting Victoria University to Kelburn. This act has meant the enduring relationship that Kelburn has continued to have in the minds of New Zealanders in this institution of scholarship and learning

The cable car is also identified with Kelburn by people throughout New Zealand. It was designed by Dunedin born engineer James Fulton and built between 1898 and 1902 for the Kelburne & Karori Tramway Company an offshoot of the Upland Company. Originally people wanted and planned for the cable car to extend by tramway along Upland Road and all the way to Northland. This did not happen but the Kelburne – Karori Motor Bus Company was created instead as the first bus route in the city.



Kelburn Vista from the Botanic Garden
Alexander Turnbull Library

Vera Fulton

What children would know of the gully before Kelburn was built we can only speculate. Certainly Moxham's children and those of his farm workers would know of the gully. Maybe others would come from the town if there was a good picnic spot. A girl named Kathleen Beachamp who we now know of as the famous story teller, Katherine Mansfield, may well have come this way since her father, Sir Harold Beauchamp, had business relationships with the Upland estate company. Perhaps they strolled up from the Botanic gardens together to observe progress on the development as it was being built..

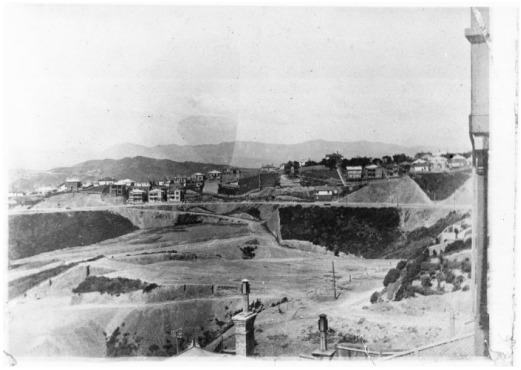
A special girl however was Vera Fulton the daughter of the man who designed the cable car. Many people know of the story of how her father made sure that Vera was popped through the breakthrough of each tunnel on the cable car track to be the first person to go travel each tunnel. What most people do not know was that her father was a registered land surveyor as well as an engineer and he surveyed and laid out all the roads in Kelburn with the help of Vera. As James stared down his theodolite and level, Vera would act as "chainman" meaning that she may have held the staff or with a plumb bob in position at the end of her father's measuring chain. Vera almost certainly would have visited the gully. One can imagine her at end of what is now Ngaio Road, perhaps sitting on a rock beside the stream, her father directing some men to clear a space in the bush so that she can place her staff. On hearing calling and fluttering she would look up to see the tuis in the trees just as we can now.

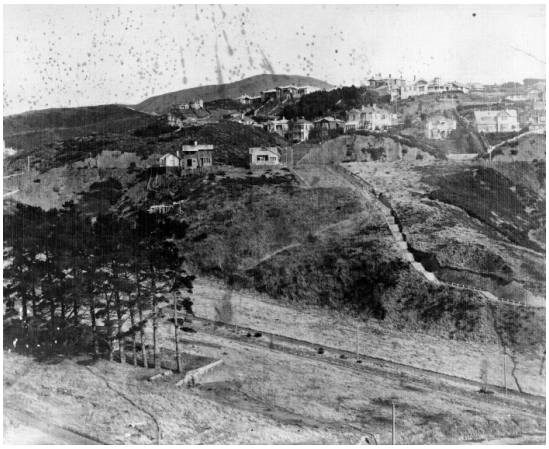
Her relationship with things Kelburn did not end here. A little later another Kelburn kid was living at 30 Kelburn Parade. You can imagine him with a couple of little friends exploring

Kelburn on their bicycles and perhaps discovering the gully. This would have been before the school was built.

Vera went on to marry an English physicist, Frank Hortan who worked with the famous New Zealand Nobel prize winner Lord Ernest Rutherford at the Cavendish laboratories at Cambridge University in England. The boy above also worked at Cambridge University. His name was Maurice Wilkins. In the small Kiwi community in Cambridge they would have certainly met. Perhaps they swapped stories about Kelburn. I wonder if Vera regretted the felling of the bush and whether she expressed this to Maurice. In those days they probably thought of it as the inevitable march of progress. Maurice, himself went on to receive a Nobel Prize as one of the discoverers of DNA, “the blueprint for human life”.

The bush that had been in the Glen was stripped right back to the Botanic gardens. The original bush that grew in this area would be classed as podocarp, broadleaf semi coastal forest similar to Otari. Originally there were tall podocarps such as miro, rimu, kahikatea, matai and totara. Much of this would have been taken for building and firewood. There were reports of goats and squatters using the land as well. Moxham introduced gorse to act as boundary fencing hence the gorse path in the Botanic garden. Fortunately we have had no serious gorse to contend with in the gully.





Scenes showing the gully and School site during development of Kelburn
Alexander Turnbull Library

The Gully shortly before the school was built
Alexander Turnbull Library

The Botanic Garden was set up in 1851 at the behest of the Wellington Horticultural society which had come into existence in 1841 only one year after the founding of the colony of New Zealand. In 1869 the Wellington Botanic Garden was entrusted to the New Zealand Institute (The fore runner of the New Zealand Society) to manage, because in those days the garden was not just for recreation it was for scientific research as well. Dr James Hector, the noted Government scientist, had come to Wellington in 1965 and had wanted this. He had brought with him John Buchanan, a botanist and draughtsman. John Buchanan studied the native plants in the gardens and produced a list of plants existing in 1876. John Buchanan noted the damage to the forest at that time, stating that some trees such as tawa and maire were only in juvenile form indicating that the mature trees had been taken out. Other important trees noted were rewarewa, pukatea, Northern rata and hinau. The rest of the cover was made up of Kohekohe, ngaio, and tarata. Mamaku (Black tree fern) was the dominant tree fern reaching as high as 10m

Bisecting the suburb is Upland Road which forms the main thorough fare to Kelburn. To build this reasonably level required much cutting and battering. Off Upland Road is Kowhai road which follows a levelled area on what was once a small spur jutting into the glen.

The school and the teacher college were built each side of Kowhai Road, the teachers college situated where the Visual Resource Centre and Ngaio School now stands. Both were narrow sites.

Kelburn school was opened in 1913. It was designed by Architect, Gray Young who designed many homes in Kelburn as well. At the outset there was minimal outside playing space and virtually no grassed playing space. The lack of this, in comparison with other New Zealand Schools, has occupied the minds of Parents and Teachers ever since. Kelburn was apparently

the first school in New Zealand to have a voluntary parents committee and in 1920. One of their first projects was extension of the playground which began by excavating the slope toward Upland Road

In 1954, Kelburn's first school Committee was formed and it was significant that one of the first issues was further extension of the playground. It was arranged with the Wellington City Council that the face of the playground would be open for the dumping of clean soil. It was obvious from our recent excavations that much of it was not "clean" judging by the old bicycles and bottles. Soil came from different sources. It is known for example that much came from the Easterfield Building site at Victoria University when excavations were being carried out before the construction of the building that now stands there..

As the Gully was filled there were constant problems with the stability of the bank. There were silt problems in Ngaio Road and the garages at the bottom were affected by slippages. This concerned the Wellington Education Board as there was really no authority to do the work and drainage was a problem. In 1955 Poplar trees were grown to stabilize the bank. (The remnants of these poplar trees were only recently removed as part of the gully programme.) At various times, filling had to stop to allow it to consolidate. In November 1957, 15 feet of the top faced broke away into Ngaio Road which required the Wellington Education Board to build a wall at the base.

It was all finished in 1960. The school gained sixty feet in width amounting to a quarter of an acre.

In 1973, the school buildings were replaced. The new school buildings were designed by Beard and Taylor. It is thought that at least some of the demolition material was tipped down the bank. Certainly some of the material down the bank will be consistent with the materials in the old school.

In 1989, Beca, Carter, Hollings and Ferner undertook a feasibility study for cutting a 10 m x 40 m grassed playing field near the top of the gully. It would have required a 5 metre retaining wall. This was regarded as too expensive for so little utility and was dropped in favour of an adventure playground replacing a smaller one on the old site of the teachers college.(now the Junior School "Ngaio".

Architects Gooch, Mitchell & Macdiarmid Ltd produced plans for the adventure playground in 1993. Initially the estimate proved too expensive but a smaller compact version was constructed minus the long slide own the bank and the elevated tunnel. Most other items in the initial vision were included but interestingly the original vision included an undefined adventure "wilderness area".

Although the wilderness area was never constructed the current gully project expands this later idea into a rather open ended concept with wider possibilities.

Some of the area originally earmarked for the adventure playground is very steep and remains in unstable condition. A programme of flax planting was begun to stabilize the slope and continues with the Gully project.

When the adventure playground was finished there still remained a good deal of land with an impressive variety of noxious weeds present. These required clearing every year and were

usually done by Periodic Detention workers or by spraying. At one stage a company offered to plant dense lucerne to stifle the weeds but this was apparently a failure.

Trees had been planted in the past including a couple of sequoia trees which are still growing and some native grasses which failed,

During this period I discussed the possibility of planting native plants and trees in the gully with Tony Robinson who was then on the Board of trustees.

Tony, during an earlier acquaintance had stirred my interest in native flora on tramping trips. Tony was near the end of his term at Kelburn Normal and was not overly enthusiastic. Some time later I took it up with Prue Von Keisenberg and she was very supportive of the idea, suggesting I talk to Wayne Rickets who apparently had been thinking along the same lines.

We resolved to put some kind of proposal together for the Board of Trustees. Wayne was on the PTA and we gathered a group of interested parents who met regularly and from their input a proposal was produced and presented to the board of trustees in October 2000. The authors are listed as Rob Ansell, Wayne Rickets, Sue Boyle, Gael Lister, and Clare Bush.

The vision was simply "to create a teaching woodland in the Ngaio Road Gully below the adventure play ground".

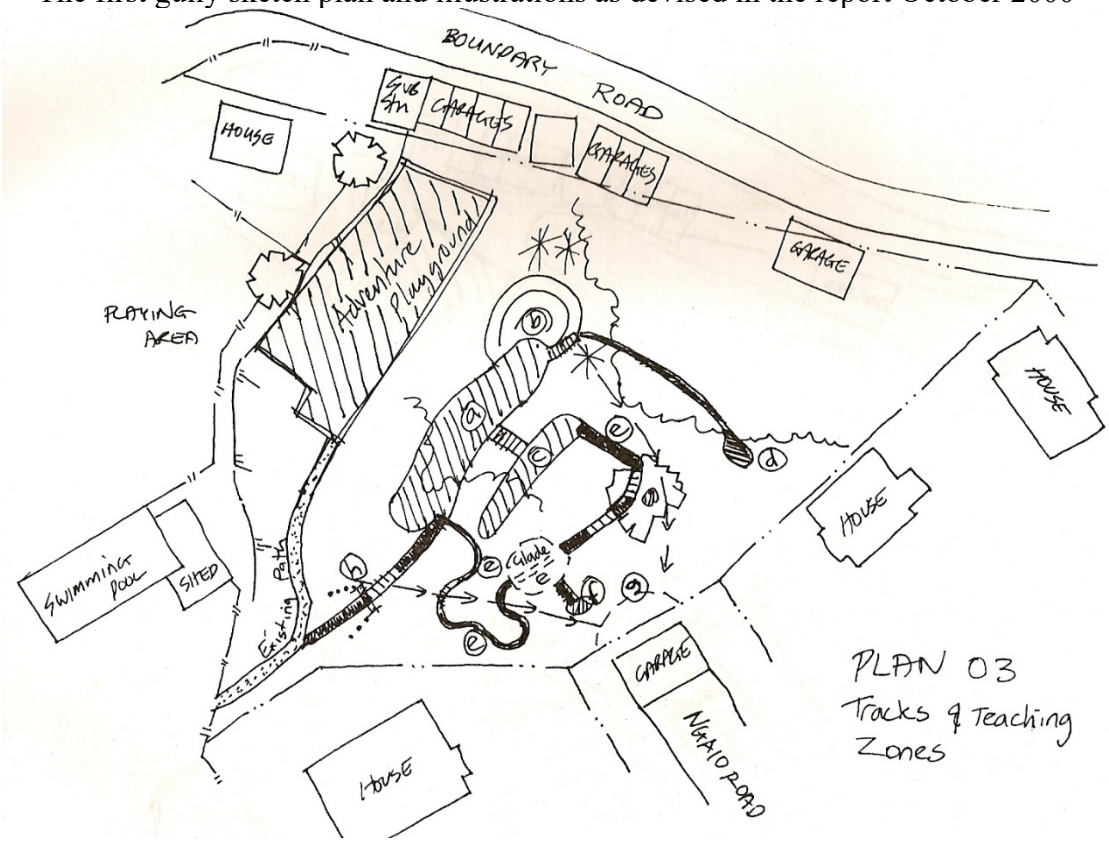
The concept was to entail:

- Creating pathways for child use and maintenance purposes
- Create special locations for teaching and other child related activities
- Planting was to be arranged in a variety of themes to demonstrate topics, enhance locations and aesthetic advantage
- Planting generally based on the native regrowth in Kelburn. This would help to give children an appreciation of the local flora. This strategy will also follow the natural regrowth patterns while inhibiting the regrowth of weeds and noxious plants.
- Planting to be chosen and arranged to be low maintenance, to hold slopes and to allow for surveillance from above the adventure playground area.
- Central to the intended concept was to be the notion of "touch the ground lightly" implying keeping all construction low key and using appropriate natural materials, avoid large retaining walls and high maintenance planting and structure. This will most importantly avoid expense and unrealistic need to maintain the gully.

The signature illustration in the report was the native clematis paniculata which is native to the Kelburn area.

Clematis paniculata

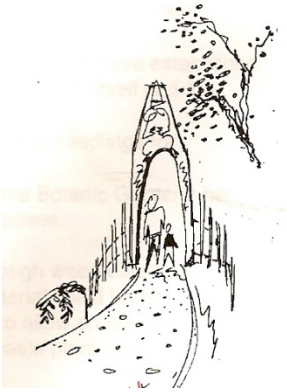
The first gully sketch plan and illustrations as devised in the report October 2000



Commentary as from the report

a) Gathering area. This 6m wide terrace is the largest area a group can gather. Potential to be grassed.
b) A small natural amphitheatre ideal for a private or small group teaching or performance space.
c) Small terrace(Another teaching space, small planting) stairs perhaps from main terrace above
d) Lookout. This location overlooks the dell and has the best vista of the overall gully. Could be a private space. Access along the top of a steep bank could erode therefore should be developed once suitable planting is established to hold top of steep slope.
e) Glade and loop track. Generally follows the contours for safety and could contain small boardwalks to assist planting, provide safe pausing areas etc
f) Small knoll next to a small but steep narrow valley has potential for a small attractive area
g) Lower depression is damp but close to garages. The bottom of the dell (Which runs up the west side)Ideal location for initial planting to provide a dense growth to prevent access to Ngaio Road. The lower reaches are ideal for initial planting of large trees. Temporary maintenance access only
h) Waharoa(Gateway)

Boardwalk



Waharoa

A gully committee was established at this time and met regularly. The committee included the authors of the report plus at various times Jan Stewart, Hal Levine, Guy Cleverly and Phil Garnock Jones (professor of plant science at Victoria University). Susan Kirkham had been designated the teacher representative by Prue Von Keisenberg.

The first task had been to survey the gully because the only topographical survey plan available had been confined to the adventure playground. This was not an easy task as the blackberry over much of the gully was reaching head height. I was assisted by Hans Deidrechsen for this and although I had the job of standing behind the theodolite Hans had the unenviable task of slashing into the head height blackberry to find suitable survey points.

Hans might not have been as pretty as Vera Fulton but his exceptional height and teutonic stoicism served him well and a reasonably good survey plan was produced.

The original committee members took up roles. Sue Boyle undertook to develop the education side. Gael provided horticultural expertise and Wayne looked after finances.

Right from the beginning the project was seen as a revegetation project and the original strategies had been to source seedlings locally and raise them to a suitable size for planting. There was debate about whether to obtain a garden shed /greenhouse which the Lions were able to finance for schools at the time. However hundreds of seedlings were put into PB bags and kept at the Bush's household instead. Most of these seedlings came from Dr Shands garden in Braithwaite Street Karori with a number from our own gardens.

About this time a Rewarewa was donated and planted by pupil Harry Lawlor and his great Grandmother Heather Olphert. This was unfortunately lost to the last crew of PD workers clearing the gully in January 2003 but the Rewarewa has since been replanted in the same position. The losing of native trees to well meaning people helping in the gully has become something of an occupational hazard but does underline the lack of knowledge for identifying even our more common or iconic species.

There were misgivings about using the PD workers for this reason however the problem was taken out of our hands when the Department of Corrections health a safety process identified our gully as too steep and dangerous for PD workers.

A "millennium" Puriri was donated to the school as part of a programme. It was planted in a discrete location as puriri trees were not recorded in pre-settler Wellington. This proved its downfall as it was eventually destroyed along with some other natives as the spot was chosen for disposal of some greenery by the caretaker of the time.

A totara tree was also donated and thrives today besides the steps leading into the gully. Unfortunately the donor is not recorded but it stands by the entrance stairs as our most mature specimen.

Following the survey a rough plan for tracks and teaching spaces were developed. It had been intended to put in simple steps initially and have a gravel path much like the side paths in the botanic gardens.

Ideas abounded in the early stages but it was clear that the vegetation would need to be in place to develop many of the adventure and teaching ideas.

Ideas sprang from the school children such as developing a place for the glow worms (As in the Botanic Gardens), creating an artificial pond or water feature.

Adventure activities could include a rough cross country track, confidence building or camping style activity. A small copse could be developed to provide materials for building say a small authentic whare as might be built for a kainga. Educational projects could be developed in designated project areas providing small specialised habitats. Weta homes, or feeding places to attract birds. Botanically the bush is full of medicinal or edible items such as Kawakawa and koromiko. Rengarenga provided for the Maori an edible staple with its roots. Ramarama is related to the guava and Hinau to the olive, producing similar fruits. The Kiekie produces an apparently delicious fruit that is seldom seen because it loved by the birds and the possums. May be, one day, a Kelburn pupil will be inspired to start a new horticultural enterprise based on a native fruit.

There are cultural stories to tell in the gully, Mahoe and Kaikomako were use in the making of fire by the Maori and from here leads to the story of Maui and Mahu-Ika and the origin of fire.

It was decided not to approach the gully from the point of view of creating a landscaped garden, as that would lead to too greater expense and maintenance. Early on we did have a landscape architect involved but they were unable to produce a planting plan. The more authorities were involved the more the concept of revegetation has been encouraged. With the development of the Karori sanctuary the gully planting was envisaged as part of a system of corridors distributing birds into the urban area. Indeed support from the Wellington City Council and World Wildlife fund was based on this concept.

Wayne Rickets obtained some finance from the World Wild life fund to remove some rather large poplar trees on site for safety reasons. These were shallow rooting and very large. One of them had already fallen. The teachers requested also that we cut down some eucalyptus trees which had become a hazard for pupils by shedding the odd branch

This was the cause of some consternation among the school children who did not quite understand why we were cutting down trees if we were going to grow trees.

In fact there was a talk of a petition being started by one pupil whose mother had played in a hut erected by her brother, way back. The remains of the hut were still there and I guess were regarded as somewhat of a historic place.

Aerial of Gully before Tree Removal

The trees were cut down in 2001 and then dragged up the slope. The fence at the side of the upper playground was temporarily taken down for this purpose. The effect of dragging the large trees up the unstable slope was to dramatically change the topography so that our original idea of simple steps went out the window.

The gully following tree removal

We would now have to have stairs, handrails etc and therefore required building consent. This meant delay as we went through the process of creating plans specifications etc.

In 2002 plans were drawn up for the gully that included play and teaching space, terraces and a gateway structure.

The Waharoa – Papa Matua

The production of the plans drove the impetus to build a “Waharoa”, a gateway structure. The suggestion of this was made in the report to the board of trustees in October 2000 and reiterated in the strategic plan produced for the Board in August 2001 where under Maoritanga it stated that Treaty(of Waitangi) principles should develop a connection for the school with the tangata whenua. The gully project was seen as a unique opportunity to develop a close working relationship with local iwi and to use the area as an educational resource that would enable greater appreciation of their natural resources.

It proposed that the project group would work closely following the school liaison policy and consultation with local iwi.

Working with a Maori parent Jeanette Thompson, Jono Randell a carver and lecturer at the Erskine college of Art was commissioned to undertake the carving. Jono obtained two slabs of macrocarpa for the carving. Initial contacts were made and meetings held however delays on the project meant both Jeanette and Jono Randell had moved on by time the project was again in full swing.

Once the access and teaching spaces were complete it was realised that the budget for the Waharoa remained and was required to be spent as a condition of the community grant. Contact was made with Jono who now lived in Hawkes Bay. The design was refined and was completed by Jono Randell who undertook the carving complete with a feather made from corten steel undertaken by Dutch artist Riks Terstappen.

Jono Randell and Waharoa carving in progress at Matipo, Hawkes Bay

Jono described the aspects of the Waharoa as two fold, the symbol of passing into special space and of respecting that space.

This also forms the educational aspect of the Waharoa along with its existence as a symbol of the creation story of the Maori.

The carving of the pole represents the Aka vine or Supple jack which was an important plant for the Maori physical and metaphysical worlds. It was used for building traps, weirs, nets, mats stockade binding and houses. Also mentioned in some tribal or Iwi stories as the vine Tane mahuta climbed after receiving the three Kete baskets of Knowledge containing wisdom (Weinanga peace & love karakia and practical knowledge. These vines connected Rangi the sky father and Papa tuanuku the earth Mother in a physical and symbolic way. Separate yet connected.

The feather represents Rangi the Sky father. The posts represent Tane mahuta. At the base will be Whatu Kura or sacred stones

Detail of carving

As this chronicle is being written the Waharoa is being prepared for its final erection. The construction company Mainzeal through parent John Pengelly has undertaken to see the foundations laid down and the Waharoa put in place.. Jonos wish was that in its painting children, staff, parents etc should contribute by colouring into the grooves. Supervised by Sarah Melville current, past students and even the Duke of Edinburgh "Gully Gurlzz" have contributed to painting.

Annie Gear with school pupils preparing to paint the Waharoa

The current acting Principal Jill Burdett is an enthusiastic supporter of the Gully project and the eventual opening of the waharoa is unlikely to go unnoticed. Organised by Maori studies teacher, Annie Gear, the Waharoa is due to be opened on the 24th October 2008 with a powhiri and Hangi .

Teaching Space

Meanwhile there was the process of building teaching space and access. Building consent was applied for and gained and a contractor looked for. Finance was arranged from the Community Grants Foundation.

Initially we were looking for a landscape contractor. However there was a tight programme for planting. Edward Isaacs had been organising a contractor for some school building works and eventually they were commissioned to undertake gully works, asphalting and some school works.

The gully was programmed to commence July 2003 to be completed in September as a last chance date for the first mass planting.

From there things turned to custard. The contractors did not commence work until September. And although excavations were complete, come October the fencing and terracing was not completed and it looked like the contractors would not complete before the end of the school year.

Mid November the contractor discovered some fibrolite on site. This contains asbestos so the contractor suspended works as from their point of view the site was contaminated. The

response of the authorities, the Department of Education and the Wellington City Council, was disappointing. We did not expect them to take charge but neither were they willing to help in any way. (Even if that was just pointing us in the right direction). Among the unhelpful suggestions from the authorities was that we would have to excavate the entire site. Since the site took six years to fill, the cost of that would be prohibitive! This issue will also undermine any future ideas requiring significant excavation or construction in the Gully.

To make matters worse two piles of branches left over from the tree planting were to be burnt. Wayne Rickets obtained a permit from the Fire Service only to be told not long after starting the relatively smokeless fire that a neighbour had complained and we had to put it out.

Perhaps the remaining logs will live, to stay on as a weta nest feature for school pupils!

To add "injury to insult" Edward Isaacs burnt his face during the episode. I only discovered some years later that it had been quite serious and he had to visit the emergency department.

Unfortunately plants for the first large mass planting in that year were all pre ordered and had arrived. Despite our carefully worked out planting plan we were forced to plant in November in random locations unsuitable for the species chosen. This resulted in a very high plant failure rate in the hot and windy conditions..

It was August 2004 before we were able to establish a relatively benign strategy forward from an environmental consultant which enabled work to continue. Refer to appendix for a copy of this report.

With the report the contractors recommenced work and were able to complete based on the strategy given there..

These problems in the gully resulted in the Waharoa being delayed. Neither were further paths, boardwalks or adventure trails planned. Although these are able to be constructed they must be detailed in strict guidelines of the report which requires geotextile to be placed across the ground in pupil areas of constant use and covered with clean fill or to soil to prevent migration of the fibrolite through the soil to the surface. Most of the surface fibrolite has already been cleaned off the area.

With many active parents moving on and the delay as a result of the fibrolite meant a hiatus developed and momentum was lost from the project.

Up until this period a number of parents helped with weeding, and planting including Andy Laughton, Francis Luketina, Mark Weir, Jock MacIntosh, Phil Garnock Jones, Mike Munro, Drew Blair, Ian Harrison, Hal Levine , Hans Diedrechsen, Perry Lark, Mike Price , Mike Lloyd, Gael Liston-Loyd and Penny Diedrechsen. Harriet Ansell –Toebes Chipped in with catering for the workers on working bee days..

About this time the council community officer became interested in the school project. The council were now offering up to 500 free plants a year for such projects. This lead the way to a fresh approach to planning the planting for the gully.

A new committee was formed and came to include Drew Blair, Annie Fischer, John Marsh, Sarah Melville, Janet Carlyle and Perry Lark. One problem resulting from the hiatus was weed growth. The blackberry had made its way back.

The school at this stage purchase a blade trimmer. (I personally trimmed almost the entire gully) which meant hours of buzzing. *"I was expecting complaints from the neighbours especially when one finally approached me. I began the conversation with profuse apologies for the noise only to be told that the sound was music to his ears. He had been worrying about the prolific weed growth and the effect on his own property".*

Weeding was the major problem at this time. They were mainly controlled by occasional working bees and little progress seem to be made as all the weeds seemed to be simply growing back.

The viability of revegetating the whole gully was being questioned.

The Gully Gurlzz

In 2006 a group of Wellington girls college students doing their Duke of Edinburgh Award took on weeding the gully as part of their community service. Ann Louise Mitcalfe an old girl of Kelburn School and daughter of well known conservationist Barbara Mitcalfe assisted with supervising the girls. They weeded, cut up carpet to act as weed mats and undertook planting.

They also assisted in hosting the planting bee of that year and planted Rata trees for project crimson. Some of the girls were old girls of Kelburn Normal. The girls that took part that year were Olivia Toebes, Elizabeth Vowes, Isabella Blunt, Lizzy Eden, Jacinda Ashley-Jones, Bella Ansell, Lizzy Frawley and Kate Morten.

Duke of Edinburgh Girls from the left Kate Morten, Jacinda Ashley-Jones, Bella Ansell and Olivia Toebes

The girls showed that with regular releasing of the trees from the weeds and by using the carpet, maintaining the gully was viable without too much effort. While the girls gained skills knowledge and appreciation of the conservation of native plants, the school received the benefit of their service in putting the maintenance of the gully back on track. The following year Annie Fischer organised a group of Mothers to regularly do this along with intermittent help from the school. This has lead to the current system where a number parents each or in groups take responsibility for a patch of gully.

Rob Ansell and Ann Louise Mitcalfe

The girls were not available in 2007 and weeding was done in sporadic but effective fashion by school parents Janet Carlyle, Annie fischer, Sarah Melville with assistance from others.

Plantings

Weeds

At the commencement of the project the weeds in the gully followed a defined pattern with grasses to the upper and eastern areas and wandering jew in the eastern gully and shaded areas. In the centre were nasturtiums and down the northwestern quarter a healthy band of Blackberry. At the bottom wetter areas the dominant weed was onion weed. Among the weeds there were patches of german ivy, old mans beard and on the western slope chasmanthe mixed with the wandering jew. Blackberry remained a general problem spreading over almost the entire gully eventually. Bindweed and gorse were introduced with the fill provided by the contractors. The gorse did not survive but the bindweed became a particular problem. Other weeds of significance have been fennel, cape ivy and thistle.

The deadliest weed has been nasturtium because it grows incredibly quickly and smothers the growing plants. However it can be cleared very quickly unlike bindweed which can lead to damaging the plant while the tendrils are unwound.

The growth pattern of the weeds did give clue to choosing the ideal locations for local plants species.

As well as the Poplar trees growing on site, were a number of trees, some of which could also be regarded as weeds such as the Aussie eucalyptus and wattle trees. There were other exotics such as tree lucerne.

On site there were also a number of natives including ngaio trees, black tree ferns, taupata. Mahoe and Kawakawa. On the North western side there are also a number of Karaka trees. Up above the adventure playground there are Kowhai trees however these are most likely to have been planted.

In the shade on the eastern side there are a number of native shining spleenworts Many specimens of this large glossy green fern can be found growing wild all round Kelburn.

2003 Planting

Early on, the World Wild Life Fund and other conservation groups advised us that we should be planting local species with stock ecologically sourced as was being undertaken in the karori wildlife sanctuary. We began by collection nurse stock from selected gardens and bagging these. These were a variety of species and were picked with a view that they would be judiciously sorted and panted to a plan when old enough. There was a plan to create a small nursery at the school but to do so would have required a dedicated teacher and parent resources sustainable over the years it takes to achieve sizeable plants.. Eventually this concept failed by being too labour intensive. (We did not have the resources of Karori wildlife sanctuary. A number of plants were held at Ben and Claire Bush's house and were eventually

planted but the survival rate was low. Some Rangiora and Five finger survive from this period but little else. Commercially it was near impossible to get ecologically sourced plants however this is getting easier now that more commercial nurseries are catering for this market. Even so since most nurseries buy in one cannot always be certain. A rule of thumb given to us is that the range of local bird flight of say a pigeon, kaka or tui would be regarded as the range of ecological sourced plants. This appeared to us highly subjective. There are other complications as well, for example new plants hybridizing with garden plants sourced from elsewhere. None the less, we resolved to source plants as local as practicable and use only species listed by Buchanan or known to have to have existed on this site.

The first planting was in 2002 with some plants provided from a Victoria University project by Phil Gaynock-Jones. These were of limited numbers and species. Some coprosma robusta survive from this planting.

The first mass planting was in 2003. To plan for the planting, the gully was divided into zones. An earlier survey of the gully had divided the gully into three zones based on the conditions and evidenced by the type of weeds growing in these three zones

Typical regrowth patterns for semi-coastal forest in the area might begin with tauhinu and Koromiko in exposed areas and on into rangiora, five finger, mahoe, pigeon wood, kaikomako and mapou. Finally, kohekohe, pukatea , hinau, rata and nikau etc would grow to dominate such forest. Alternatively it might commence with Kanuka, mahoe and five finger in more sheltered spots,

The more exposed areas were reasoned to be more dominated by manuka in the regrowth pattern.

However in choice of plants the availability and time taken for trying to follow natural regrowth patterns would be impractical. Phil Gaynock Jones provided a list of plants to commence with and divided them into categories in accordance with exposure:

Dry Ridge

Aristotelia Serrata	wineberry
Pittosporum eugenoides	Tarata
Cordyline Australis	Cabbage tree
Cortaderia fulvida	Toetoe
Dodonaea Viscosa	Akeake
Kunzea ericoides	Kanuka
Pseudopanax arborea	5 finger
Coprosma Robusta	Karamu
Hebe Stricta	Koromika
Sophora microphyllla	Kowhai
Pittosporum tenuifolium	Kohuhu
Melicytus ramiflorus	Mahoe
Phormiun Cookianum	Mountain Flax
Cassinia Leptophylum	Tauhinu

Mid slope moderate conditions

Would be similar without the cortaderia, cassinea, dodonea, phormium and hebe stricta but with:
Myrsine Australis
Olearia Paniculata
Coprosma repens
Hebe arborea

Mid Slope windy
Without the cassinea, hebe stricta, Kunzea, dodonea but with:
Coprosma repens
Griselinia littoralis
Olearia paniculata
Myrsine Australis

Sheltered gully but dry
Coprosma Robusta
Hebe Stricta
Kunzea ericoides
Olearia Paniculata
Pseudopanax arborea
Cordyline Australis

Wet Areas:
Aristotelia Serrata
Coprosma Grandifolia
Cordyline australis
Phormium Tenax
Pseudopanax arbora
Schefflera digitata

The first planting was to be in the area surrounding the teaching areas which extended from the damp west sheltered area to mid slope dry to windy mid slope in the east and sheltered dry gully at the eastern border.

The above list compiled by Phil was used as a guide but modified by the plants available for purchase and also strict adherence to the 1876 Buchanan list. Also it was decided to risk buying a number of specimen trees to give educational interest. These were to be planted in judicious locations. There were also a number of tree ferns. Black mamaku for the damp line down the dry watercourse on the North western side and silver fern for the dry sheltered gully on the eastern side.

The plants were all pre-ordered and delivered but unfortunately the contractor had not completed by the programmed September date as agreed. The contractor was still building in November.

The contractor was well aware of the planting and also the approaching summer holidays. There was still a good deal of retaining wall and stair to be completed and although the excavations had been completed the contractor then advised us that they had found some old pieces of fibrolite on site and therefore had to stop work.

We therefore had no choice but to hurriedly plant in late November. The plants had been chosen to put in place in the area that the contractor had been working. The situation forced us to scrap the planting plan and just get the plants in as quickly as we could. Just about all with the exception of the tree ferns were subsequently in the wrong location. Until the fibrolite issue was sorted out it also meant that little weeding or maintenance could be done.

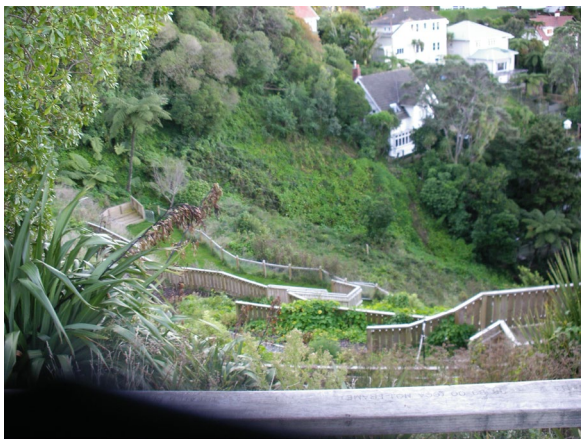
As a result the survival rate was very low. Survivors included the tree ferns, some pukatea, miro, totara, kaikomako, Kowhai, Rimu and kahikatea trees.
Some of these were planted behind the line of mamaku and below the line of garages in Boundary road to provide a backdrop to the approach to the Waharoa. Few of these survived due to prolific weed growth in this corner.

Of the nursery plants it was noted that coprosma robusta, wineberry, griselinia littoralis, and tarata grew well. A notable failure was kawakawa which is a prominent regrowth plant in the area as well as on the fringes of the site. Exposure was most probably the problem. Wineberry did not survive either if too small.

The eastern strip proved the most difficult to grow on. The wind here is at its fiercest in the gully and the ground dries out easily. Although logic said that we should begin planting from the top down in retrospect planting from the bottom up would have enabled the growing plants to assist in sheltering the new.

The most damaging weed growth to the plants in this period was the nasturtiums. Nasturtiums, although easy to remove tended to grow rapidly and stifle the new plants. The regrowth of blackberry in this period was also prolific and later required the services of a school provided blade trimmer to cut back the growth. The later growth of convolvulus was not evident at this time. It was brought to the gully along with gorse by the topsoil provided by the contractors. The gorse was brought easily under control however the convolvulus eventually proved to be the number one problem.

To top off the destruction in this period a well meaning caretaker attempted to control some weeds by spraying weedkiller but could not recognise the natives among them and many were lost in this way. Ironically he was carefully preserving the Australian Wattle believing they were Kowhai.



Gully 2006

2005 - 2006 Plantings

Once the gully construction and fibrolite issues had been resolved we were able to start planting again. The Wellington City Council who had previously not supplied plants for our kind of project were now able to assist by providing 500 plants free per year.

The plants include Griselinea littoralis (Kapuka), Coprosma Robusta (Karamu), Aristotelia Serrata (Wineberry) and Melicytus Ramiflorus (mahoe) which had all previously shown to have survived well.

The planting plan was to fill in around the teaching areas. Below the adventure playground the intention was that the planting be kept relatively low to enable sightlines from the playground into the heart of the gully area. The species that were chosen were Phormium tenax (flax), Coprosma repens (Taupata), Cassinia Leptophylla (Tauhinu), Hebe stricta (Koromiko), and Myrsine australis.

Hedycarya arborea (pigeonwood) and Comprosma Grandifolia (Kanono) were chosen for the damper sheltered western areas.

Kunea ericoides (Kanuka) and leptospermum scoparium (manuka) were chosen for the dry eastern areas.

Some Totara were also requested.

Muehlenbeckia complexa was ordered but none was available. An idea had grown to use muehlenbeckia to allow it to mix with the grass at the first level down from the stairs. There was an idea that children like to roll in it as happens on the hills on the coast a Makara and it might provide sitting places for the children however none was available. In 2007 some was obtained but not in great numbers so it is an idea that will probably never occur.

The same year a number of mixed natives were donated from the World Wild Life Fund. These were part teaching programme or study of their own and were left over. There were mixed species, all local. There were a number of kowhai and large number of Nikau. Unfortunately the nikau were very young (easily confused with grass.) and have not survived apart from one or two hardy plants. The dreams of creating a nikau grove came to nothing!

Micha Haughton, a teacher at the school became actively engaged with the gully and independently purchased a number of plants as part of class project.

The children in his class and another all planted the plants themselves

These included lancewood, ramarama, Libertia, and Muehlenbeckia. They were planted along the path to the adventure play ground. The plants planted above the retaining wall did not survive apart from some lancewood as they were vulnerable to children sitting on them.

The Ramarama survived and is thriving as is a Griselinea Lucida donated by Henny Ansell who was in his class at the time. These are all situated at the first steps down to the gully.

The overall survival rate from the years planting would have been good however disaster struck the following year when some one detailed to clear the weeds used a line trimmer. The person

saw some large plants but failed to recognise the smaller ones hidden in the grass. This resulted in the loss of some two hundred plants.

Project Crimson donated eight Rata trees which were planted by the Duke of Edinburgh girls on the upper north west side and Barbara Mitcalfe arranged for two black Maire trees to be planted equally placed below these.

In this period carpet was begun to be laid down to suppress weeds and help the soil retain moisture. Previously mulch had been tried but was found to slip down the steep slope. The carpet was not always pretty, having at times to be weighed down with rocks and whatever was handy to resist the wind. However, it was effective.

In 2006 phormium tenax (Flax) and sophoro microphylla (Kowhai) were planted along the bank immediately below the playground. The flax, to hold the bank and the Kowhai to extend the belt of existing flowering kowhai. It was hoped that the spring flowering would attract tuis and bellbirds to the playground edges.

General view of planting activity

Patricia Mathews weighing down carpet

Prue Von Keisenberg and Granddaughter

2007 – 2008 Plantings

Experience derived from revegetation planting next to the Otari reserve has led to a recommendation that for revegetation, only a very few, say four proven species need to planted in a given locality thereby quickly suppressing the weeds. As these grow ,other native species tend to self sow once the shelter has been provided by these plants . In the Gullies case proven species for this approach would be phormium tenax(flax), coprosma robusta(Karamu), Aristotelia serrata(Wineberry), pittosporum tenuifolium (Kohuhu) and for 2007 these species were used. Much of the flax went toward reinforcing the bank below the playground the rest of the flax was used to hold banks close to the paths and along the dry watercourses.

The Board of Trustees provided some money in 2007 to buy trees that were not readily available from the Wellington city Council.

A large number of tree ferns including (Cyathea Dealbata) mamaku, Dyxonia fibrosa and Dyxonia Squarrosa (Wheki). The mamaku were planted following the western stream moist bed along with flax. The Wheki was planted in clumps in dry areas and the fibrosa generally in the eastern dry stream bed.

A number of Muehlenbeckia complexa were bought and generally planted where originally intended to provide a mass planting in the grass.

Trees bought included Kohekohe, Putaputaweta, tawa, rewarewa, and matai.

3 native clematis paniculata were planted. These are native to Kelburn and had originally been intended as a signature flower for the gully. Providing they survive they should flower in 2008. Unfortunately clematis looks a lot like old mans beard when not flowering and it is hoped they will survive successive weedings.

Some plants and trees were brought from gardens. A titoki and tree fuchsia were transplanted for example. Unfortunately the titoki did not survive, The fuchsia however has survived despite the attentions of a young boy who though it was dead. (Fuchsias are one of the few Native trees which are deciduous). It was planted close to the bottom of the damp stream bed on the western side.

Also planted were 6 Hinau trees donated by the Ansell family in recognition of pukehinau the Maori name for Kelburn.

Some parents began supplying plants to form an under layer to the planting. Some rengarenga were planted in the upper area close to the old school pool. Near the upper black Maire some ferns and astelias were planted. The ferns were mainly hen and chicken with some blechnum chambersii and the astelia solandri.

Some Kiekie has been planted along with nikau at the top of the western side stream bed but it unlikely that the kiekie have survived as the situation was perhaps not sheltered enough at this time.

The 2008 planting carries on the concept of the 2007 but adds a number of cabbage trees with the intention of creating a grove of these toward the lower end of the gully. Some five finger (pseudopanax arboreous) were added to suit the lower damper area of the gully. Some Kanuka (Kunzea ericoides) and Manuka(Leptospernum scoparium) were provided for drier area gaps

where earlier plantings had died. Muehlenbeckia complexa planting continued and many Rengarengas continued to be planted for temporary ground cover in lieu of carpet or bark chip. Experimentation began with the transplanting of ferns such as hounds tongue.

The Otari Plant museum nursery also donated a number of plants that had been destined for the settler's cemetery but were found to be surplus to requirements. These included a number of species with many Putaputaweta and tarata.

July and August were exceptionally wet months for Wellington and the clearing of weeds above the crib wall at the bottom of the gully uncovered an actively flowing brook springing from the "dry" watercourse on the eastern side. Possibly this is the last above ground remnant of the Ngaio stream. Probably not so fascinating for the garage owner below, who through not having cleared the fallen debris around the garage had to put up with the water flowing through the garage and not the drain provided.

This perhaps this vindicates the planting in this place of swamp trees kahikatea and pukatea during early plantings. Fitting with the swamp theme a number of flax were planted act as a barrier and to hold the area above the crib wall and stabilize a very boggy spot.

National Award

On the 9th of August 2008 the New Zealand Plant Conservation Network presented Kelburn Normal School with an award for the Gully as being a school project of national significance. The award was formally handed over at the school assembly on Friday 29 August 2008, by John Sawyer an ecologist with the Department of Conservation. The presentation consisted of a book "Rata and Pohutukawa", a certificate and a print especially created for the occasion by Artist Sue Wickison of now extinct New Zealand mistletoe "trilepidea adamsii". A timely reminder that there were some local gorgeously flowering parasitic mistletoe in the region that are now on the endangered list. These would almost certainly have been in the Kelburn bush at one time.

Adopting a patch

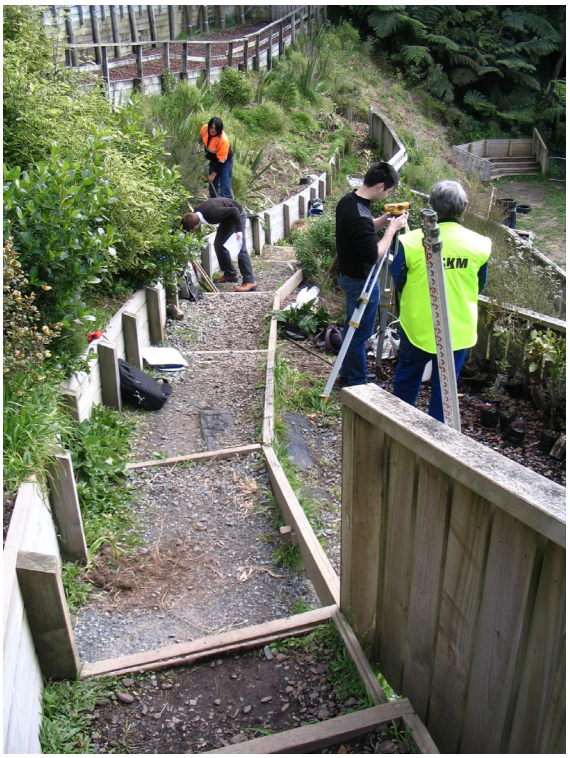
Maintenance of the gully until the trees have sufficiently grown has become a challenge. Naturally parents come and go at a primary school and it is important to establish some kind of continuity.

In 2007 an adopt-a-patch system was created to ensure buy in by successive parents to maintaining the gully. This was an idea gained from its use at Tressilick park, Ngaio. The idea was the parents and teachers could take up a manageable patch of the gully and take responsibility for taking care of the plants in the patch. Weeding or watering or giving shelter where necessary

SKM Graduate programme – *The Grad Brigade*

In 2008 Kelburn Normal School Gully Project was adopted by the Sinclair Knight Merz(SKM) graduate programme. SKM has a variety of Science, engineering and Architectural Graduates who as part of the development at the firm take part in community projects. For the gully they have been assisting with the planting and weeding and notably the design for the placement and foundations for the Waharoa. Their planting has included a cabbage tree grove on the lower eastern side.

SKM Structural engineering graduate Xiaohan (Hans) Wang (Left) and Lucille Jorgenson architectural graduate (right) with Sarah Melville and Annie Fischer at Waharoa briefing



Geotechnical Engineer, Karen Jones, overseeing graduates undertaking soil and topographical survey for the Waharoa.

The next stage of the graduates involvement is intended to be to assist Kelburn students in developing a masterplan for the gully. This plan is to be a collaboration intended to explore the uses the gully could be put while respect the planting that has taken place. From this a blueprint for future development can be put in place.

Gardening Group and the Introduction of Recycling in Kelburn School

Introducing Recycling

Late in June Matt Church House went with his class for a trip to WCC where they talked with Donna Sherlock about waste management at Kelburn School.

They came away with a large compost bin, Green Bins for plastic and paper recyclables and a commitment to reduce the amount of waste that Kelburn School sends off to the Wellington landfills each week.

Each classroom at Kelburn was given a Green Bin and a recycled paint bucket for food waste was also donated (thanks to the organising by parent Annie Fisher) by Resene Paint Wellington.

Now if you go to Kelburn School on a Tuesday morning you will find a group of children arranging their classroom Green Bins for collection on Kowhai Road.

On a Friday afternoons a chain gang of children collect the compost buckets from each of the classrooms and file down to the Gully and deposit the contents into the two compost bins that sit in what is evolving into, thanks to the efforts of the gardening team, a beautiful (shady in summer) outdoor classroom space.

The large skip that use to receive all of the Schools waste is being emptied far less frequently and the School are looking at downsizing it. It is hoped that it may eventually become a thing of the past. This is good news not only for the environment but also the schools budget.

Garden Club

On the 11 August teacher Matt Churchouse held a meeting for all students who were interested in joining a gardening team to help work on the school gully restoration project.

31 keen students turned up primarily from the lower middle syndicate and the 13th of August 2008 marked the first official gathering of ‘The Gardening Club’ lead by Matt Churchouse and parent Sarah Melville.

Funds that had been raised by Matt Churchouse’s Class at their ‘recycled toys sale’ were put towards a second compost bin for the school gully and a set of gardening tools and gloves were also purchased for the Garden Club members.

Over the next few weeks these dedicated children spent the second half of their lunch hour weeding, carrying mulch by the bucket load from the School cottage Carpark, and mulching the ground on the lower slops of the Gully bank that shelters the grass play area in preparation for planting. By the end of the Term they had planted over 40 plants including Flax, Rengarenga, Putaputaweta, Manuka, Makomako and Kowhai.

Many other students joined in as they watched the gardeners hard at work and it has become apparent that this marks, in a significant way, the beginnings of a new kind of relationship between the children at Kelburn School and their Gully.

Where to from here

The gully project has now been running 8 years. It was said at the outset that it was to be a 500 year project and that it would take its own life with successive teachers, administrations, parents and pupils using it in a variety of ways. The 500 years pertains to the time it would take to develop a fully mature forest complete with the tree top gardens of epiphytes that New Zealand forests of this type are famous for. The challenge now is to fully adopt the potential as the resource that it is. The presence of fibrolite will prevent large scale or continually inhabited structures being constructed. However, for paths, project and teaching areas the strategy of putting in an underlayer of geotextile will prevent the migration of fibrolite to the surface and mitigate any health risk from sustained exposure to dry decomposing fibrolite. The alternative of excavating 10 continuous years of fill is not practical or economic for any form of substantial development.

Following the erection of the Waharoa, the process will be to put in any remaining paths and areas where projects could take place. These project areas would supplement the teaching areas already in place. Project areas could encompass each educational or adventure activity cater for small supervised groups.

With the contemporary focus on sustainability the growing interest in a wide variety on energy saving and alternative solutions to everyday problems is producing vast array of possibilities for the gully. Perhaps all those schools with large empty playing fields should be developing gully like places of their own!

Apart from that the gully as a living place will be at the whim of the various pupils, staff and parents who pass through the school for which the gully and will receive the stamp of their passing in ways not envisaged here. It is hoped that the objectives of those who endeavoured to put in place this resource are respected and the vision is not destroyed by objectives of short term gain, all be it with the best of intentions.

Project Places

The development of project places to supplement teaching spaces is worthy of the next stage. These should be created specifically to suit the type project that the teachers may wish to have. Water is present in the gully so that water based type projects are also possible. These could involve creating specialized habitats for lizards, peripatus or wetas. Bird feeding apparatus etc. A forest pond could be set for freshwater crayfish or indeed any apparatus or habitat that could

assist with a science or group project. Teaching and projects spaces could also be the backdrop or focus for performance or media activity.

Confidence or fitness course

Maximising the gully land tracks can be included to involve a fitness or confidence course. This could involve some structure as well as a sinuous track around the gully. The track should take in some of the steeper areas. The slide that was to be part of the adventure playground could be incorporated with the eastern dry water course as an ideal location. Maybe exercise stations could be incorporated at points on the track. The gully could be used as a simple orienteering course for suitable students. Climbing or other activities with a risk attached would need to be located in easily supervised areas and comply with current safety guidelines. The idea of the gully as wilderness area as an extension of the adventure playground can therefore perhaps be realised as suggested when the playground was first conceived.

Connection Track between School and Ngaio Road

Connection with Ngaio Road is a possibility. The connection in the past has not thought to have been a good idea from the point of view of possible vandalism or unwanted individuals using the route for transit from the Glen to Upland Road. The idea of growing a belt of bush lawyer at the bottom as a security device was even suggested.

The connection however is no different from the old one that existed for many years alongside the Ngaio block down to Ngaio Road. However people always have and will continue to use the gully for various purposes despite the lack of access therefore a publically accessible route could help in passive surveillance of the and therefore be desirable.

Suitable trees for donations

With the degree of shelter now available now is a good time for to donate trees for planting. They would need to be about 2m high with respect to specimen trees and planted from May to July for best results. Any from the planting list would always be welcome but for specimen trees the following would have particular significance

Tawa
Kohekohe
Titoki
Rimu
Tree Fuchsia
Matai
Rewarewa
Nikau
Kahikatea
Pukatea
Miro
Kaikomako
Totara
Hinau

Teacher buy in

Meadowbank Bank School in Auckland has a gully very much like Kelburn. They have specifically recruited a teacher that has particular interest in environmental matters and natural sciences thereby having the responsibility of using their gully as part of the curriculum requirements. This is an idea that should be seriously considered by the school to fully maximise its potential.

To maximise the benefit of the resource of the Kelburn Normal Gully it is highly recommended that that the school does this.

The gully identifies the defining concepts for our times that of ecology and that of sustainability. Ecology represents the inter dependence of all organisms including man on each other on the planet. Sustainability identifies all practices starting with nature but extending through to our everyday habits of going about our business in a way that will sustain our way of life and prevent degrading all the natural supports of our existence.

Even beyond this the gully can be a resource in some way for every part of the curriculum with the above messages a by product to be absorbed by osmosis rather than rammed home. The knowledge of the plants and trees also contains the knowledge both the Maori and the early settlers had. The nutritional, medicinal and practical uses they put to the plants gave them self reliance in a way not possible in the modern urban world.

Fact sheets

These have been provided on most of the plants planted in the gully to date. They give some information about each plant including flowering, fruiting, birds, insects and diseases. They also give the uses they have been put to by Maori and pakeha as well odd interesting tales.

Implications of Asbestos

The site is registered with the Wellington Regional Council with respect to contamination by asbestos bearing products. That is bits of fibrolite that have probably been cladding to old style classrooms earlier present on the site. The standard prefabricated classrooms used to be universally clad in this product

The presence of Fibrolite does not mean the gully is a heath risk if precautions are undertaken. As much surface asbestos has been removed as much as practicable but from time to time fragments might migrate to the surface of the soil.

Generally the precautions outlined in the environmental report (appendix) should be adhered to. All new areas where children are to undertake activities should be created with an under layer of geotextile with clean soil or other surface above. This applies to new paths and project areas. Alternatively new paths could be boardwalks or be covered in a surface such as asphalt.

All existing works have been treated in this way.

Epilogue

The gully can be an amenity for the School and community alike. Establishing the garden club and the recycling initiative is only the start of an opportunity to teach the values of the day to Kelburn children. Already there are initiatives where farmers are experimenting with the use of compost to offset fertilizer use on farms. The compost made by the school pupils will naturally support the plants in the gully but what the children will also see is that compost bins are little ecosystems in their own right, all be it on a micro scale reflecting the larger ecosystem of the Gully itself.

The educational tale of the gully starts in the chronicles with the story of local Maori and how they might have used the gully. But the full story is a primeval one, part of the shaping of Wellingtons topography through the eons from dinosaurs roaming the now sunken continent of Zealandia through to the time shortly before the arrival of the Maori when Moa and the mighty Haasts eagle reigned supreme in New Zealand. This is when our plants and trees were shaped in the evolutionary cycle. The tangled divaricating plants that proliferate in New Zealand are said to have been a result of generations of response to browsing by Moa. The moa are now extinct in New Zealand, the first victims of the arrival of man into the ecosystem. The divaricating plants remain.

There are trees, whose ultimate survival without man would depend on their fruit passing through the gut of the kereru, and there are times of the year when the Kereru are dependant on the very same trees for their own survival.

Before the arrival of the European the Maori were dependant on many of the plants and trees in our Gully for their survival and well being. Rengarenga, Mamaku, Kiekie titoki, and even Nikau were all food plants to the Maori as well as having a host of other uses being it building, weaving or medicine yet to most in New Zealand the names of these would be hardly recognizable.

Gully plants and trees absorb the carbon dioxide and produce the oxygen that keeps the physical environment of the entire planet in balance, we all know that, but there is a myriad of smaller interdependencies that we hardly know or care about in the modern world. How many of these can we lose before it undermines our way of life. Such is ecology. This is something we can only speculate about. But the gully can begin to give our children the intuitive knowledge that there are lessons that come with our native plants. Lessons of survival not just in our history but also in our present and our future.

Rob Ansell

Illustration: Hector Ensor

APPENDIX 1 PLANT LIST

Plant List

Based on Wellington Botanic Gardens' bush remnants species list (from Shepherd 1992; Buchanan 1875) omitting species not native to the area; plus a few other local species and nomenclatural changes.

Species in **bold** type are trees and shrubs that are important to include at the Kelburn School gully – either they're common or they're significant in some other way.

Botanical name	Maori or English name	Growth form
Adiantum cunninghamii	maidenhair fern	fern
Adiantum diaphanum	maidenhair fern	fern
Adiantum viridescens	maidenhair fern	fern
Alectryon excelsus	**titoki**	**tree**
Aristotelia serrata	**wineberry**	**tree**
Arthropodium cirrhatum	rengarenga	herb
Asplenium bulbiferum	hen and chickens fern	fern
Asplenium flaccidum		fern
Asplenium oblongifolium		fern
Asplenium polyodon		fern
Asplenium terrestre		fern
Astelia solandrii		herb
Beilschmiedia tawa	**tawa**	**tree**
Blechnum chambersii		fern
Blechnum filiforme		fern
Blechnum membranaceum		fern
Blechnum novae-zelandiae		fern
Brachyglottis repanda	**rangiora**	**shrub/small tree**
Carex ?forsteri		herb
Carpodetus serratus	**putaputaweta**	**tree**
Clematis forsteri	puataua	climber
Clematis paniculata	puawhananga	climber
Coprosma grandifolia	**kanoano**	**shrub/small tree**
Coprosma lucida	shiny karamu	shrub/small tree
Coprosma rhamnoides		shrub/small tree
Coprosma robusta	**karamu**	**shrub/small tree**
Coprosma rotundifolia	round-leaved coprosma	shrub/small tree
Cordyline australis	**ti**	**tree**
Cyathea cunninghamii	gully tree fern	fern
Cyathea dealbata	**silver tree fern**	**fern**
Cyathea medullaris	mamaku	fern
Dacrycarpus dacrydioides	**kahikatea**	**tree**
Dacrydium cupressinum	**rimu**	**tree**
Dendrobium cunninghamii		herb
Dianella nigra		herb
Dicksonia squarrosa	wheki	fern
Dysoxylum spectabile	**kohekohe**	**tree**
Elaeocarpus dentatus	**hinau**	**tree**
Freycinetia banksii	kiekie	climber
Fuchsia excorticata	**kotukutuku**	**tree**
Geniostoma ligustrifolium	**hangehange**	**shrub/small tree**
Grammitis billardierei		fern
Grammitis ciliata		fern
Griselinia littoralis	papauma	shrub/small tree
Griselinia lucida	puka	shrub/small tree
Haloragis erecta		herb
Hebe parviflora		shrub/small tree

Hebe stricta var. atkinsonii	koromiko	shrub/small tree
Hedycarya arborea	**pigeonwood**	**tree**
Histiopteris incisa		fern
Hoheria (what spp?)		tree
Hymenophyllum minimum		fern
Knightia excelsa	**rewarewa**	**tree**
Kunzea ericoides	**kanuka**	**tree**
Laurelia novae-zelandiae	pukatea	tree
Leptospermum scoparium	**manuka**	**shrub/small tree**
Leucopogon fasciculatus	mingimingi	local?
Libertia grandiflora		herb
Lophomyrtus bullata	ramarama	shrub/small tree
Luzula picta		herb
Melicope ternata	wharangi	shrub/small tree
Melicytus ramiflorus	**mahoe**	**tree**
Metrosideros diffusa	rata	climber
Metrosideros fulgens		climber
Metrosideros perforata		climber
Metrosideros robusta	rata	tree
Microlaena avenacea	bush rice grass	herb
Microtis unifolia		herb
Muehlenbeckia australis		climber
Muehlenbeckia complexa	pohuehue	climber
Myoporum laetum	**ngaio**	**tree**
Myrsine australis	**matipo**	**tree**
Myrsine salicina	toro	tree
Nestegis cunninghamii	Black maire	tree
Olearia paniculata	akiraho	shrub/small tree
Olearia rani	heketara	tree
Parsonsia heterophylla	native jasmine	climber
Passiflora tetrandra	native passion fruit, kohia	climber
Pennantia corymbosa	kaikomako	tree
Phormium tenax	harakeke	herb
Piper excelsum	**kawakawa**	**shrub/small tree**
Pittosporum eugenioides	**lemonwood**	**tree**
Pittosporum tenuifolium	**kohuhu**	**tree**
Poa anceps		herb
Podocarpus totara		**tree**
Prumnopitys ferruginea	**miro**	**tree**
Pseudopanax arboreus	**fivefinger**	**shrub/small tree**
Pseudopanax crassifolius	**lancewood**	**shrub/small tree**
Pseudowintera axillaris	horopito	shrub/small tree
Pterostylis banksii		herb
Raukaua edgerleyi	raukawa	shrub/small tree
Raukaua simplex	haumakaroa	shrub/small tree
Rhopalostylis sapida	**nikau**	**tree**
Ripogonum scandens	supplejack	climber
Rubus cissoides	lawyer	climber
Schefflera digitata	**pate**	**shrub/small tree**
Sophora molloyi	**cook strait kowhai**	**tree**
Sophora microphylla	**kowhai**	**tree**
Thelymitra longifolia		herb
Uncinia banksii	hookgrass	herb
Uncinia uncinata	hookgrass	herb
Weinmannia racemosa	**kamahi**	**tree**

APPENDIX 2
KELBURN NORMAL SCHOOL GULLY REVEGETATION PROJECT ASBESTOS AND HEALTH RISKS

Report from Healthy Environments Ltd Occupational Health and Safety Services
Prepared by L. M. Stratton healthyenviro@paradise.net.nz Ph 0274 424 -280

HEALTHY ENVIRONMENTS

INTRODUCTION:

This report outlines an evaluation the health risk posed by asbestos in the form of fibrolite fragments found buried in gully that forms part of the Kelvin school grounds. The school has embarked on a revegetation project in the gully along with the establishment of some teaching spaces on existing terraces.

Excavation work for stairs and paths exposed the asbestos material. Although this has been removed from the area further work is likely to expose more material from the fill. The gully area was formed in the 1950s by dumping fill and demolition material from old school buildings.

Asbestos is a fibrous material occurring in natural deposits. Asbestos was used in a wide range of products due to its ability to absorb heat and sound, making it an excellent material for insulation. Until the 1980's asbestos was commonly used in:

* cement sheeting (fibro)
* drainage and flue pipes
* roofing, gluttering and flexible building boards
* thermal and pipe insulation
* vinyl asbestos tiles
* brake linings
* paints, coatings, sealants and adhesives

LIABILITY FOR ADVICE GIVEN:

Healthy Environments will only accept responsibility for advice given if such advice is in writing.

DISCUSSION:

Asbestos fibres pose a risk to health only if airborne, as inhalation is the main route of exposure. Small quantities of asbestos fibres are present in the ambient air at all times, and are being breathed in by everybody on a daily basis. The effect of asbestos on health depends on the duration of exposure, concentration of the asbestos fibre in the air, and the size and form of the fibres.

Demolition of the old school buildings in the 1950s would have resulted in asbestos cement materials such fibrolite roofing and wall sheets and, possibly shingles being crushed. Some asbestos dust would be generated during the damage to these ac materials. The bulk of the demolition materials from the school buildings would have been moved into the gully and then covered with a considerable overburden of soil. Some of the smaller fragments of asbestos material and fibrous dust would have become mixed with the overburden and therefore may lie close to the surface in the gully. The extent of the asbestos contamination in the top soil in the gully is not known.

Asbestos fibres do not bind to soil particles or migrate to ground water through soils to any great extent. The physical characteristics of the fibres from the three most common asbestos minerals used in manufactured materials tends to restrict their movement through a light or medium packed substrate. Chrysotile fibres are curly while amosite and crocidolite fibres are needle-like with barbs. The asbestos fibres tend to adhere to each other or attract other particulate.

The migration of asbestos fibre through the fill in this gully to the softer top soil over the past 50 years would have be negligible. The demolition material containing asbestos contamination in this gully if not disturbed poses a very low exposure risk to pupils and teaching staff at the school or the public in the wider residential community. However, the excavation of the gully terraces for construction of retaining walls, stairs and paths does pose a health risk not only to the contractor but also to school and community at large. There is a potential for asbestos fibre contamination contained within the softer top soil to become airborne with the drying out of the excavated material. Any asbestos-cement fragments themselves pose little risk since the asbestos fibre is bonded strongly in this type of matrix. Breakdown of asbestos-cement materials in soil is slow and in the present situation would not have resulted in any significant fibre release and dispersion into the soil surrounding fragments even after 50 years.

SUMMARY – MANAGEMENT STRATEGY:

The key factor in the managing this asbestos hazard during the revegetation project and after completion of work is management, communication and control.

* The excavation work to construct retaining walls, stairs and paths on the various terraces in the gully would require the soil be sprayed with water to keep it moist. Any asbestos cement fragments exposed in banks, trenches, paths etc can be safely gathered up and placed in plastic bags.

  The excavated soil ideally should be removed from site and disposed off at an approved site.

However, the excavated soil could be reused as fill behind retaining walls provided it is kept covered until required for the reinstatement work. Prior to reuse of the excavated soil it must be moistened by spraying with water.

* Exposed areas of soil in excavated areas should be covered with plastic sheeting until such time the construction work is complete and an overburden of suitable material has been reinstated to enclose any potential asbestos contamination.

* The measures proposed to stabilise and prevent possible migration of glass and asbestos contamination from the sub-soil to the surface outlined in the variation to the building consent is an appropriate management option.

  The 50mm granular free following material followed by a BIDIM A24 mesh and capped with 200 mm of soil would effectively enclose the hazard.

  The BIDIM A24 Geotextile specified is a non-woven product composed of 100% polyproylene filaments with poor size 0.15 mm. This material is stable to ground alkali and acid conditions, has a good physical strength and high water permeability. The pore size of the Geotextile sheet would impede loss of asbestos contamination from fill to softer soils.

  The Geotextile sheet should be fixed to banks in trenches or against the back side of retaining walls.

* At completion of the creation of teaching spaces and revegetation project a strict management plan needs to be established.

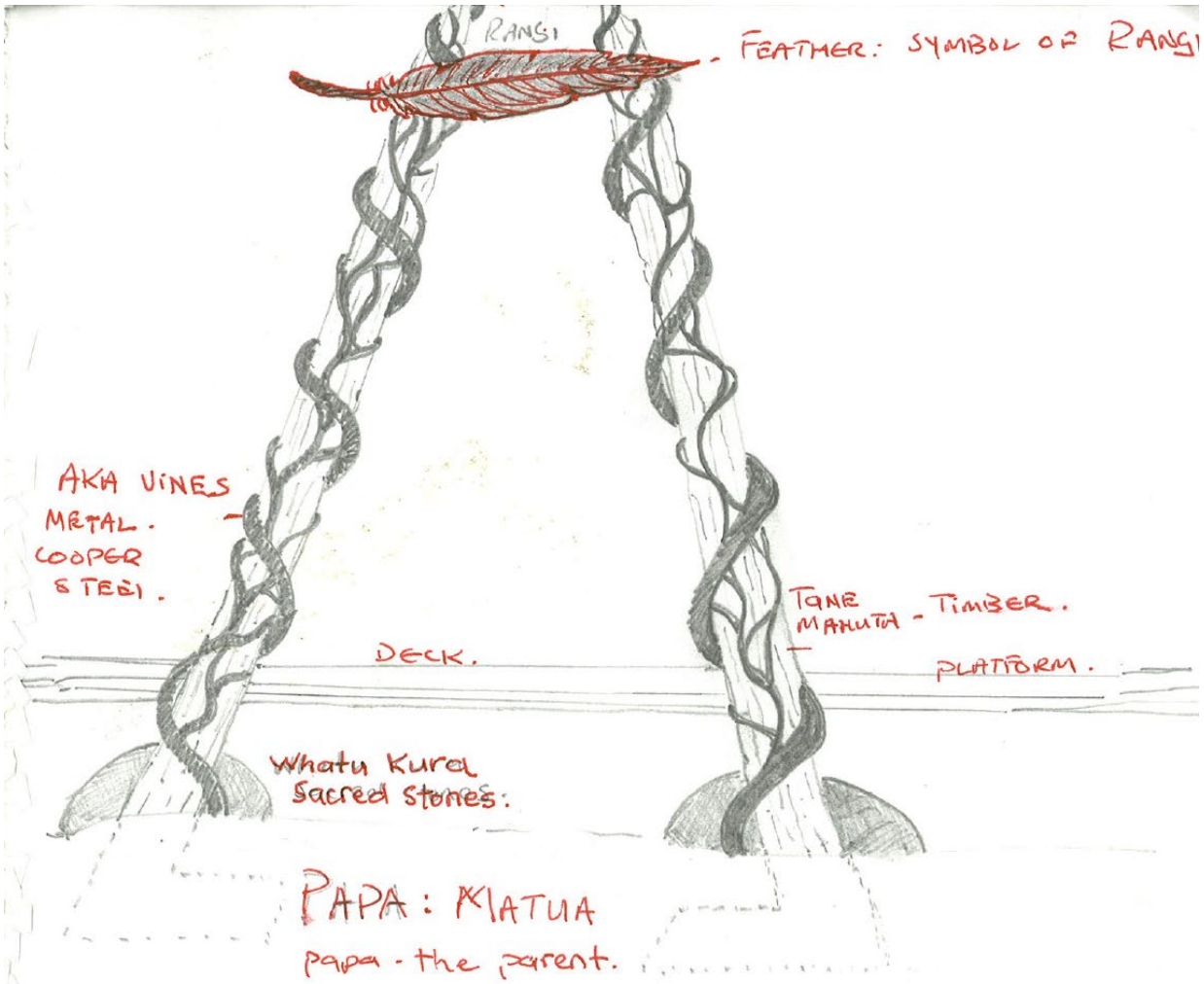
  - No unauthorised excavation work is to take place in the gully

  - Teachers at the school, internal ground staff or outside contractors need to be made aware of the hazard and what are the management requirements for work in the area.

  - Review the management of the gully and teaching spaces on an annual basis. This must include and inspection of the stability of terraces, paths and walls in the gully.

    Any deterioration noted in the period between reviews must be dwelt with immediately.

APPENDIX 3 ARTISTS NOTES ON WAHAROA



MATERIALS: TIMBER: WHARF PILES. NATIVE LOSS:
TOTARA FROM CENTRAL NORTH ISLAND.
5-6 metres tall.
TWO LARGE BOULDERS. LOCAL:
MAKARA?
METAL: STEEL. COPPER. TIN.
PAINT. STAIN.
CONCRETE. STEEL MESH.

30.6.2002.

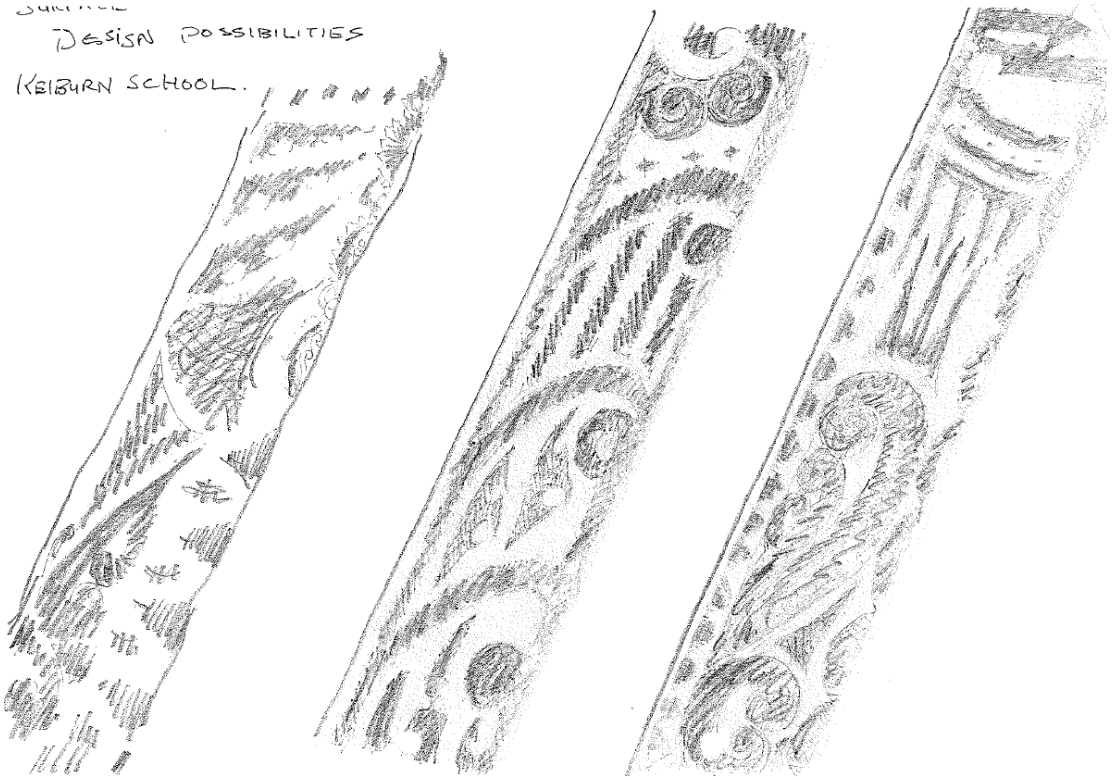
KELBURN SCHOOL WAHAROA: 9763564

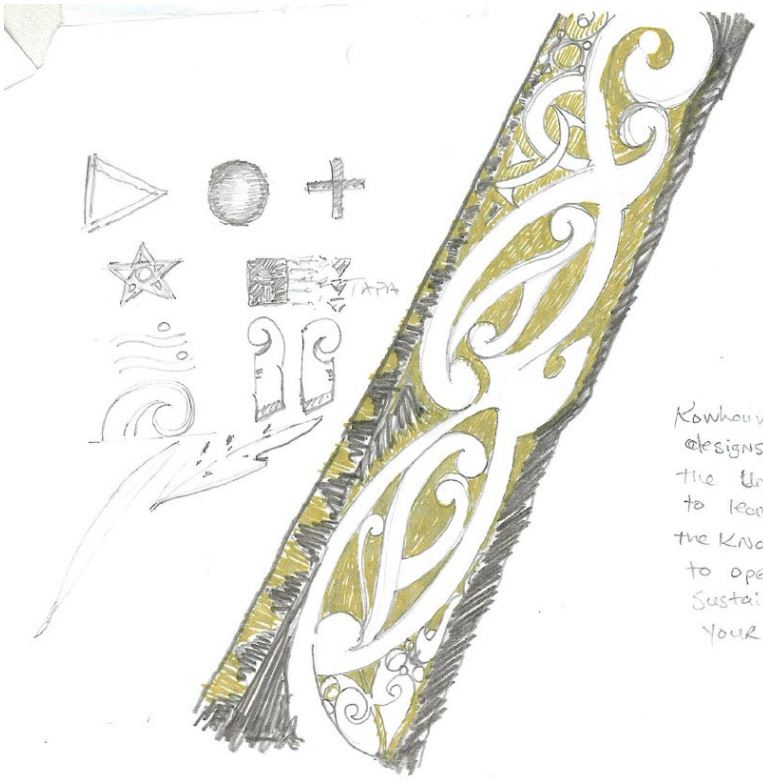
Rob Ansell - 9708824
Jeanette Thompson. 9728647
4944122
Rei Ahipene Mercer
MORRIE LOVE..

ASPECTS of GATEWAY. Waharoa two-fold.
Symbol of passing into special space; of respecting that space.
EDUCATIONAL: What the waharoa represents in terms of above and a symbol of the creation story of the Maori.
Rangi - sky. father:
Papa-tuanuku - Earth mother.
were named after their separation. By allowing light into the world of their children and giving them space to move about, Rangi & Papa are the creators of our world. STORY: DETAILS - EXPOUND.
AKA VINE: important plant/vine in Maori physical & metaphysical worlds. For building traps, weir, nets, mats, stockade binding & houses. Also mentioned in some tribal-iwi-stories as the vine Tane Mahuta climbed after receiving the 3 kete-baskets of Knowledge (containing) - wisdom (wānanga) - their contents peace & Love, ritual chants - karakia & practical knowledge. These VINE connected Rangi & Papa is a physical & symbolic way + Separate yet connected.

DESIGN POSSIBILITIES

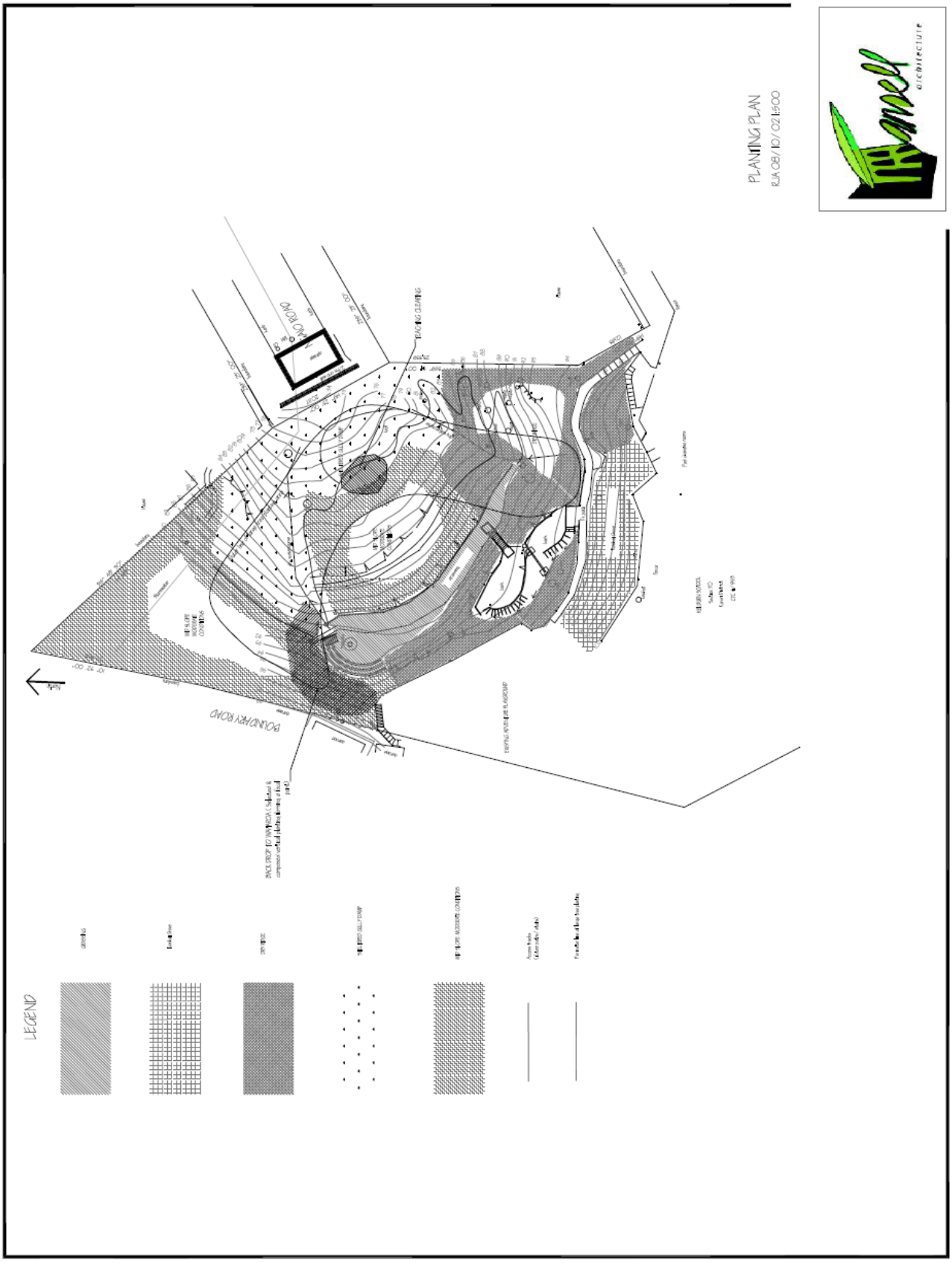
KEIBURN SCHOOL.



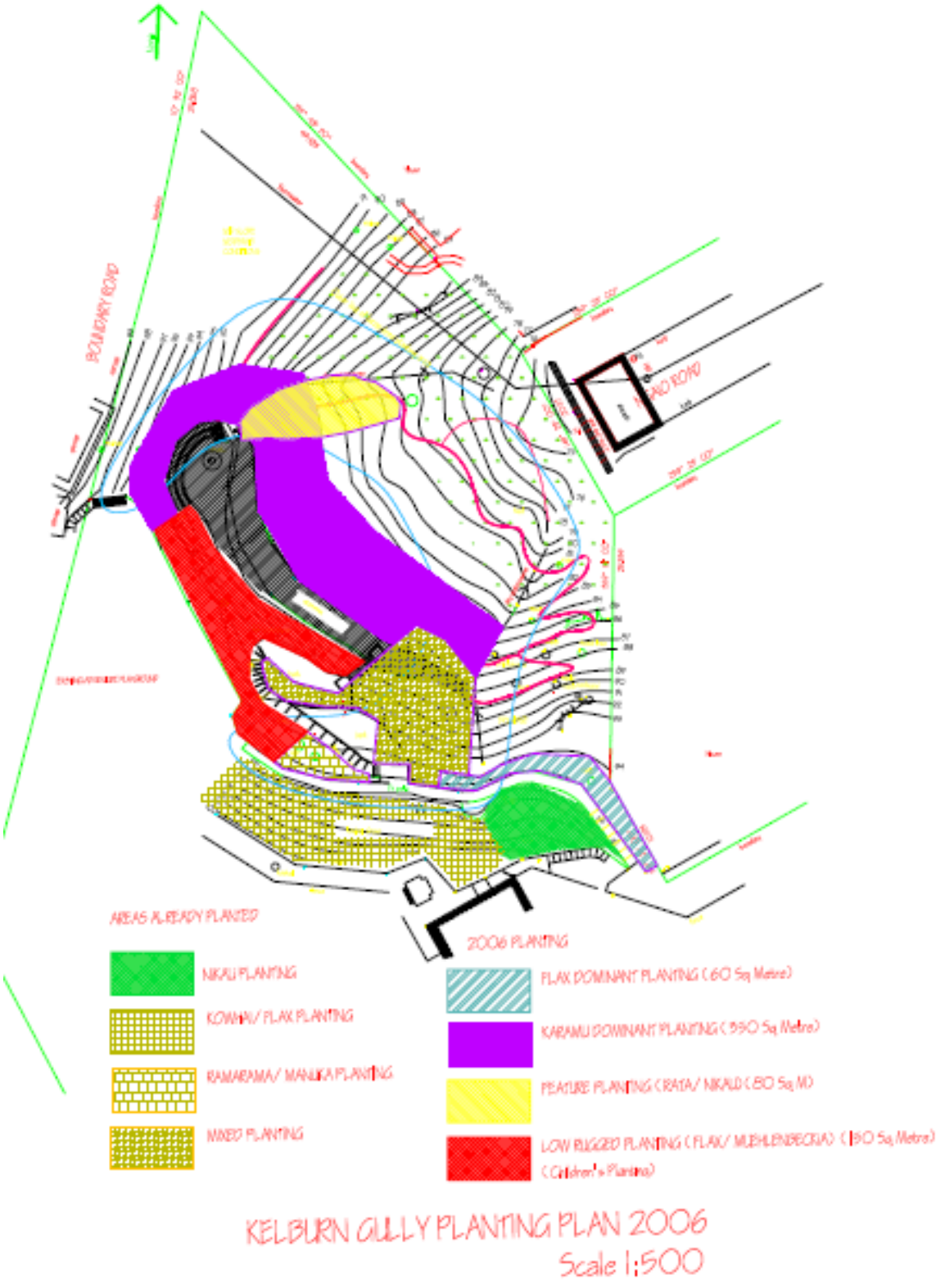


Kowhaiwhai style designs depicting the Universal desire to learn & acquire the knowledge / wisdom to operate the planet sustainably - 'Respect your Mother'.

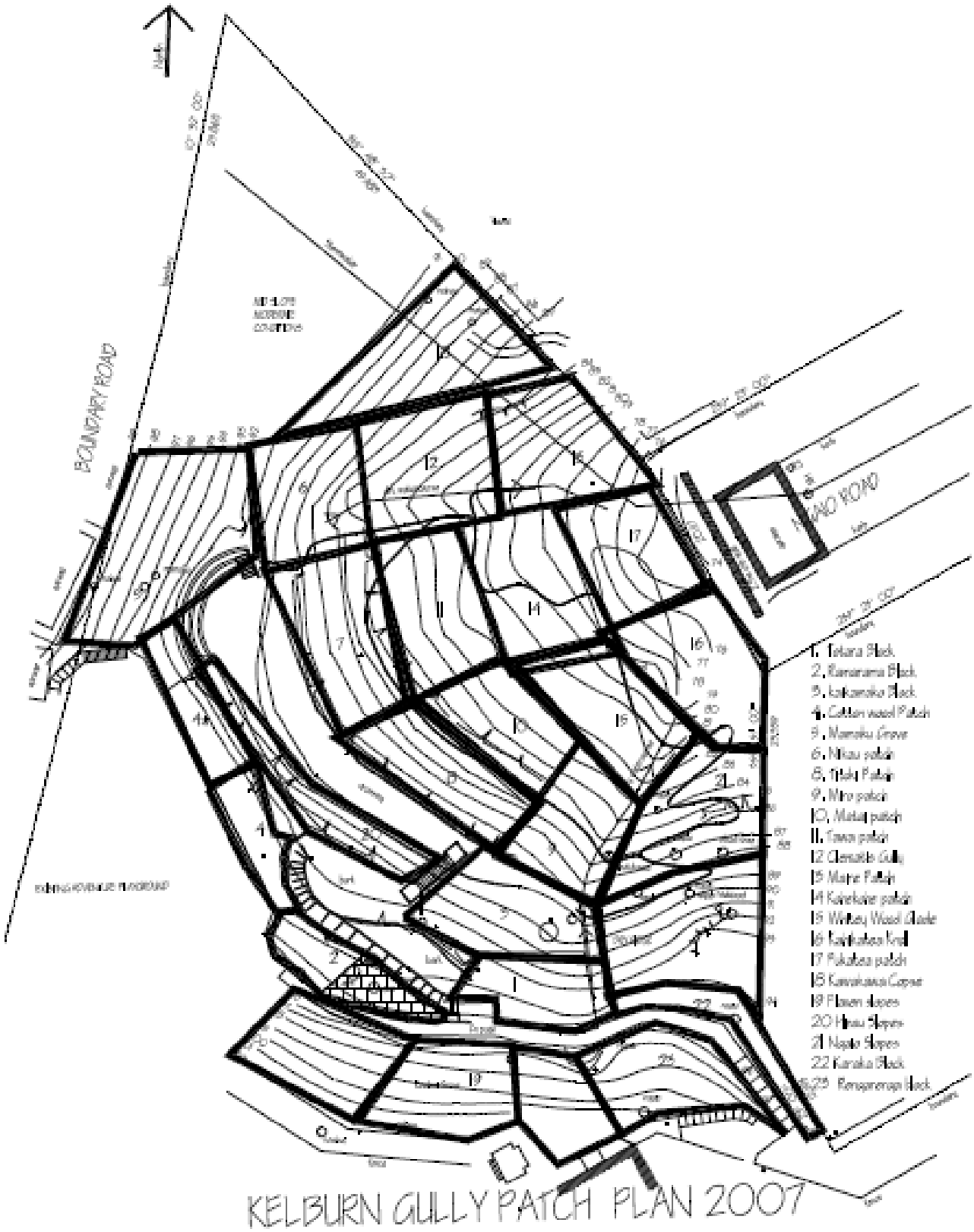
PLANTING PLAN 2002



PLANTING PLAN 2006



PATCH PLAN 2007



KELBURN GULLY PATCH PLAN 2007