

MAUNGAWHAU

A Short History of Volunteer Action

Friends of Maungawhau

I ♥ MY
MOUNTAIN
MT EDEN
MAUNGAWHAU



Mā whero mā pango ka oti te mahi.



By working together we can accomplish the task.

Dedicated to Dr Susan Bulmer

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Every effort has been made to ensure the accuracy of the information in this publication, but we cannot guarantee that it is complete and up to date. Over the years innumerable people have participated in Friends of Maungawhau. We have tried to acknowledge those involved in our volunteer activities on the mountain and beyond, but inevitably we will not have been as comprehensive as we intended. For this we apologise in advance.

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Preface

Named after the New Zealand cork tree (*Entelea arborescens*), notable for its lightweight wood which Māori used as fishing floats, Maungawhau, the mountain of the whau tree, is a very special place. For archaeologists it is an outstanding site of international significance with its kūmara pits, scarps and terraces; for geologists it is an important feature of Auckland's volcanic field; for botanists it was the place of the rare "lava-flow forest", of which only a remnant remains; for visitors to Auckland it is an outlook from which to view the panorama of the city and its surrounds; for the residents of Auckland it is a place to visit – to walk, bike and run. Finally, for a rejuvenated, thriving Māori culture, it is a spiritual focal point whose crater, "Te Ipu a Mataaho" (the bowl of Mataaho), reveres the mythical figure of volcanic activity in Auckland.

In a sense, Maungawhau is Auckland's birthplace, for from its summit the Ngāti Whātua chief Apihai Te Kawau defined and offered to Governor Hobson the triangular block of land on which he established his capital. It was Hobson who named both the city (Auckland) and the Maunga (Mt Eden). Later, this same summit would be the starting point of the survey of all New Zealand.

In the later 19th century, Maungawhau was used by Auckland's new residents as common land for stock grazing and quarried for stone to build the growing town, which resulted in the degradation of the land and its plants. But as the years passed, people came to see the Maunga as a special place to be cherished, restored and protected. Eventually a citizens' group was formed and incorporated as the Friends of Maungawhau (FoM) in 2002.

The FoM are a small, independent group of conservation volunteers – mainly local residents – brought together by a common concern over the neglected state of Maungawhau/Mt Eden. We engage in revegetation and weed control on the western and southern slopes of the mountain, working over many years to restore a severely damaged and unstable scoria slope in Batger Quarry to a sustainable ecological habitat, and are persistent advocates for better care and management of the entire Mt Eden reserve and other Auckland cones.

The stated mission of the Friends of Maungawhau is to "preserve, conserve, protect and enhance" the Maunga's cultural and natural landscape and to "defend it against harm, misuse, unsustainable use and destruction". Our long-term vision is to bring the Maunga back into a state of natural balance based on a thriving native flora and fauna, without endangering its archaeological and geological heritage, while maintaining public access in a benign and sustainable manner. To these ends, for over a decade, the FoM have made submissions to governing authorities, and initiated public awareness campaigns and events.

Over the Maunga as a whole, much of what FoM have advocated for under successive local governments and management policies has come to pass: cessation of grazing, restriction of heavy vehicles to the lower slopes, and some management improvements. We have consistently supported iwi in their quest for a primary role in decision-making and continue to lobby for a

properly resourced professional ranger service. This publication is an account of and reflection on the history of the FoM, and a record of what we have done, intended to enhance understanding and stimulate interest in the Maunga and its future.

This is a particularly apt year to tell our story, as in 2014 one era of the Maunga's history will end and another begin with the passing of national legislation, as part of a 2012 Treaty settlement, that will see Māori regain their rights as the Maunga's owners and guardians, and the Tāmaki Collective enter into partnership with the Auckland Council to manage Maungawhau and 13 other of Auckland's volcanic cones. These events will be a prelude to a proposed joint natural/cultural application to UNESCO to recognise Auckland's volcanic field as a World Heritage site. As an independent voice from the co-management relationship between Council and iwi, FoM will continue to take an active and forward-looking part in the preservation and protection of the volcanic cones of Tāmaki Makaurau.

Cast of Characters

Friends of Maungawhau Committee 2014

Chair:	Kit Howden
Honorary archaeologist:	Dr Susan Bulmer
Secretary:	April Glenday
Treasurer:	Keith Ayton
Volunteer coordinator:	Jean Barton
Office-holders:	Sel Arbuckle, Ian Fish, Oliver Hoffmann, Margie Luby, Robyn Kannemeyer, Bernhard Spörli and Lyall Te Ohu.

Sel Arbuckle

Long-term FoM volunteer who works on Maungawhau and in Withiel Thomas Reserve, a rare piece of lava-flow forest east of the Maunga.

Jean Barton

FoM volunteer coordinator and weeding enthusiast. Author of the entertaining “Tuesday reports” which are circulated to all active volunteers and keep everyone in touch about what’s happening on the Maunga. The reports form a continuous record going back to April 2009. See Chapter 3: for some examples.

Ngārimu Blair

A descendant of Apihai Te Kawau and Hua Kaiwaka, Ngārimu is a founding member of FoM and key spokesperson on Maungawhau matters.

Sue Bulmer

FoM honorary archaeologist and founding member of FoM. A former regional archaeologist for the Historic Places Trust (now Heritage New Zealand), Sue has been an outspoken advocate throughout her career for the protection of Auckland’s volcanic cones and Māori cultural heritage. In 1978 she produced the first detailed archaeological map of Maungawhau from work done by graduate students at the University of Auckland (see page 6). In 1981, during the Council repaving of the summit car park and drain digging at two locations, she carried out the only archaeological excavations that have taken place on the mountain, finding storage pits, oven pits, fireplaces and postholes, none of which was evident on the ground surface.

Wendy Davies

Landscape architect, former Eden-Albert Community Board member, and founding member of FoM who wrote many submissions on management of the Maunga.

Bob Demler

A town planner and active early advocate for Maungawhau and the Mt Eden area.

Jo Fillery

An independent and highly knowledgeable volunteer who has dedicated thousands of hours over the past decade to transforming the southern end of Batger Quarry.

Ian Fish

Long-term FoM volunteer and maker of wish trees. Co-organiser of Love Your Mountain Day since it began.

Russell Foster

Archaeologist and founding FoM member. In 2005, Russell worked with Harrison Grierson Consultants on a detailed contour plan of the archaeological features of Maungawhau. He was editor and co-author of the 2005 *Maungawhau Conservation Plan (Draft)* and the 2009 *Maungawhau: Friends of Maungawhau Planting Programme*.



Jo Fillery (right) and Sue Akeroyd (left) at the Batger Road entrance, November 2004.

Glenda Fryer

Former councillor and currently deputy chair of the Albert-Eden Local Board. Member of the Maungawhau Advisory Group 2000–2010.

Bruce Hayward

Geologist and co-author of *Volcanoes of Auckland*, Bruce has led many guided tours of Auckland's maunga and assists FoM on Love Your Mountain Day.

Kit Howden

FoM chair. Kit has spent the last 15 years working as a volunteer after 30 years in both ranger and management roles in government-administered parks. He has qualifications in protected-area park management, and a long-term commitment to the “volunteer society” and to caring for Maungawhau.

Rob Jones

A conservationist who is bringing native butterflies back to Auckland. A former FoM committee member, Rob is currently on the Eden Garden executive board and chairs Forest & Bird's Central Auckland branch.

Andrea Julian

Ecologist and a former senior planner for Auckland City Council (Heritage division). Author of a 1992 PhD thesis on Rangitoto's vegetation, and the ecological appendix to the 2005–2006 *Maungawhau Conservation Plans*.

Don McRae

An architect and chair of the Mt Eden Planning Group, who over many decades has been an advocate for improved planning and development in Mt Eden and Auckland City.

Elaine Marshall

A botanist and gardener who put much effort into the Maungawhau nursery and southern end of MU 9.

Malcolm Paterson

FoM supporter and adviser, and author of *Ngāti Whātua o Ōrākei Co-management of Heritage Places* (Unpublished MSc thesis).

Bernhard Spörli

Geologist and FoM volunteer with a keen interest in Maungawhau's ecology.

Pita Turei

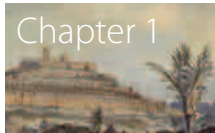
Historian, guide and storyteller. Founding member of FoM.

Volcanic Cones Society

Founded in 1998 and focused on the landscape value of Auckland's volcanic cones. Chair John Street and advocate Greg Smith have taken court action on many occasions against threats of development and loss of viewshafts.



Clockwise from top left: Kit Howden, Bernhard Spörli, April Glenday, Jean Barton, Hanni Spörli and Dorothy Henderson. 23 June 2010.



History and Context

Introduction

The Friends of Maungawhau (FoM) has been in existence since the 1980s as an informal grouping of local residents concerned about the degraded state of the mountain. It began as a sub-committee of the Mt Eden Planning Group, which has been active since the 1970s, and was called together to discuss submissions to Auckland City Council on the management and presentation of Maungawhau.

The first management plan for the Maunga was developed in 1986 at the instigation of Mt Eden Borough Councillor Jim Dart and architect Don McCrae of the Mt Eden Planning Group. Described by Cr. Glenda Fryer some 24 years later as “state-of-the-art” (Fryer 2010), the plan was intended as a template for managing the Auckland volcanic cones. It was prepared by landscape architect Harry Turbott with the assistance of archaeologist Dr Susan Bulmer. Key policies were the removal of buses and cattle and the employment of a full-time park ranger.

It was under Sue Bulmer’s leadership that FoM was formed. Sue built close relationships with tangata whenua including Ngāti Whātua heritage adviser Ngārimu Blair and historian Pita Turei, and involved like-minded individuals such as Don McCrae and Bob Demler. Active members included Kit Howden, Garry Law, Graeme Easte and Wendy Davies. The society was incorporated in January 2002.

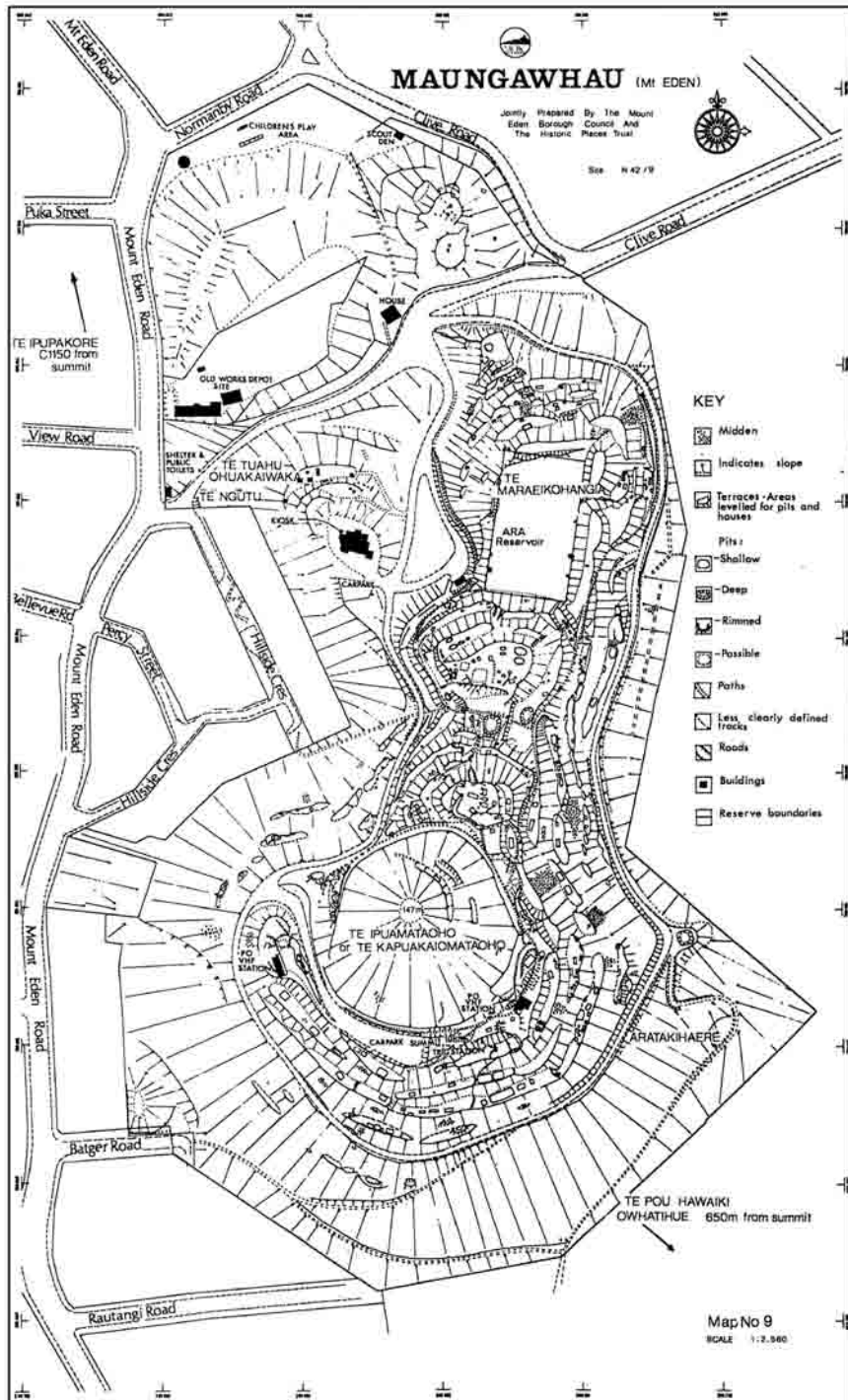
Also involved in the early days were local residents Neil Smith and Carin Wilson who supported conservation policies and campaigned against the construction of the NZ Forest Products building, now Honeywell House, at the foot of the summit road (FoM newsletter 10: 85).

FoM’s objectives, as stated in our constitution, are to preserve and protect the natural and cultural character of Maungawhau and to defend it against harm and unsustainable use. While our aims coincide to some extent with the Heritage New Zealand Pouhere Taonga Act 2014 (which replaced the Historic Places Act 1993), whose purpose is to preserve historical and cultural heritage, we focus on practical volunteer action to care for the natural environment and on advocacy for coordinated management.

This chapter outlines the historical background out of which FoM arose, and describes the concerns that unite us.

Māori history

In pre-European times, Maungawhau was the site of a large terraced pā, one of the three largest in Tāmaki Makaurau. The magnificent earthworks – terraces, food storage pits and middens – are visible evidence of a complex and highly organised human settlement. Sub-surface archaeological remains may still lie within even the most disturbed parts of the Maunga.



Archaeological map jointly prepared by the Mt Eden Borough Council and Historic Places Trust (now Heritage New Zealand) from work undertaken by graduate students. The Māori names identify places of high cultural value and interest.



Overlay map showing known archaeological features including former quarry sites. Illustration courtesy of Matthew Campbell, CFG Heritage, 2014.

The marae was located on a knoll that was later destroyed by the construction of the first water reservoir in 1887. Areas of special significance to Māori are the tīhi (summit), Te Ipu a Mataaho (crater), and Te Tūāhu o Hua Kaiwaka (a ceremonial area near the summit road entrance), which was named after the first Waiohua chief who lived at Maungawhau.

From the scant archaeological evidence, Maungawhau may have been occupied in the 16th century. Māori oral tradition goes back much further, to the fair-skinned nocturnal Patupaiarehe and to the legends of Mataaho, the deity associated with volcanoes. Among the early tribes of Tāmaki Makaurau were the Ngā Oho and Ngā Iwi. The summit road is named after Puhi Huia, daughter of a chief of the Ngā Iwi people. They and many other tribes and sub-tribes were united in the 17th century under the leadership of paramount chief Hua Kaiwaka, “eater of canoes”. Maungawhau was the site of his pā. Kiwi Tāmaki, who held mana over the central isthmus in the 18th century, was Te Hua Kaiwaka’s grandson and was born at Maungawhau.

Although Tāmaki Makaurau was peaceful and prosperous during much of its habitation, by the end of the 18th century it had been depopulated by inter-tribal warfare. When explorer Dumont d’Urville visited the isthmus in 1827, the cones were covered in bracken and tea-tree scrub.



Unknown artist’s reconstruction of Maungawhau Pa, Mt Eden, ca. 1700, published in *NZ Observer* Xmas annual 1927. *Auckland War Memorial Museum – Tāmaki Paenga Hira*. PD- Print O14(3).

In 1840, Apihai Te Kawau, paramount chief of Ngāti Whātua, defined from the summit of Maungawhau a 3000-acre block of land, which he gifted to the colonial government to establish the city of *Auckland and to form an alliance with the Crown*. The red lines at the base of the surveyor's stone on the summit mark the apex of that triangle, stretching northwest to Cox's Creek and northeast to Parnell.

The ancestral ties, spiritual associations and present-day customary uses of the volcanic cones by Māori, and of the right of tangata whenua to manage their ancestral land, have only recently been formally recognised. In 2012 the Crown concluded a Treaty settlement returning 14 cones to Māori ownership. The legislation giving effect to the settlement, the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act, passed into law in July 2014. It is unclear as yet how management powers will be shared in the future and whether long-standing volunteer groups such as FoM will have any formal input. For the Friends of Maungawhau, protecting a heritage site was the primary reason for our formation; today we continue to educate ourselves and others about the Māori history and international heritage significance of the volcanic cones.

The colonial era: grazing

From the 1840s onwards, Maungawhau was used by settlers as common grazing land for cattle, horses, goats, pigs and geese. Pasture was established, and in 1910 fencing was erected. Grazing ceased in 1930, following sporadic grass fires during the long dry summers, but was resumed in the 1940s as a means of vegetation control. Grass was resown, and fences, loading pens and water troughs were installed.

Sheep were generally preferred until the 1970s, when they were replaced by beef cattle because of dog attacks. From the 1960s, Maungawhau was grazed by Bob Linton who leased grazing land on the volcanic cones through a tendering system. Peter Linton took over the grazing leases from his father in 1995.

The Lintons followed an “open access / set stocking” regime. The female Hereford-Friesian crossbred (white face) calves were free to roam over most of the cone, seeking warmth, shade and shelter from the wind. They were grazed for one year, and were removed at 18 months of age and 300 kg live weight.

However, there was concern about the impact of cattle on the mountain, especially damage to archaeological features, from their earliest introduction. Problems of trampling and compression, soil erosion, pugging and micro-terracing (see Glossary) by stock were made worse by the Council's lack of oversight and inappropriate weed control, including spraying of erosion-prone slopes without later follow-up. In 1973 the cattle were removed for nine months by court order because of overgrazing.

When grazing resumed in 1974, several changes were introduced, including additional fencing and a switch to lighter Friesian weaners. However, management objectives were still focused on pasture maintenance rather than preserving an important cultural landscape. Ngāti Whātua, archaeologists, members of FoM and the Mt Eden Planning Group continued to



Looking north east across Mount Eden crater towards Ponsonby showing cows grazing along the crater's edge. Photographer: William Beattie, Auckland. Sir George Grey Special Collections, Auckland Libraries, 7-A15802.

campaign throughout the 1980s and 1990s for a cessation of grazing or a new approach to controlled grazing using sheep.

“Winter spelling” (de-stocking from May to August) was introduced in 2001 to reduce damage. More internal fences were built in 2003–2004 to allow flexible rotation of cattle between areas.

Finally, in 2005, after direct lobbying by Kit Howden and Ngārimu Blair, cattle were fenced off from the lower southern slope. The 2005 *Draft Maungawhau Conservation Plan* (hereafter “2005 *Conservation Plan*”) and the 2007 *Maungawhau-Mt Eden Management Plan* (hereafter “2007 *Management Plan*”) called for grazing to be phased out. The *Conservation Plan* (2005: 60) noted: “Unrestricted access of stock to most parts of the mountain is leading to a sense of injury amongst tangata whenua as it appears that emphasis is placed on pasture management and providing for the stock to the detriment of the cultural values of the Maunga.”

Yet, despite continued opposition by Ngāti Whātua and FoM, grazing was continued until May 2009 as a cheap option for “keeping everybody’s front lawn tidy”, in the words of Ross Duder, employed as a consultant agronomist at the time. Helen Lindsay, in her *Interim Vegetation Plan* (2004: 15), had cautioned: “It would not be wise to jeopardize this grazing concession in this interim stage, until a long-term solution has been found to the management of the pasture, as it is unlikely that a grazier of similar empathy and experience will be found in the future.” When

grazing was finally discontinued, it was without any clear direction about how to control rank grass growth and the associated fire risk and weed incursion.

Grazing and fertilisation have damaged Maungawhau and changed its ecology in ways we have yet to fully understand. Kikuyu grass, “planted to try to cover the scars of mismanagement” (Esler 2004: 150) has taken hold on disturbed soil, crowding out the native pātītī (*Microlaena stipoides*; meadow rice grass) which thrives in low-fertility soils and once covered the Maunga.



In 2006, Landcare Research and AgResearch began a four-year study on four cones including Maungawhau to identify groundcovers that could replace kikuyu and be kept in check without grazing. In fact, the study focused exclusively on pātītī, planted into glyphosate-sprayed sites. The results were that “after 12 months pātītī cover was extremely low in all treatments (1–4%)” (Landcare Research 2011: 3).

Auckland Council undertook further grass trials at a cost that has never been fully revealed. FoM were critical of the continued waste of money, the necessity for ongoing herbicide treatment regardless of Māori resistance to its use, and the mono-species approach to the detriment of biodiversity. The 2009 *Maungawhau Mt Eden Vegetation Management Plan* (Sec. 5.2) remarked that “the work required to achieve eradication of the dominant pasture sward will be over the long term, in excess of 15 years”.



FoM pātītī (*Microlaena stipoides*) trial 2005. The planted pātītī in the centre of the photo is being overtaken by exotic grasses and weeds. None of the pātītī is evident today.

that “the work required to achieve eradication of the dominant pasture sward will be over the long term, in excess of 15 years”.

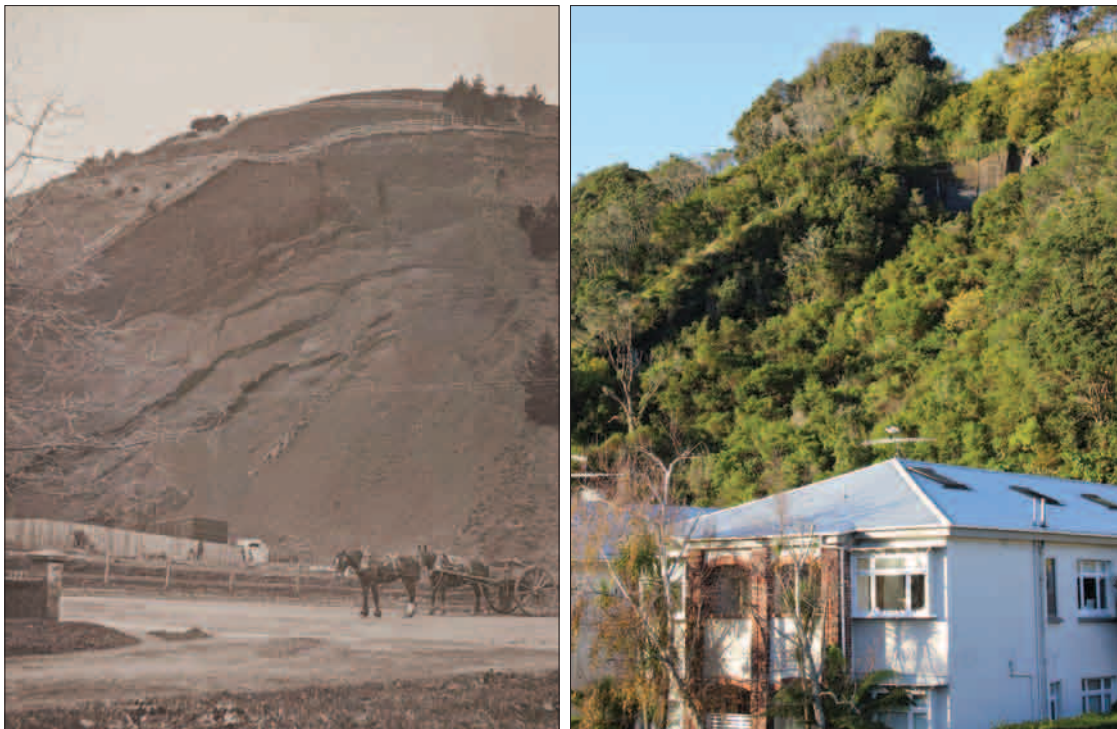
FoM believe that the timeframe is idealistic and does not take into account the wider financial, ecological, archaeological and recreational considerations. Our experience of propagating and planting pātītī in Batger Quarry prior to 2006 demonstrated that in an established environment of kikuyu, pātītī will always require intensive and costly weed control of some sort. The difficulties are compounded by other invasive plants such as veldt grass (*Ehrharta erecta*), which is present on the Maunga and is ecologically very competitive with pātītī.

Quarrying and erosion

Quarrying of scoria and rock for roads, kerbstones and buildings started early in the settlement of Auckland. To the early settlers, the pre-crushed road metal lying ready to hand must have seemed a godsend. Entire cones were obliterated and none of the abandoned quarries was left in a stable state.

A 63-acre public recreation reserve on Maungawhau was formally gazetted in 1876. Until a Domain Board was put in place in 1879, the reserve was administered by the Mt Eden Highway Board, and the Domain Board itself was funded largely by the sale of scoria (2007 *Management Plan*: 68). Breaking rocks was considered to be the kind of hard labour suitable for wrongdoers; Mt Eden Prison was built out of basalt bluestone hewn from the Maungawhau lava flows by the prisoners themselves.

At least five pits operated on the flanks of Maungawhau. Vertical faces are seen today at Rautangi Road, Hillside Crescent, Tahaki Reserve and Glenfell Place including Government House and Eden Garden. There are fences marking boundaries, left hanging in mid-air by erosion, all around the mountain.



Batger Quarry in 1899 and 2014.

Boscawen, J.H. (1899). Showing how Mt Eden was being destroyed.
Auckland War Memorial Museum – Tāmaki Paenga Hira. PH-ALB-260-p32n2.

The block of land from Stokes Road to Batger Road on the western side was subdivided by accountant and businessman John Batger in the 1880s. The Batger Road pit ceased operation in 1886, following the discovery that the quarry owner had taken out all the scoria he could get, up to the Crown land boundary, and had then kept going. The Crown filed a lawsuit, which was withdrawn after the quarry site was conveyed to the Crown for the sum of five shillings.

The uppermost part of the quarry face was then vertical. A concrete facing wall was erected to hold it up. The wall required strengthening in 1955 (2007 *Management Plan*: 13, 14). Fences had to be erected to stop scoria rocks rolling down onto private properties in Mt Eden Road. The present surface is an unconsolidated debris slope formed by slope processes since quarrying ceased.

Quarry owners were required by the Reserves and Other Lands Disposal and Public Bodies Empowering Act 1915 to leave scarps at no more than 40 degrees, and to carry out remediation planting. This Act seems to have been a dead letter from the start. Quarrying did not finally cease at Maungawhau until 1928. The last pit was in Omana Road (now Eden Garden). Work stopped when the reserve boundary was reached.

Friends of Maungawhau have serious concerns about the stability of the Batger Quarry site. A geotechnical report in 2003 recommended ongoing monitoring of the ring road, but no monitoring was carried out. In 2008 a large surface slip near the top of the quarry required engineering works. Another in 2010 followed the disintegration of a large rotting pine stump. After years of expressing concerns to Council officers without result, Kit Howden in 2010 enlisted the support of Cr. Sandra Coney, chair of Auckland Council's Parks, Recreation and Heritage Forum. A geotechnical survey was commissioned from Tonkin & Taylor Ltd (2011), resulting in tilt meters being installed in the concrete facing wall. The scree slope, especially at the northern end, continues to move. The shotcrete (sprayed concrete) that was used to hold the sides of the quarry is crumbling. It is possible that pōhutukawa is the only tree capable of permanently stabilising the slope.

Many of the geotechnically unstable slopes referred to in the 2007 *Management Plan* are the result of quarrying and residential development outside the reserve boundaries – problems that the Council has been reluctant to address. At the end of Glenfell Place, a dense cover of vegetation has halted soil movement above an erosion scarp which resulted from quarrying and non-compliance with the 1915 Act. This type of remediation provides a template for similar areas elsewhere on the mountain, including – as a matter of urgency – Rautangi Road.

Batger Quarry: an experiment in ecological rehabilitation

After quarrying ceased, Batger Quarry was planted with radiata pine in the fashion of the times. The trees were felled in the early 1950s and pōhutukawa were planted at an unknown date. By the 1980s the Batger Quarry site was in a severely neglected state – weed-infested, rubbish-strewn, and criss-crossed by a variety of rough, unauthorised tracks. Parts of the quarry had been used by the Mt Eden Borough Council as a dump site for clean fill. In the 1980s there had been occasional public planting days in the quarry area and around the fernery below the

nursery, but with no long-term planning most of the plantings were overtaken by honeysuckle, climbing dock and other rampant weeds.

In the late 1990s and early 2000s a few keen people working largely independently began to take practical steps to show what could be done with sustained effort. Among them were Kit Howden, Jo Fillery, Sel Arbuckle, Elaine Marshall, Jules Flight and Ian Fish. Their focus was on removing weeds in the Batger Quarry.

The quarry site in the early days was festooned with blue morning glory and honeysuckle. Weed eradication meant hard work, digging out roots and cutting out privet. These original volunteers developed by trial and error most of the techniques FoM still use today: pruning to create light wells; laying cut branches horizontally across the slope to impede downward movement of loose scoria; mulching and disposing of weeds sustainably on-site; and always taking care to damage the fragile slopes as little as possible.

Volunteers experimented with species and recorded successful canopy and understorey plants. From 2002 to 2006, Kit Howden supervised public planting days and volunteer weeding sessions on the first Sunday of every month.

More people started joining the volunteer group in 2007–2008, as a result of FoM’s annual “Love Your Mountain Day”, and through greater public awareness of what was going on at Batger Quarry. Instead of monthly Sundays, work on Tuesday mornings became the regular pattern.

The 1986 *Management Plan for Maungawhau* (hereafter “1986 *Management Plan*”) had envisaged a track across the base of the quarry. Starting in 1998, FoM volunteers Kit Howden and Ines Hassall formed a rough track along the route, to access work areas and to provide a link in the track network for walkers. The Council was initially critical of the track development, but in 2010 the Eden-Albert Community Board gave the track official recognition by funding upgrading work. Although money ran out before the track was fully edged and surfaced, it is now accepted as part of a mid-level round-the-mountain walk. FoM volunteers maintain the track and wish to



Community planting in 1988 compared with a photo of the same location in September 2010.



Planting after the track upgrade in May 2010.

see it completed – to provide for local users, to enhance the perceived value of the restoration area and thereby to deter bush-crashing, creation of desire lines (unformed shortcuts) and damage by off-leash dogs.

In 2002, Elaine Marshall put forward a proposal to set up a community nursery and produce plants for the Maunga in the old Auckland City Council nursery site on Maungawhau, then being used as a contractors' depot. The aim was to grow species not available commercially, such as pātīti, toatoa (*Haloragus erecta*) and *Carex dissita*, to revegetate the quarry and to establish on archaeologically sensitive areas. Approval was granted in 2003 and the Eden-Albert Community Board provided \$10,000 to cover building repairs and some equipment costs. Elaine developed a propagation programme and a site preparation plan. In 2003–2004 the Maungawhau nursery and the Cornwall Park nursery together produced several thousand seedlings, which were planted in the quarry and on the summit. Having devoted an enormous amount of unpaid time and effort to the nursery over a two-year period, Elaine withdrew and work ceased. In 2013, FoM volunteers began exploring the possibility of growing plants in the nursery specifically for the areas where we operate.

Volunteer efforts since 2008 have extended to hosting group visits, speaking to schools and community groups, weed identification days (“Meet the Local Nasties”), displays at local festivals, participation in the annual Auckland Heritage Festival, and weeding forays as far afield as Grey Lynn and Mt Albert.

The first leaflet about FoM's work was produced in 2002 by Vanessa Clark and Susan Bulmer. An updated version was produced in 2010, revised and translated into Chinese in 2011. Long-time member Ian Fish developed and registered our website in 2006. He continues to maintain the website and has developed walking track maps, a news archive, blog site and QR codes. FoM joined Facebook in 2011.

The reserve classification

Passive recreation has been a protected purpose of the Mt Eden Domain since it was first created. The mountain became a popular place for a Sunday stroll or drive, all the more so with the advent of the horseless carriage. The trees that had been planted grew large, and seats were placed beneath them. Drinking fountains were provided. In 1908 the tram tracks reached the mountain and a shelter in the Queen Anne style was constructed. When the tea kiosk was built in 1927, it became possible to take tea on the terrace. The summit road was sealed with bitumen in the 1930s, and in the 1940s annual Christmas pageants were performed in the crater with the audience seated down the slopes (Franklin 1956: 32).

“Recreation reserve” is one of seven classifications under which all reserves must be categorised under the Reserves Act, which came into force in 1977 and requires all reserves, except for some government-purpose and local-purpose reserves, to have a management plan. On 28 September 1978 the resident archaeologist at the Auckland Institute and Museum, Janet Davidson, wrote to the Mt Eden Borough Council expressing concern that “the new Reserves Act does not seem to permit a joint Historic and Recreational classification”. As a compromise solution, she proposed that the domain be divided into two different kinds of reserves: historic and recreation. This would allow “positive steps to enhance and interpret the historic features” while in no way inhibiting “continued use of the domain for passive recreation as at present”. On 19 December the Borough Engineer reported that agreement had been reached on the summit road as a convenient boundary. The Domain Board accordingly resolved that a recommendation go forward to the Minister of Conservation for a historic/recreational divide at the road.

So began the arbitrary division of a single heritage landscape. The dual classification, strenuously opposed by Sue Bulmer among others, has led to misunderstanding and confusion ever since, among Council staff and the public. Thus, under current management objectives, “archaeological, geological, Māori heritage values” take precedence over “recreational values” for the historic reserve, while in the recreation reserve the priorities are simply reversed (2007 *Management Plan*: 13, 14). In reality, the distinctions are blurred.

This ranking of values, and prioritising one set over another, has led to a presupposition of conflict where none need exist and to a lack of understanding that “the entire mountain is a historic site of very great significance and value” (Bulmer et al. 1999: 2). Moreover, because ecological values are accorded secondary status in both classifications, the possibility of restoring scoria-cone forest to parts of the lower slope has never been given proper consideration as a worthwhile and legitimate aim. In regard to archaeological features, Kit Howden in numerous submissions to Council has tried to show that informed ecological practice can aid their protection.

A profusion of plans

Management of the volcanic cones is governed by an evolving and complex set of laws, regulations and plans. The overarching statutory framework is outlined in Appendix 1. This section examines the plans (as listed below) and priorities that have determined administrative policy for Maungawhau:

- 1986 *Management Plan for Maungawhau (Mt Eden Domain)*
- 1997 *Volcanic Landscapes and Features Management Strategy*
- 2005–2006 *Maungawhau Conservation Plans*
- 2007 *Maungawhau-Mt Eden Management Plan*
- 2009 *Maungawhau Mt Eden Vegetation Management Plan*
- 2010 *Maungawhau/Mt Eden Weed Control Plan*
- 2010 *Maungawhau/Mt Eden Vegetation Management: Cultural and Archaeological Management Plan*
- 2011 *Maungawhau Revegetation Plan*

Some of these Council plans have features in common:

- A hierarchy of priorities and values arising from the dual reserve classification.
- Unsuccessful attempts to reconcile values.
- Marginalisation of ecological values.
- An imbalance in the management and operational powers assumed by Auckland Council in contrast to tangata whenua.
- A lack of clear vision, practical proposals and action plans, resulting in failure to implement stated policies.

The following subsections review the background to development of the main plans for Maungawhau and critique them from FoM's perspective.

1986 *Management Plan for Maungawhau (Mt Eden Domain)*

In 1980 the Mt Eden Borough Council advertised its intent to prepare the first management plan for Maungawhau. Prepared by Harry Turbott, one of New Zealand's first landscape architects, its objectives were to preserve and maintain the archaeological and geological features of the Maunga, to promote awareness and respect for Māori values and traditions, and to permit free recreational use of the reserve to the extent compatible with its preservation.

Kit Howden in his personal submissions of July 1980 and January 1984 recommended that tour bus operators be licensed and contribute towards the domain's upkeep and that a permanent full-time ranger be appointed. Both recommendations were included in the plan (1986 *Management Plan*: 32, 56). But more than 30 years later, we are still agitating to have them realised.

The management plan was finally granted Ministerial approval in 1986. It distinguished between a “summit zone”, where planting could be carried out only in conjunction with the New Zealand Historic Places Trust (now Heritage New Zealand), and a “lower zone”, where the aim would be “to preserve the current diversity of indigenous plant species found in the volcanic landscapes and features”, provided that plantings did not compromise the archaeological, geological and cultural values of the site.

The Borough of Mt Eden was amalgamated into Auckland City Council in 1989. Management decisions continued to be made by engineering staff, and unwitting destruction continued. In 1992 the Mt Eden Community Board proposed a “concept plan” to implement the management plan, and in 1993 it produced an “issues paper” to determine development priorities via public consultation. Neil Smith, co-ordinator of the Friends of Maungawhau, endorsed the views of the Mt Eden Planning Group that management was concerned with road surfacing, coach manoeuvring and fencing, rather than with conservation of the reserve. Sue Bulmer in 1993 urged the Mt Eden Community Board to appoint specialist staff, and to establish an advisory committee including “a Waiohau tribe member, an archaeologist, a landscape architect and an historic site management specialist” (*Central Leader*: 24 April 1993). The Council responded by resolving to consult the community and iwi on vegetation and erosion control.

1997 Volcanic Landscapes and Features Management Strategy

The *Volcanic Landscapes and Features Management Strategy*, prepared for Auckland City Council by LA4 Landscape Architects, is intended to provide guidance in the preparation of reserve management plans under the Reserves Act 1977. Although it has never been reviewed and has been criticised for its conflicting aspirations, it remains the only valid document attempting to offer an integrated management strategy for the volcanic field as a whole. It will therefore be an important reference when an integrated management plan is prepared under the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act.

Significantly, the strategy notes “native vegetation remnants” (p. 47) as one of the “assets” of Maungawhau/Mt Eden, and states under “Flora and Fauna” that a management policy should be “to preserve the current diversity of indigenous plant species found in the volcanic landscapes and features, in particular the regionally uncommon species, and to reintroduce other indigenous species once found in these areas” (p. 69).

A policy was to restrict planting on upper slopes and “to encourage indigenous ‘Planting Buffer Zones’ on the lower slopes of the volcanic cones as a buffer to adjoining land uses, where appropriate, following consultation with the Historic Places Trust and tangata whenua” (p. 88).

1999–2004 *Further studies; little action*

Between 1999 and 2004, the Council produced a raft of studies and reports on visitor management, traffic management, track repairs, fencing and remedial work on the eroded summit. In 1999 a group of archaeological heritage managers submitted a report to the Eden-Albert Community Board, and to the Council's Parks and Open Space Committee, offering practical advice to better protect the Maunga and enhance the visitor experience. Archaeologist reports on damage to features were produced in 2000 and 2001.

In 2002, FoM drafted an *Interim Vegetation Plan* for discussion and comment, and made a detailed submission on the Council's draft annual plan 2002–2003, highlighting the need for a professional ranger and a role for volunteers. In 2003, Sue Bulmer, in her submission to the Council's annual plan 2003–2004, proposed that a community trust be formed to manage Maungawhau, and that a national reserve be established, incorporating Maungawhau and nine other volcanic cones, to promote efficient management and proper protection.

In December 2002, Ngārimu Blair, a descendant of Apihai Te Kawau and Hua Kaiwaka, took up voluntary residence in the caretaker's cottage with the support of FoM. His duties were to organise activities related to learning and practice of histories and tikanga (customs) associated



Three long-term advocates for the Maunga: Glenda Fryer, Ngārimu Blair and Sue Bulmer. *City Scene*, Auckland City Council, September 2003.

with Maungawhau, and to provide a base for the development and coordination of heritage restoration projects. His presence as kaitiaki (guardian) of the Maunga could be considered a complementary function to that of a ranger, but is not a substitute for a dedicated full-time officer who has the responsibility and authority to implement policies.

In 2004, members of FoM and the Maungawhau Advisory Group (Bob Demler, Susan Bulmer and Kit Howden) submitted a *Vision for Maungawhau* to the Council's 2005–2006 annual plan. Proposals included the provision of a visitor centre; a ban on buses; road and track upgrades; legal boundary surveys; interpretive signage; and vegetation management which takes account of fire risks and biodiversity. All of these goals were stated in the 1986 *Management Plan*; some we still pursue today.

The sadly neglected state of Maungawhau took centre stage following the election of Dick Hubbard as mayor in 2004. In his press release of 12 June 2005 he promised “an urgent plan so that over the next two years we pull out every stop imaginable to give Maungawhau a makeover – to deliver it back to the people and protect it for future generations”. But Mayor Hubbard had underestimated the procedural and bureaucratic hurdles. His three years in office produced a great deal of planning effort but less in the way of change on the ground despite the imposition of a 1% targeted rate levied on property owners to purchase more open space and to protect the volcanic cones. The fund included a grandiose \$6 million makeover for Maungawhau.

The urgency evaporated entirely with the 2007 election of Hubbard's successor, John Banks, as did the targeted rate. The massive expenditure put forward by officers turned out to be politically and economically unsupportable. Some work had been done on tracks, signs and fences, and the phasing out of grazing had begun, but the big projects – a visitor centre in Tahaki Reserve, a shuttle to replace private vehicles, and the appointment of a ranger – were never realised.

2005–2006 *Maungawhau Conservation Plans*

In 2002 the Council proposed that a conservation plan and a new management plan be developed for Maungawhau. A conservation plan is a non-statutory document, prepared under a district plan and the Heritage New Zealand Pouhere Taonga Act 2014, that collects together relevant background information from various disciplines, and sets out objectives and policies to be included in a management plan. The 2005 draft conservation plan was prepared by Russell Foster and Associates for Auckland City Council. Russell Foster is an archaeologist and founding FoM member. Contributors included Ngārimu Blair and Pita Turei (Māori history), Bruce Hayward (geology), John Adam (historic landscape), Andrea Julian (ecology) and Susan Bulmer (archaeology).



Dick Hubbard has been the only mayor to support FoM, but even he could not stop bureaucratic blunders. Pictured with Mayor Hubbard (left to right) are Sue Bulmer, Ian Fish, Jo Fillery, Ines Hassall and Sel Arbuckle. The Batger Road entrance, May 2005.

The plan focused on protecting the heritage values of the reserve, and recommended that references in the 1986 *Management Plan* (Sec. 7.5) to an “upper” and “lower” zone be deleted. It remarked that “Maungawhau is a single archaeological site that cannot usefully be subdivided in individual or groups of features” (Sec. 5).

Under the heading “Kaitiakitanga” (Sec. 8.2.1), a stated policy was to “protect and enhance native biodiversity on Maungawhau”. Dr Andrea Julian (Sec. 8.3) argued in an ecological report appended to the conservation plan that scoria-cone vegetation should be re-established on Maungawhau because it is “virtually non-existent on the mainland of the Auckland Volcanic Field”.

The 2005 *Conservation Plan* was never finalised. Following an internal review, the Council in 2006 commissioned CFG Heritage Ltd to complete the plan, replacing archaeologists Sue Bulmer and Russell Foster with Louise Furey and Matthew Campbell, who went on to implement parts of the conservation and management plans. The resulting 2006 *Conservation Plan* was meant to remain incomplete during the preparation and public notification of a new management plan to allow iwi histories other than that of Ngāti Whātua o Ōrākei to be included. In fact, neither the Ngāti Maru history submitted during the management plan review process nor any other iwi histories were ever incorporated. This may have been due to the 2007 Waitangi Tribunal enquiry into overlapping Treaty claims in Tāmaki Makaurau.

The 2006 *Conservation Plan* remains in draft form and is unavailable to the public. In its assessment of the mountain’s significance (Sec. 11), it notably excludes not only the ecological values identified by Andrea Julian but also Maungawhau’s significance to Māori. In contrast, the much longer 2005 version discusses Māori associations with the Maunga in some depth, and notes that “the entire reserve is a single site of significance to Māori” (Sec. 5.2).

2007 Maungawhau-Mt Eden Management Plan

The 2007 *Management Plan* has six principal objectives, broadly based on those stated in the conservation plan. Unfortunately, these objectives once again prioritise some values (archaeological, geological, Māori heritage) over others (ecological, European heritage, landscape and recreational), as if all interests can somehow be slotted together like a jigsaw puzzle.

The management plan was never satisfactory to Māori. It failed to acknowledge their spiritual and cultural associations with Maungawhau and their status of holding mana over the land. Rather than empowering Māori, the plan (Sec. G.1) sought “to facilitate enhanced involvement by Iwi” if the Council was so compelled by “the outcome of any Waitangi Tribunal processes”. In comparison, the 2002 management plan for Whenua Rangatira (Okahu Bay and Takaparawhau/Bastion Point) is based on a partnership and is administered by a reserve board which has equal representation by Auckland City and iwi representatives.

In our submissions on the draft plan for Maungawhau, FoM members recommended that the whole mountain be classified as a historic reserve (Bulmer 2006) and that a new open space zone specific to volcanic cones be developed (Howden 2006). Neither recommendation was accepted.

Following the hearing of public submissions, the draft plan was amended to acknowledge the contribution of volunteers and neighbours in managing Maungawhau, to clearly define the role of volunteers, and to “implement and sustain a volunteer programme” (Policy G3-2). We have yet to see these objectives realised.

We also commented on the Council’s failure to implement the 1986 *Management Plan*, attributable to fragmented administrative structures, lack of continuity and expertise among management staff, and misunderstandings among contract staff. We yet again pointed out the need for dedicated staff trained in heritage park management.

The 2007 *Management Plan* was supposed to be implemented via an action plan that would include “an integrated ecological and biodiversity approach” (Auckland City Council 2006: 29) as underlying principles. But in the following years, objectives were cherry-picked with the aim of improving infrastructure and the visitor experience rather than protecting the Maunga and empowering iwi and volunteers.

2009 Maungawhau Mt Eden Vegetation Management Plan

The 2007 *Management Plan* (Sec. B3-1) called for the development of a vegetation management plan that promotes the use of native plants and supports a biodiversity approach to sustainable management. Opus Consultants produced a draft vegetation management plan for consultation in 2007 and a final version in 2009. FoM’s views were not sought, nor were our submissions considered. We regard the 2009 plan as still in draft form and in need of amendment.

Various areas below the summit road are earmarked for scoria-cone or lava-flow forest. We endorse the plan’s vision of an archaeological site covered by grassland, within a setting of indigenous bush on parts of the lower slopes. It commends our work in Batger Quarry as “a good example of a community group achieving significant success in re-vegetating a difficult site” (p. 34), and sets our work within the wider context of ecological restoration over the Maunga as a whole.

Specific areas requiring weed control and removal of exotic trees where they impede views or pose risks are identified in the plan. Five years later, removal of tree privet, Queensland poplar, honeysuckle, agapanthus and ivy to the north and west of the tea kiosk is long overdue. In Tahaki Reserve, phoenix palms, wattle and Madeira vine have been removed by FoM volunteers.

One key recommendation in the *Vegetation Management Plan* (2009: 56) for one or more parks officers or rangers “to specifically monitor the day-to-day management of volcanic cones” has been fulfilled with the creation of a new position, Project Leader – Volcanic Cones, in September 2013. However, this position is short-term (two years) and is function-based, not site-based. It falls short of the need for a full-time ranger on Maungawhau, responsible for on-the-ground supervision, guidance, and liaison with contractors, volunteers and the public.

Another recommendation has not been actioned: removal of the dog off-leash area from the upper part of Tahaki Reserve, which has archaeological features and is a supposed skink habitat, to the top of the reservoir area. Although the continued presence of skinks is unconfirmed, FoM supports this move if consistent with the designated purposes of the reserve and endorsed by

mana whenua. Our view is that Maungawhau should not be used to compensate for the lack of open space to fulfil local recreation demand.

The *Vegetation Management Plan* was intended to be reviewed annually by a Project Working Group that includes FoM. To our knowledge, no review has ever been undertaken. However, the 2009 plan was followed by a 2010 *Maungawhau/Mt Eden Weed Control Plan* and 2011 *Maungawhau Revegetation Plan*, both prepared by Remnant Restoration without FoM input. The *Weed Control Plan*, although addressed to “weed control contractors and volunteers” (p. 1), omits mention of FoM and excludes Batger Quarry.

2009 Maungawhau: Friends of Maungawhau Planting Programme

FoM is keenly aware that authority from Heritage New Zealand is required to modify in any way any part of the mountain. To avoid the risk of inadvertent damage to archaeological features, in 2009 we commissioned Russell Foster and Associates to produce an archaeological report that establishes guidelines for our voluntary planting and weeding work on the southern slope. The report was funded by the Eden-Albert Community Board. Among its recommendations, the report said that FoM should develop a five-year planting programme and “should approach Council to use the guidelines raised in this report as a basis for operation specifications in the vegetation programmes of volcanic cones” (Foster 2009: 7). FoM asked the Council to obtain the necessary Historic Places Trust authority for planting on the southern slope, and tried to interest the Council in developing a five-year programme, but nothing came of these efforts.

In 2010, Auckland Council issued its own *Maungawhau/Mt Eden Vegetation Management: Cultural and Archaeological Management Plan* to obtain the necessary authorities (consents) under the Historic Places Act 1993 for vegetation control on an archaeological site. FoM and other volunteers are parties to this document. The Historic Places Trust granted an authority for two years, “which should suffice until the [Maunga Authority (see below: “Transition to co-governance and community engagement”)] co-management group is established” (Historic Places Trust to Auckland Council 2011). The authority expired in May 2013 and, to our knowledge, no renewal was ever sought.

Communication difficulties

One of FoM’s objectives, as stated in our rules, is to “provide advice and representation” in matters relating to management of the volcanic cones as heritage sites. Yet, on many occasions, we have been ignored or sidelined. We have not been kept well informed of Council policies and decisions, and our enquiries have often gone unanswered. The continuing lack of communication with the Council’s weed control and environmental maintenance contractors is a major frustration to FoM.

The appointment in 2002 of David Bowden to the new position of volunteer coordinator in the Council was a major step forward in providing practical support and encouragement to volunteers. Biosecurity officers have also helped us, often outside their appointed role. The communication problems arise, then, from the lack of integration within the Council structure,

disjointed lines of responsibility, and the closed-shop mentality among some officers. Lack of communication can cause all sorts of misunderstandings and risks, and has severely hampered our work on several occasions.

In May 2012, at our instigation and after long negotiation with Auckland Council, FoM signed a memorandum of understanding (MoU), which sets out the two parties' respective roles and responsibilities and requires FoM to prepare an annual work plan. But the MoU has not improved communications nor given us any clearer sense of direction. We cannot say that the agreed responsibility of Council to "inform and/or actively seek input from the Friends in matters concerned with the overall management of Maungawhau" has been fulfilled. In 2013 we sought a review of the MoU, which was declined. We now regard the MoU as having lapsed, and look forward to entering into a new agreement with the Maunga Authority in 2014.

On a more positive note, in 2012 we helped draft the Council's first *Parks Volunteer Charter* and gained Council recognition of the *Universal Declaration of Volunteering*.

We have also maintained excellent relations with Ngāti Whātua o Ōrākei, two of whom were founding members of FoM. We have supported Tāmaki Hikoi in their aspirations to provide a guiding and shuttle service on Maungawhau, and we have received much help from Ngārimu Blair and Malcolm Paterson of Toki Taiao (Ngāti Whātua o Ōrākei heritage and resource management unit).

Stakeholder hui

Lobbying by FoM and Ngāti Whātua resulted in the formation in 2000 of a Maungawhau Advisory Group (MAG) by the Eden-Albert Community Board. Its meetings, chaired for the first four years by Cr. Glenda Fryer and later by Cr. Wendy Davies, Bob Demler and Kit Howden, brought together councillors, community board members, FoM and iwi representatives. The hope was to begin implementation of the 1986 *Management Plan*.

Although progress to that end was limited, MAG succeeded in having the summit being closed to vehicles at night, and prompted an operational review in the wake of Council mishaps such as a cattle trough being placed in a storage pit, and three pine trees being cut down in succession before the correct tree was identified.

After submissions from FoM, in December 2008 a monthly forum replaced MAG, which in mid-2007 had faded out of existence due to lack of attendance by Council officers. Meetings of the Maungawhau stakeholders team were chaired by Tony Hartnett, the Council's Volcanic Cones Co-ordinator, a position created in 2005 as a result of the 2004 operational review in which Kit Howden participated.

The reconstituted group was meant to focus on operational matters and bring everyone together – contractors, Council staff, local board members, archaeologists, arborists, volunteers, user groups and iwi. The consultation process was once again limited and unsatisfactory. We were frustrated by bureaucratic planning procedures, an embedded contract-out culture, and



Our cross-street banner in Mt Eden village funded by the Albert-Eden Local Board.

lack of accountability within Council. Nothing of importance was achieved. The Maungawhau stakeholders team last met in late 2012; subsequent meetings were unilaterally cancelled by the Council representative.

Auckland Council came into being in 2010 and Maungawhau immediately became a priority, with the conservation ethos of the previous regional parks structure taking on greater prominence. Change on the ground has continued, including road repairs, removal of old pines, grass trials and improved general maintenance.

One constant through all these changes has been the Eden-Albert Community Board (now Albert-Eden Local Board) which has been generous in support of the Friends of Maungawhau as a local environmental initiative. Over the years, the Local Board has funded our activities through its Small Local Improvement Project (SLIP) budget, discretionary funding, and contestable local event funds. Board members have attended FoM meetings and events, and supported our efforts to improve communications with Council officers.

Buses on the Maunga

Roads and buses damage both the natural form of the Maunga and its sub-surface archaeological features. Vehicles and constant foot traffic undermine slope stability and lead to erosion. In 2008 a large surface slip near the top of Batger Quarry required engineering works. Buses and private vehicles detract from appreciation of the Maunga as a heritage site and compromise pedestrian safety. In 2011, uncontrolled vehicle access during the Rugby World Cup opening night and on New Year's Eve put people – and the Maunga – at serious risk. FoM received complaints and wrote to the Council.

Calls for removal of large buses from the summit go back to the 1986 *Management Plan*. The 2005 *Conservation Plan* (Sec. 7.2.1) warned:

Even if heavy vehicles were removed immediately, in the medium to long-term, say 25–75 years, the road will need to be reconstructed if unrestricted private vehicles still have access. Planning for the long-term preservation of the mountain should happen now.

Vehicle congestion on the summit, especially with tour coaches making free use of the Maunga as a viewing platform, had been a problem ever since the car park was built in the 1980s. Kit Howden remembers Paul Wilson, then Manager Parks and Streetscape at Auckland City Council, remarking in the 1990s that once the Sky Tower was built, tourist interest in Maungawhau might diminish and the traffic problem could then be revisited. The attraction to commercial tour operators of free access to Maungawhau, versus paid entry to the Sky Tower, was barely considered.



A typical day on the summit, 2004. The heavy buses have gone but congestion, theft and vandalism continue.

Procrastination and delaying tactics have been the general pattern in our dealings with decision-makers. It was not until February 2011 that the incoming Albert-Eden Local Board resolved to implement the 2007 *Management Plan* which, in typically non-committal language, provided for a reduction in the “negative impacts of heavy vehicles on the summit area” over a “multi-year timeframe” (Secs D2, D3). In December 2011, vehicles heavier than 3.5 tonnes were banned from the summit and a trial shuttle service was introduced.

FoM continues to advocate removal of all vehicles from the Maunga as a long-term goal.

Love Your Mountain Day

The concept of an annual traffic-free open day on Maungawhau was first proposed by Ngārimu Blair and Kit Howden in 2004. The aims were to celebrate the mountain’s Māori history and heritage and raise public awareness of the need to preserve Auckland’s volcanic cones – including, as a matter of urgency, getting buses off the summit road. FoM members Sel Arbuckle, Kit Howden and Ian Fish gained the support of Government House and Eden Garden, which agreed to open their adjoining gardens free of charge, giving the public open access to all areas of the Maunga.

The first Love Your Mountain Day planned for March 2006 was cancelled because the traffic management plan was altered at the last minute to allow bus access. The first actual event was held in December 2006. From 2007 to 2009, local business Eden Coffee was the major sponsor.



Sue Bulmer on Love Your Mountain Day 2007.

Their graphic design consultants created the event logo, which appears in our publicity, on volunteer T-shirts, and on the information packs given to visitors on the day.

Other Mt Eden businesses express their support, but in difficult times few retailers are able to contribute financially; FoM members have covered many costs themselves. In 2011 the event received local body support for the first time. The grant covered the cost of a promotional cross-street banner for Mt Eden village. This year the Albert-Eden Local Board have tripled their grant, which will allow for more promotion and modest remuneration to a part-time event manager. Council evaluation surveys conducted in 2012 and 2013 showed a high level of satisfaction among respondents.

For more information about Love Your Mountain Day, see Chapter 4: Education and Advocacy.

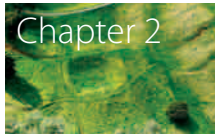
Transition to co-governance and community engagement

Following a long programme of Treaty of Waitangi negotiations since 2009, and a historic process of overlapping claims and compromise by 13 iwi, 14 volcanic cones including Maungawhau were transferred to Māori ownership in July 2014 when the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act passed into law. The legislation provides for a co-governance structure, Tūpuna Maunga o Tāmaki Makaurau Authority (Maunga Authority). The Maunga Authority consists of six Auckland Council members and six Ngā Mana Whenua o Tāmaki Makaurau (Tāmaki Collective) members plus a transitional non-voting Crown representative. It operates under the Local Government Act 2002, which means that all meetings will be public.

Expectations of the new governance regime are very high. The process of developing and implementing policies for the 14 cones will be long and expensive. The Crown has contributed about \$400,000 to the establishment and operation of the Maunga Authority, but has made no commitment to long-term funding. Under the new Act, Auckland Council is responsible for ongoing costs, but “only to the extent that funding and revenue for the maunga and the administered lands allow” (Clause 61). Unless central government bears some financial responsibility, the cost burden will fall on ratepayers and operations on the volcanic cones may be under-resourced or regional parks may lose out.

The new governance structure also presents a challenge to the Council, requiring it to relinquish power and engage in real consultation with tangata whenua to devise new ways of managing the volcanic cones. If the policy is to move from co-governance to co-management at the operational level, both iwi and active volunteers need to be involved.

FoM could participate through some consultative mechanism to replace the defunct Maungawhau stakeholders team – better led and with real power. The legislation in fact provides for the possibility of third-party participation in a committee or sub-committee of the Maunga Authority. We propose that community groups such as the Volcanic Cones Society, Mt Eden Planning Group and Friends of Maungawhau should take part in decision-making related to the ecological, geological and cultural conservation of our volcanic heritage.



The Natural and Cultural Landscape

Introduction

Austrian geologist Ferdinand von Hochstetter described the Auckland isthmus as “one of the most remarkable volcanic districts of the earth” (Hochstetter 1867: 229). This chapter outlines Maungawhau’s remarkable geology and vegetation, and describes how the landscape has been affected by a history of relentless modification and ongoing change.

Given the uniqueness of the site and the associated natural vegetation types, it seems surprising that the ecology of Maungawhau has been so greatly undervalued. Our belief is that restoration of scoria-cone forest to much of the lower slopes has a legitimate place among management objectives. Sensitive ecological restoration will complement, not compete with, preservation of a cultural and archaeological landscape.

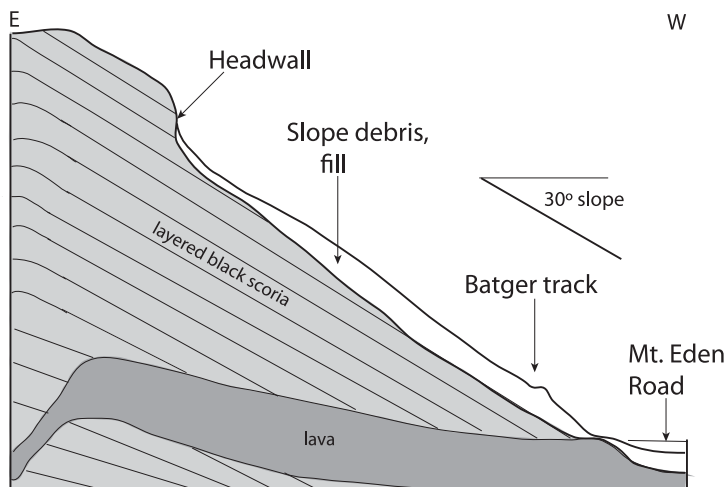
Geology

Maungawhau forms the highest point on the Auckland isthmus (196 m above sea level), sitting on the watershed between the Waitemata and the Manukau harbours. It is a scoria pile surrounded by an apron of lava flows. Different forest types may develop on scoria and on lava. The lava flows extend in many directions, towards Newmarket, Sandringham/Balmoral and Epsom. Two summit cones are aligned in a north-northeast direction.¹ The little volcanic centre of Te Pou Hawaiki near the University of Auckland School of Education (former Teachers’ College) and now obscured by construction, lies to the south, at the foot of the main cone, and is also more or less part of this alignment. Small tuff rings are located at Tahaki Reserve in the north and Eden Garden on the east side.

Unlike Te Kopuke/Mt St John to the southeast, the crater of Maungawhau never holds any water. This provides a clue about the relative age of the local volcanoes. When Three Kings volcano erupted, the crater of a pre-existing volcano, Te Kopuke/Mt St John, was plugged by ash, providing a more or less impermeable seal for formation of a pond. Maungawhau does not have such a pond because it never received an ash seal as it is younger than the Three Kings volcano. It is considered to be about 28,000 years old (Hayward, Murdoch and Maitland 2011: 129), but its age is not yet as precisely determined as that of other volcanoes in the Auckland Volcanic Field. Well-known exposures of the volcano are the lava columns of the climbing cliffs under Auckland Grammar School and the former quarry at Eden Garden where there are dikes (lava feeders of the volcano) and an interesting cliff exposure of lava flows. Withiel Thomas Reserve to the east is located on the flow top of a lava tongue.

1 Some geologists think there may actually have been three cones. The debate continues.

The eastern side of the main cone consists of red scoria coloured by oxidising fluids and containing many volcanic bombs. In contrast, the material on the west side, especially as exposed in the Batger Quarry, the main FoM operating area, is black and contains fewer bombs, but has many angular fragments of lava, including five-sided mini-columns, presumably ejected out from a previously cooled plug in the throat of the volcano. Because of the intense extraction activity in this quarry, one cannot assume that any layering seen in the quarry is still that of the original deposition during eruption. However, the steeply inclined scoria layering is clearly visible in a historic photo of the quarry (see page 12). Tahaki Reserve in the north marks another quarry excavation. The Maungawhau lavas often contain isolated white fragments of quartz, picked up by the magma at considerable depth from the surrounding crustal rocks as it rose to the surface. Searle (1962) interpreted them as pieces of greywacke, melted by the heat and then recrystallised.



Schematic section (not to scale) of the Batger Quarry area. The possible presence of a lava flow at depth is based on outcrops of lava in the Mt Eden Road area. The 30° slope of the debris fill is at the angle of repose, making the material potentially very unstable.

Ecology

Vegetation history

There is evidence from pollen cores from elsewhere in the Auckland Volcanic Field that the cones were under scrub and grassland during the last ice age. Immediately before human arrival, Maungawhau would have been covered in low broadleaf bush, a sub-type of northern coastal bush. It was probably dominated by pōhutukawa on the scoria cone but featured more diverse tree species on the lava flows (such as the Tahaki Reserve, Government House grounds and Withiel Thomas Reserve remnants). Charcoal identified to tree species of both habitats has been found in excavations on the summit area, presumably from domestic fires.

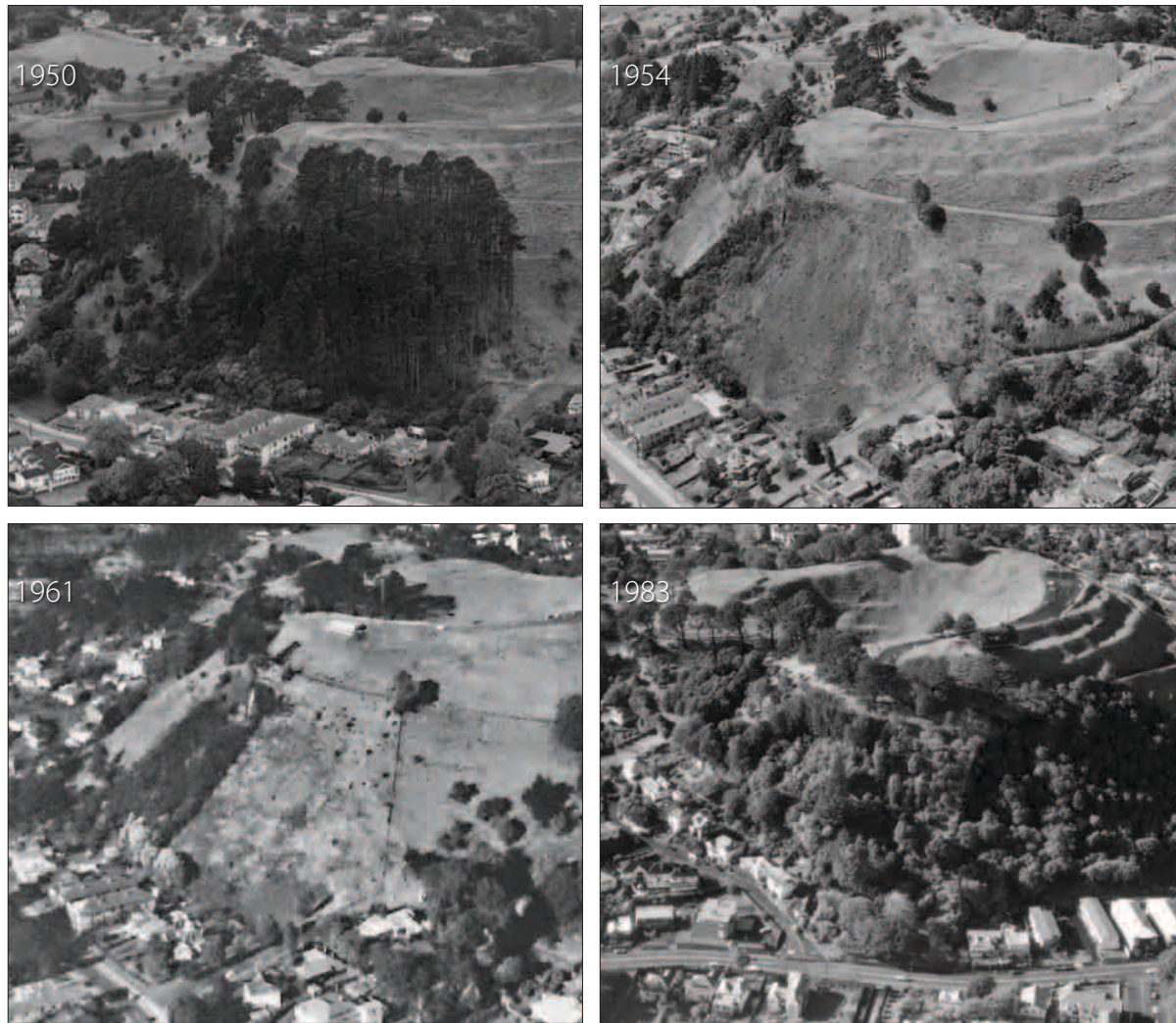
Little vegetation would have survived during Māori settlement on the Maunga, although karaka might have been cultivated. When permanent occupation ceased in the mid-18th century, a vegetation succession commenced that would have led back eventually to bush. By 1840 the mountain was clothed in tea-tree (mānuka) scrub and bracken. A little bracken persists today near the Owens Road entrance. Pātītī (*Microlaena stipoides*), the grass favoured for restoration work on the visible archaeological features, would have been present.

From the 1840s the mountain was grazed as common land and later under a number of leaseholds. One imagines a very rough pasture containing pātītī alongside sown English grasses and pasture weeds. By 1870 there was a thistle problem. Botanist Alan Esler (2010) noted that the weeds mentioned in old Lands and Survey Department records for the cones – thistles, hedge mustard, Cape daisy and storksbill – are indicators of overgrazing. Goldfinches love thistles; in the early 20th century, boys were earning money by trapping goldfinches on the mountain for sale to the pet shop in Queen Street, so presumably the thistles had resisted eradication. Pasture weeds are less in evidence today, partly because of fertilisation and the spread of kikuyu grass, desirable from a pastoral viewpoint but ecologically just a weed. A slow-burning grass, and unlikely to be a fire hazard in natural ecosystems unless very rank and dry, kikuyu has been mentioned in recent times as a potential non-woody vegetation for the visible archaeology on Maungawhau.

Proclamation of a public recreation reserve on the mountain in the 1870s was followed by fencing off of some areas for planting with exotic trees. The holders of the grazing leases were not pleased, and unexplained damage to both fences and trees ensued. Many of the trees were *Pinus insignis* (radiata), then coming into fashion as a utility tree for shelter-belts and farm plantations. Holm oak from the Mediterranean was commonly planted on country estates in England during this period. The picturesque grove of holm oak above Hillside Crescent is today helping to hold up a damaged, unstable slope. Many weeds and a few native plants are regenerating in the understorey.

A new appreciation of native trees began from the 1890s, under the banner of Scenery Preservation. By 1927 this enthusiasm had extended as far as the crater of Maungawhau, in which fern trees (ponga) were planted. The move proved to be controversial and led to calls for preservation of the cones and greater recognition of Māori cultural values. The same year, following a demonstration hangi attended by hundreds of people on the mid-northern slopes near the new tea kiosk, Princess Te Puea planted a pūriri tree on the mountain and the Te Akarana Māori Association planted a tōtara. Commemorative plantings continue, with a group of pūriri planted by Labour Party loyalists in 1974 (near the Normanby Road entrance) in memory of Norman Kirk, and a grove of rimu (which subsequently died) by the Eden-Albert Community Board to greet the new millennium.

The reservoir complex on Maungawhau, which occupies Te Maraeikohangia, the former marae site, is designated land for Watercare Services under the *District Plan* and *Proposed Auckland Unitary Plan*. After the reservoir reconstruction in 2010–2011 the reservoir roof was revegetated in 2011 with low-growing native plants. FoM had no formal input into the planting plan, although Kit Howden suggested suitable species and recommended a track layout giving east–west access on the popular route between the Glenfell Place steps and the old kiosk. He also



Batger Quarry in 1950, 1954, 1961 and 1983, showing the transition from pine plantation to native vegetation. *Whites Aviation Ltd: Photographs. Detail of WA-24250-G (1950), WA-35207-F (1954), WA-54810 (1961) and WA-76985-F (1983). Alexander Turnbull Library, Wellington, New Zealand.*

warned about the high cost of weed control and infill planting in subsequent years. The plantings were maintained, by manual methods, only for the first year. Today the reservoir roof is weedy and neglected, water-logged in winter and dry in summer – an object lesson in how difficult it is to establish low-growing species in the presence of pasture grasses, kikuyu and red clover. The establishment of native species would probably require permanent control of at least kikuyu, right around the perimeter of the feature to be planted. FoM believes the entire area, including the abandoned grass trial plots, needs to be reconsidered in terms of its usage, tracks and desire lines, planting and ongoing maintenance.



Batger Quarry in January 2013. Photograph by Alastair Jamieson, Wild Earth Media Ltd.

Ten fruit trees were planted on the lower slopes of the Maunga near the Batger Road entrance in July 2010. The Mount Eden Village People raised funds for the trees as part of their project to plant fruit trees on public land. Kit Howden agreed with and participated in the planting on Maungawhau on the grounds that it promoted community engagement and biodiversity, and that planting of non-invasive food trees on the lower slopes was not explicitly ruled out by the 2007 *Management Plan*. However, Council officers objected after the fact. The Maungawhau stakeholders team resolved to remove the trees, and they were relocated off-site the following year. Whether fruit trees might be acceptable on certain parts of the Maunga, or whether no exotic species should be planted anywhere, are questions on which FoM members still have differing opinions (see Chapter 5: Challenges).

On the visible archaeological features, plant choices are made on utilitarian grounds. Low grassy or scrubby vegetation are the best options to protect the integrity of the underlying ground. The natural vegetation of all parts of the cone, including the crater, would be forest.



In August 2010 FoM volunteers planted harakeke between the summit road and bamboo stand at the top of the concrete wall in Batger Quarry. This trial harakeke planting has successfully outcompeted kikuyu on a dry steep slope and helped close off unwanted access. Clockwise from top left: Rob Jones, Ani Fuga, Keith Ayton, Kit Howden, Jean Barton, Anna Zhang and Dorothy Henderson.

Our own work on the Maunga is ecological restoration – rehabilitating damaged areas that have no known archaeological features to a state resembling the original vegetation. Strictly speaking, ecological restoration is impossible on Maungawhau because, in the words of Sue Bulmer (pers. comm.), “it’s not the same mountain”. The vast quantities of shell deposited on the slopes during Māori occupation must have rendered the soils more alkaline, while later burning to promote bracken growth depleted soil organic matter, and grazing and fertilisation altered the original fabric and soil conditions. Our experimental approach to restoring a highly modified site demonstrates that ecological and archaeological goals can coexist and are consistent with management plans and fundamental guidelines such as Kevin Jones’s *Caring for archaeological sites*.

Natural vegetation types

The natural vegetation of Maungawhau is northern coastal bush (Wardle 1991), not lowland humid mixed podocarp-broadleaf rainforest as claimed in the 2006 *Maungawhau Conservation Plan* (Sec. 6.2). That mistake was based on a misreading of the cited publication by Horrocks (2002) which examined the pollen record of local vegetation around a lake (Waiatarua Reserve)

at 40 m above sea level. Horrocks later (2005) reconstructed the pre-human vegetation in the crater of Te Kopuke/Mt St John as forest dominated by pōhutukawa. The podocarp present was kahikatea, which would have been associated with the crater's unique ephemeral wetland.

Pōhutukawa, pūriri, and karaka would have been among the prominent tree species on Maungawhau; podocarps would not. Tōtara was absent from the pollen cores from Te Kopuke/Mt St John but exists on cones near Whangarei; its prominence in “natural” regeneration on Maungawhau today is due to the massive artificial seed source in the plantation on the southern slope, and to its resistance to grazing. As mentioned, charcoal from archaeological excavations on Maungawhau represents both scoria-cone and lava-flow tree species.

Pōhutukawa is much less evident in lava-flow forest, which is often moist in the lower reaches, but may be dry where land is sloping and exposed. This forest type often has a fantastical appearance: trees are gnarled and misshapen and the cable roots of puka snake across the rock surface. An echo of the structural complexity of lowland broadleaved forest is conveyed in the massive kiekie vines and epiphytic astelias and orchids. Important species like white rata continue to be lost from lava-flow forest.

Direct comparison with the central scoria cones of Rangitoto – at 115 hectares making up 5% of the volcano's area – is not straightforward. Initial colonisation of lava and scoria by plants was only beginning at the time of European settlement and continues today, as does natural successional



(Left) lava-flow forest in Withiel Thomas Reserve, 2014, and (right) flowering pōhutukawa.

change in the vegetation. Fires, deer, possums, wallabies and people have interfered with the succession on Rangitoto. Andrea Julian, author of the “Ecological Component” of the 2005 *Conservation Plan*, wrote a definitive account of Rangitoto’s vegetation for her PhD (Julian 1992). The suggested plant species list given in the FoM ecological plan for Maungawhau (Marler 2013: 29) is partly based on Julian’s recommendations for species best suited to scoria-cone revegetation.

Happy (2009), who described the vegetation on a somewhat different volcanic substrate at Tuff Crater (Onepoto Lagoon, Tank Farm), found all of Julian’s recommended species growing naturally there with the exception of mangeao and pigeonwood (porokaiwhiri). The plant lists in the *Vegetation Management Plan* (Appendix B) follow Julian’s recommendations with the exception of tānekaha. Tānekaha is well established on the Rangitoto cone, including the crater, according to Haines and Wilcox (2007), but doubts persist as to whether it arrived on the island naturally. The only podocarp in the plant lists is tōtara.

It will be apparent that any attempt to list the species complement of the original forest on the Maungawhau scoria cone can only be a conjectural reconstruction (see Appendix 4: Maungawhau Suggested Native Plant Species). There is a very broad overlap with the main species of lava-flow forest: pōhutukawa, pūriri, titoki, māhoe, māpou, kawakawa, among others. Some species are already growing on the cone, although it is problematic to say that any individual tree is present “naturally”; others are beginning to establish by natural dispersal from lava-flow forest. Karaka, if it was cultivated by Māori inhabitants, may be unnaturally abundant. Tōtara, although also unnaturally abundant, was probably naturally present, and this is a clear difference between scoria-cone and lava-flow forest.

Biodiversity and natural regeneration

Global biodiversity is achieved by having a variety of different species and operates on different scales – from the genetic through to the ecosystem scale. The population size of a species must be large enough to prevent loss of genetic diversity. This is essential for species vigour and survival. As population numbers diminish, a species becomes increasingly more vulnerable to extinction, particularly where the population is isolated.

The international legal instrument dealing with loss of biodiversity is the Convention on Biological Diversity 1993 together with the associated Rio Declaration and action document Agenda 21 to which New Zealand is a signatory. The protection of biological diversity is required under the Resource Management Act 1991 and the Reserves Act 1977.

Biodiversity is covered in Part 1 of the 2013 *Proposed Auckland Unitary Plan*. The policies listed in Section 4.3.4.8 commit Auckland Council to avoid or mitigate adverse effects on indigenous biodiversity, including loss or degradation of lava forests and rare or threatened species.



The 2007 *Management Plan* (Sec. B3.1) calls for a “biodiversity approach to sustainable management”. One of the objectives cited in the *Vegetation Management Plan* (2009: 4) is “to manage vegetation on the lower slopes towards full native forest stratification and increased habitat biodiversity for native fauna such as birds and skinks”.

Scoria-cone and lava-flow forest types make a unique contribution to global, national, regional and local ecosystem biodiversity. This diversity is diminished through the destruction of scoria cones and by the loss or fragmentation of lava-flow landscapes. In 2007 a listing of rare ecosystem types was published in the *New Zealand Journal of Ecology* (Williams et al. 2007). The type locality given for lava-flow forest is Mt Eden, Auckland; for scoria-cone forest, Rangitoto Island. Rangitoto has a high level of protection and is touted as “a classic example of forest succession” (Department of Conservation 2006) in the argument for World Heritage status for the Auckland Volcanic Field. Of lava-flow forest, however, only about 5 hectares of severely fragmented remnants remain on the Auckland isthmus. Lava-flow vegetation within the reserve consists only of a terribly degraded remnant in Tahaki Reserve and an area near the caretaker’s cottage which was modified and is now mainly grassland. Construction works continue to damage our few remaining sites. In February 2014 a developer was successfully prosecuted for causing deliberate damage to the Almorah lava flow, described by Lucy Cranwell as a “relic of primeval forest” (cited in Cameron 1999). Degradation of remaining lava-flow remnants and introduced plant and animal pests further undermine the natural ecosystem process in an insidious but devastating way.

Virtually no scoria-cone forest remains on the Auckland isthmus. This is why Andrea Julian gave priority to continuing efforts to restore this nationally rare forest type on Mt Eden.

In addition to restoration planting, it would be desirable therefore to allow natural regeneration to occur on some part of Maungawhau, free of human direction. An obvious place is the area above Eden Garden and Government House, the most direct route for birds and seeds into the reserve. Minimal human intervention – planting locally sourced whau or coprosma as a nursery crop – might be necessary to kick-start the process, providing shade to weaken the dense grass sward and a roosting place for birds. Natural regeneration in this area is supported in the *Vegetation Management Plan* (2009: 30), which advises the use of eco-sourced material from Government House.

Natural succession is also discussed in the *Vegetation Management Plan* (2009: 47). The authors stated that “while natural regeneration may be a desirable outcome on certain areas, it needs to be managed to be effective and successful”. Caveats included public safety, archaeological protection, views and weed incursion.

We have demonstrated the feasibility of fostering natural regeneration, by keeping weeds out and engaging in supplementary planting. Among the species regenerating naturally in areas



cleared of wandering willie (*Tradescantia fluminensis*) in grassland or the quarry area are pūriri, tītoki, whau, taraire, mangeao, coprosma, tōtara, kawakawa, bidibid, carex and some ferns (rasp fern, necklace fern and spleenworts). The surest way to reconstruct something similar to the original species composition may well be to allow nature to take her course. The decision whether to leave large tree species to mature is affected by considerations such as the need to retain views, shading of neighbouring properties, safety near tracks and stability on the steep southern slopes.

Significant ecological areas

The significant ecological areas (SEAs) overlay in the 2013 *Proposed Auckland Unitary Plan* covers all the forest areas of Maungawhau, including Batger Quarry and Government House grounds, and the lava-flow remnants at Withiel Thomas Reserve, Almorah Road and Windmill Reserve. FoM were successful in having the Maungawhau SEA extended to the western domain boundary.

The vegetation on Maungawhau meets two SEA criteria: it is representative of the forest type WF7 “Pūriri forest” which is classed as a threatened ecosystem in the Auckland region (Auckland Council 2013b) under a newly published national ecosystem classification system (Singers and Rogers 2014), and it is a habitat for the relict sickle fern (*Pellaea falcata*) which is regionally critical in the Auckland area (Stanley et al. 2005: 154).

The intent of the representativeness criterion is to identify areas that make up at least 10% of the natural extent of the original ecosystem types in the Auckland region in order to schedule and protect these remaining areas of indigenous habitat. Pest plant removal and conservation planting are permitted activities in SEAs. The difficulty on Maungawhau is that the SEA overlies many archaeological features. Council has advised that any conflicts will be

addressed on a case-by-case basis. Consultative mechanisms and guidelines to resolve potential conflict will need to be included in future management, conservation and operational plans.

The largest colony of sickle fern is in the extremely unstable scree slope below the concrete facing wall (MU 7 [see “vegetation management unit” in the Glossary]). This unsafe area is in need of professional landscape remediation and is avoided by FoM volunteers (except for occasional privet control and weed clearance and around the few remaining pōhutukawa trees). Now the added complication arises that any interference with the weed cover might be detrimental to the fern. Other colonies exist in the coppiced privet area of MU 11, alongside the downhill road, and in former pasture where patches of veldt grass pose an immediate threat. A further



Sickle fern (*Pellaea falcata*) growing on the northern slope of Maungawhau, threatened by honeysuckle and Chinese privet (*Ligustrum sinense*). Nick Goldwater, Wildland Consultants Ltd.

colony is on the quarry face adjacent to Withiel Thomas Reserve, on land nominally within that SEA but outside the reserve and unmanaged by Council. A plan is needed to manage the population as a whole.

Another uncommon and possibly endangered species in the Auckland region, *Coprosma crassifolia*, is also found on Maungawhau.

Environmental and pasture weeds

The practical work of FoM is vegetation management – weeding and supplementary planting. In Batger Quarry, and on the outer slopes where the transition is from pasture to scoria-cone forest, our concern is with “environmental” weeds – species that could either cause new plantings to fail, or persist after they become established, interfering with ecosystem function and species composition. Some of the environmental weeds on Maungawhau are also designated “pest plants” under the *Auckland Regional Pest Management Strategy* (2007), and are subject to the Biosecurity Act 1993. We are less concerned with “garden” weeds that are unwanted in a cultivated planting, and “pasture” weeds which are unpalatable or noxious to stock.



Over the past decade Jo Fillery has transformed the area near the Batger Road entrance into native bush. These photos are from (clockwise from top left) 2004, 2005, 2010 and 2013.

Alan Esler published several papers in the 1970s discussing volcanic-cone vegetation. In 1974, after the cattle had been absent from the volcanic cones for nine months, Maungawhau was covered in *Microlaena*, with some Yorkshire fog and cocksfoot. Ryegrass and clover grew on trodden paths and terraces. The major weeds were thistles, Cape daisy, musky storksbill, oxeye daisy and fireweed. In 2000, Esler walked over the mountain with the Council's grazing consultant, Ross Duder, who recorded his impression of change in the 26 years since grazing resumed in 1974 – the prominence of kikuyu, Montpellier broom, mistflower, Mexican daisy and weed species not controlled by grazing. Esler (1974) had warned that grazing was the only thing keeping kikuyu in check. He has been proved right. Kikuyu has spread rapidly, obscuring archaeological features and outcompeting low-growing native species.

Ominously, South African veldt grass (*Ehrharta erecta*), a species with “unknown ecological limits” (Esler 2004: 155), had also made an appearance by 2000 and is today poised for rapid expansion. At home in dry shade under broken canopy, veldt grass occurs on Maungawhau in just those places most suited to ecological restoration. Kikuyu grassland is too rank for it to penetrate, but it readily enters *Microlaena* grassland. A large pure stand of veldt grass above the Clive Road cul-de-sac is spreading south along the reserve boundary and into a patch of ground disturbed but not remediated by Watercare some years ago. It has invaded the whole bush area in Tahaki Reserve. On present trends, the spread of veldt grass will make both ecological restoration and archaeological conservation vastly more complicated and expensive.

Among other naturalised weed species are Japanese honeysuckle and Mexican daisy. These too can be eradicated only by intensive manual work or repeated spraying.

Another of Auckland's worst weeds, wandering willie (*Tradescantia fluminensis*) is proliferating in grassland and under tree canopy. Other carpeting weeds such as periwinkle, deadnettle and ivy also persist under canopy and prevent natural regeneration of native species. Agapanthus, onion weed, arum, stinking iris and mistflower are clump- not carpet- forming, but



Veldt grass.



Mexican daisy and mistflower on the southern slope, 2014.

can form a monoculture that will interfere with natural regeneration. Biocontrol agents, such as the mistflower fungus and mistflower gall fly which are present on Maungawhau, may be helpful but do not offer a complete solution.

A record of the major weeds being tackled by FoM and our methods of controlling them are found in Chapter 3: Volunteer Work on the Ground and Appendix 5: Maungawhau Naturalised Exotic Plant Species.

Fauna

None of our plantings is sufficiently well established or pest-free to reintroduce native fauna, but pōhuehue (*Muehlenbeckia complexa* and *Muehlenbeckia australis*) will provide habitats for lizards and copper butterflies. In 2009, prompted by butterfly enthusiast Rob Jones, we planted native ground nettles (*Urtica incisa*; pureora) at the bottom of Batger Quarry as a host plant for the now rarely seen red and yellow admiral butterflies. These native butterflies are long-lived and dependent on their unique food source. Because they tend to congregate around hilltops to find mates, the nettles on Maungawhau are an important habitat in a coordinated breeding programme.

Native lizard species are thought to be present on the Maunga, but have not been observed by FoM. Although no bird surveys have been conducted, over the past decade we have noticed a marked increase in native bird populations in restoration areas, particularly tūi, kererū, fantails, kingfishers and waxeyes (self-introduced).

The main animal pests on Maungawhau are rodents and possums. In recent years, FoM volunteers have monitored a rat trapping line that runs through Batger Quarry, and have observed mice and rats on the ground in summer. We report wasp nests to Council.

More information about native fauna and animal pests can be found in FoM's ecological plan (Marler 2013).

Human context

Tangata whenua values

The Māori world view is one of holism where people and the land are interdependent. The concept of mauri (life force) establishes the spiritual connections among all living things, and cause-and-effect relationships between people and the land. In traditional Māori agriculture, the practice of fallowing allowed depleted soils to regenerate. It has been suggested that on the Tāmaki cones, nature will heal the scars of misuse. FoM take the view that a helping hand and a range of approaches are needed to achieve the various management objectives. To quote Ngārimu Blair, speaking of Maungakiekie: "It's not a one-size-fits-all policy for this maunga or any other because those landscapes vary a lot. The soil structure, visitor impacts, they're all different and different parts of the mountain will require a different set of management tools, but we should have that tool box" (Paterson 2009: 100).

When consulted by Helen Lindsay for her *Interim Vegetation Plan* (2004: 7), Ngāti Whātua o Ōrākei expressed clear views about how Maungawhau should be managed. Exotic species should not be planted on wāhi tapu including Maungawhau, and those exotics already present should be progressively removed. A diverse selection of native species, with the aim of restoring ecosystems, was envisaged. Plant species lists should reflect the full spectrum of the diet of native birds, offering food and shelter over the whole annual cycle. There should be provision for customary use of plants for hangi, making fire, food, medicine, arts, and so on. Plants should be eco-sourced from within the Tāmaki Ecological District.

Most FoM members concur with the Tāmaki iwi on these points. Trees and shrubs producing nectar or berries for birds were encouraged even in the 1986 *Management Plan for Maungawhau*; plant lists in the conservation and management plans are annotated to identify species important to birds. Similarly, the *Vegetation Management Plan* (2009: 39) recommends planting of the reservoir area with taonga Māori plant species. We have made a small contribution by planting weaving varieties of harakeke in the quarry area. The plant materials were given to FoM by Judy Te Hiwi, kaitiaki of an important harakeke collection on the North Shore.



An aerial view of Mt Eden taken in 2012. It shows the sprayed out areas for Auckland Council plant trials. Photograph by Robyn Kannemeyer.

The broad thrust of Māori thinking is consistent with legislative constraints. An untitled discussion document from the first Maungawhau stakeholders team meeting (17 December 2008) refers to the desire of iwi for a strong statement of intent to return the Maunga to an ultimate state of native vegetation underpinned by the principles of sustainable ecological biodiversity. Territorial authorities are enjoined by the Resource Management Act 1991 to promote the maintenance of indigenous biodiversity; and by the Local Government Act 2002 to adopt a sustainable development approach. The relationship of Māori and their culture and traditions to their ancestral lands is a matter of national importance under the Resource Management Act 1991.

The one point on which we are not in complete concord is in regard to chemical control. A policy of the 2005 *Conservation Plan* (Sec. 8.2.1) was to “reduce use of chemicals as a method of weed control”. Auckland Council’s *Weed Management Policy for parks and open spaces* (2013e) has the same objective. However, attempts to reduce chemical use by once-only application have not produced good results: spraying out all vegetation once leaves a clear field for weeds to invade, and hand-weeding has proven too costly.

FoM’s policy over many years has been that the use of herbicides as part of a planned weed control programme is the only practicable way of controlling many of the most enduring and invasive weeds on Maungawhau. In our experience, chemical control can be minimised by using a combination of manual weeding and shading out of unwanted species. Bare areas must be revegetated with native species, by planting, direct seeding or natural regeneration where applicable.

Community values

People have many reasons for valuing Maungawhau. Besides walking the dog and enjoying the view, the opportunity to be outdoors and encounter nature is important to Aucklanders living in an intensified city. Many local residents feel a sense of identity with and personal connection to the Maunga and cherish its beauty.

It is significant that a large proportion of local people visit on foot or by bicycle. Some people are apprehensive about losing views and the open “countryside” feel of the reserve.

As well as its Māori respondents, the *Interim Vegetation Plan* (2004: 7) selectively asked local residents for their views on managing vegetation on Maungawhau. Residents supported gradual removal of exotic trees and planting of natives, and clearly defined zones for archaeological conservation, recreation and ecology. They wanted vegetation managed as a single ecological area encompassing the whole of the mountain regardless of ownership, including Government House grounds, Eden Garden, surrounding private property, and lava-flow forest remnants.

In 2001 the Council commissioned a study, *Maungawhau: A Study of Visitor Use and Attitudes*, from the New Zealand Tourism Research Institute. Feedback indicated that “nature, the visual beauty of the mountain, and the views” are overwhelmingly valued as “very important” to local residents (NZTRI 2001: 12). Exercise and recreational opportunities were the next most highly rated.

Tracks

In 2006 a *Review of the Maungawhau Track Network Draft Report* was prepared by consultants Frame Group Ltd for Auckland City Council. Although apparently never formally adopted, it identified concerns FoM had been trying to draw attention to for years: loss of soil, rutted surfaces, damage to archaeological features, formation of parallel tracks as the original tracks deteriorate, and desire lines in undesirable places. The recommended solution was hard surfacing with minimal earthworks – asphaltting of not just the crater circuit path but also many other paths identified as main access routes, including circuits over archaeologically sensitive high points.

FoM agrees that while naturalness and informality are important values to tangata whenua and local residents, some hard surfacing and raised formations may be necessary in areas of high use. However, the fully boxed steps built below the reservoir on the eastern side of the mountain are visually intrusive and impractical. Desire lines have already formed alongside and at the top of the steps. Boardwalks, discussed in *Caring for archaeological sites* (Jones 2007: 75), may be an option worth considering.

For years we have campaigned for Council to adopt the Standards New Zealand Handbook SNZ HB 8630:2004 *Tracks and Outdoor Visitor Structures* and to develop a comprehensive track and access plan including entrances, interpretation and way marking. In the meantime, FoM volunteers extemporise, repairing tracks, dealing with washouts, and creating water bars.



Poor drains and lack of maintenance caused this 2007 washout after heavy rain. FoM volunteers have built water bars and halted much of the track flooding and erosion.

Views

The protection of views both from and to Maungawhau began in 1973 with a landmark planning decision prompted by the public outcry over construction of The Pines high-rise apartment towers on the eastern flanks of the mountain, spoiling views from afar. In 2006, partly in response to construction of a sprawling modern house in the Hillside area of the mountain, the Council's Environment, Heritage and Urban Form Committee proposed changes to the *District Plan* to stop housing from encroaching visually on volcanic landforms.

Tangata whenua wish to protect significant views of their cultural landscapes – sites that embody the identity of an iwi or hapū. Rather than sightlines or “viewshafts” from suburban Auckland to the cones, they value views between ancestral maunga and views between places of cultural and historical significance and their associated maunga. The question of cultural landscapes is not addressed in the 2007 *Management Plan*.

The *Vegetation Management Plan* (2009: 8) laments “the progressive loss of many stunning viewshafts” as trees on the upper slopes continue to grow. Protection of views to and from the terraced upper slopes fits with the need to keep trees away from the visible archaeology. The plan

identifies seven high points to be protected, and calls for a separate visual assessment to identify unwanted trees and help determine future vegetation on Maungawhau. We endorse this approach. The need to keep identified views open might also be achieved in part by locating seats and interpretive signs at strategic viewpoints.

One area of potential conflict is on the lower southern slopes. The mid-level track here, well used by local people, has wide views across the city. However, tōtara trees, self-seeded from the plantation above, threaten to encroach on the views. There are trees among our plantings that may eventually do the same, and Eden Garden has recently planted an exotic kauri species, which will make a very big tree, at the highest point on their site. While large trees can be of value in framing views, a landscape plan prepared in consultation with iwi would help to resolve debates about openness, views and sightline obstruction.

Visitor impacts

Freedom of public entry and access to all areas of Maungawhau is guaranteed under the Reserves Act 1977 (Secs 17 and 18) and is implicit in the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act which preserves the Maunga's reserve classifications. Under the *Proposed Auckland Unitary Plan*, most of Maungawhau is zoned as "Public Open Space Conservation", while Tahaki Reserve and the kiosk area are "Public Open Space Informal Recreation".

The 2010 *Auckland Regional Park Management Plan* defines approvals and restrictions under four classes of activities – permitted, controlled, discretionary, and prohibited. A similar approach is taken in the forthcoming *Unitary Plan*. In contrast, the 2007 *Management Plan* (Sec. D1.6) takes a "visitor experience" approach to managing and providing for tourism and recreational use, while acknowledging that "the site cannot continue to sustain current, ever-increasing visitor numbers under the existing environment of minimal management and monitoring". The plan does not indicate what types of recreation may be permitted or prohibited; nor does it require any licensing or concession fees, as provided for under the Reserves Act 1977 (Sec. 59A), for commercial tourist vehicles using the park road.

Auckland Council began visitor monitoring in 2011 and estimates that over one million people visit Maungawhau each year, impacting on the vegetation, archaeological and natural features of the Maunga. Residential satisfaction with the overall care and protection of Auckland's volcanic landscapes consistently falls below the Council target of 70%. FoM has made many recommendations over the years and we continue to express our concerns about worn tracks, erosion, damage to archaeological features, and poor maintenance.

A 2005 study of Maungawhau (Clark and Milne 2005) found that public awareness and community input are essential to identify and resolve the pressures of overuse. In the absence of any other meaningful studies, Kit Howden has produced a basic classification system to rank and assess the potential adverse impacts of activities on heritage values. It is hoped that this may be a start to establishing the sustainable carrying capacity of the mountain. Activities are ranked from lowest impact (compliant if consistent with the primary values of the Maunga and restricted to defined areas) to highest impact (adverse effects requiring control).

Activity ranking (low to high impact)	Description
Intrinsic use	Valuing and appreciating Maungawhau from afar, including artistic endeavours. Related to viewshaft protection.
Heritage-based activity	Educational visits and volunteer activity such as FoM conservation work and Love Your Mountain Day.
Authorised cultural activities and celebrations	Authorised spiritual and cultural activities as defined in Sections 58 and 65 of the Ngā Mana Whenua o Tāmaki Makaurau Collective Redress Act.
Passive recreation and commemorations	Guided walks, walking or jogging on formed tracks; walking to the summit for the views; use of the Coast to Coast walkway; exercising dogs; casual ball games and kite flying; May Day ceremonies by Morris dancers.
Picnics and gatherings	Gathering to picnic, socialise and exercise in key viewing areas or flat areas under trees. Indicated by flattened turf and sometimes rubbish left behind.
Use of built structures	Use of the old tea kiosk (visitor centre), Scout hall, Council nursery and Tahaki Reserve playground.
Driving to the summit	Cars and minibuses: impact on the Puhī Huia Road (which is not a public road); potential damage to sub-surface features; congestion; adverse impacts and risks to pedestrians.
Sport and training	Athletic events and sports training. Officially controlled by permits, but without a ranger there is little oversight. Tahaki Reserve is used as a bookable event area, providing for a wide range of activities from film and music shows to Christmas parties. The area can be legally enclosed into a charge-entry facility, thus preventing “freedom of entry and access”.
Protest activity	Protests and political activities held by, for example, environmental activists, peace campaigners, and Falun Gong protesters.
Commercial use	Paid guided tourist group visits, filming, water supply (Watercare reservoirs and water reticulation), temporary telecommunications, and trading. The most unusual activity observed by FoM was weapons sight testing with an anti-tank gun on the summit in May 2002.
Major events	Large crowds gathering around the summit to view fireworks or city-wide events.
Off-track activity	Bush-crashing and taking shortcuts down desire lines; off-leash dogs damaging vegetation.
Purple recreation and wilderness play	Deviant recreational activities that fall outside societal norms but may not be illegal. Also includes entering the crater, building huts, and sliding on cardboard.
Prohibited and criminal activities	Vandalising trees, buildings and signs; theft and vehicle break-ins; off-road mountain biking; littering; squatting and camping.

Beyond the boundary

The 2007 *Management Plan* has policies to identify and rectify boundary encroachments (Policy G3.11) and to develop a programme of communications with neighbours (Policy G3.12).

FoM has always worked closely and cooperatively with the mountain's closest neighbours – a few of whom have joined our regular Tuesday-morning volunteer group. Some years ago we did a major clearance of privet, Madeira vine, climbing dock and honeysuckle beyond the western fenceline. Our efforts there have also put a stop to over-the-fence green waste dumping. Beyond the southern boundary we have cut bamboo, uprooted climbing dock and German ivy, and felled a large phoenix palm and several tall cherry trees, uncovering a substantial old stone wall in the process. Near Owens Road we have cleared privet, woolly nightshade and moth plant from adjoining properties, with the occupants' enthusiastic permission. Below the old kiosk on Hillside Crescent we have bagged vast quantities of Madeira vine, tradescantia, bottles and rubbish. Some FoM volunteers have independently taken action themselves or initiated weed control at nearby schools and commercial properties.

In 2012, FoM participated in a Nature for Neighbourhoods project funded by the Albert-Eden Local Board. This is an ongoing boundary scoping survey aimed at creating a weed-free buffer zone along the Mt Eden Domain boundary. We interviewed 40 property owners adjoining the reserve about their weed and boundary issues. Concerns included collapsing fences and encroaching weeds such as privet, monkey apple, tradescantia and periwinkle, coupled with worries about loss of privacy and slope stability if the weed trees were removed. Incentive measures initiated by Council might be one way of addressing the privacy issue. The stability issue is more difficult. The slope at the Hillside Crescent boundary is scoria scree with the same mobile surface as in Batger Quarry below the concrete facing wall.

At the head of Glenfell Place, Sel Arbuckle's work over many years has demonstrated that natural regeneration and control of weeds results in native cover capable of holding even a very steep slope.

At Government House, the team of gardeners led by Clint Jensen has almost completely removed tradescantia and other weeds from their site, by hand. Sel has done the same at Withiel Thomas Reserve and the Marshall Reserve (69 Almorah Road), and is working with Clint's team on a new contract at Highwic House in Gillies Ave.

These restored lava-flow forest areas will form part of a future walkway re-creating the Māori route from Hobson Bay via Te Ruareoreo stream (Newmarket Stream) and a kāinga (village) near Newmarket Park to the pā on Maungawhau. The linkage of Auckland's twin icons, the harbour and the Maunga, provides a unique opportunity to approach the scoria cone of a volcano across its lava fields.

Many other opportunities exist for ecological restoration on lava-flow areas within reserves as far away as Windmill and Melville reserves, and for protection of lava outcrops and cuttings on road reserves that give Mt Eden its special character.



Volunteer Work on the Ground

Introduction

FoM volunteers work mainly in management units MU 1 to MU 11 identified in Appendix 2: *Vegetation Management Units*. Our work area forms a horseshoe shape on the lower slopes of the Maunga, beginning from the southeastern fenceline south of Eden Garden, and around the southern slopes to just north of Batger Quarry on the western side. Known archaeological features exist on the upper boundary of MU 11 and near the summit road in MUs 3, 5 and 6. We avoid these areas.

This chapter describes our practical and experimental approach to work on the ground.

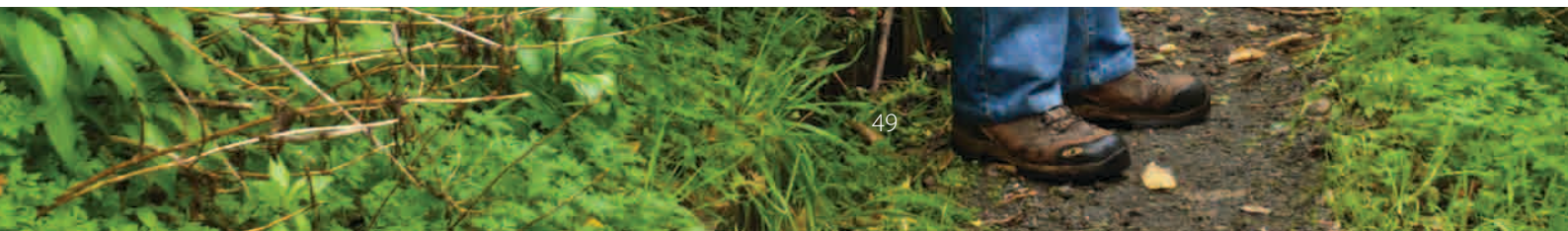
Revegetation and ecological restoration

The idea of revegetating Maungawhau is not new. In 1989, parks officer Mike Leaity, inspired by the revegetation programme on Tiritiri Matangi, proposed that an “urban sanctuary for native birds” (Leaity 1989) be established on Maungawhau, running the entire length between Batger Road and Hillside Crescent. The earlier plantings of pōhutukawa-rata hybrids would form a foundation, and the work of weed clearance and planting would progress downward from the summit road in 20-m-wide strips. His plan was only partly successful – an area running from Batger Road along the domain’s western boundary was planted, but was not maintained. Quite possibly the Council had not anticipated the cost, practical difficulties and extremely long-term nature of the project.

Batger Quarry is an unusual site. The substrate is scoria, but it is a high-angle scree, formed by collapse of an abandoned quarry face. Plants and weeds have colonised the scree slope, and a skeletal soil has formed. The parched and mobile surface presents challenges to plants trying to establish themselves and to volunteers trying to work there. The challenges may be unique; we know of no comparable site in Auckland. More information about the site can be found in the ecological report (Marler 2013) commissioned as part of this documentation project.

We have relative freedom of action in the quarry because there are no archaeological features to worry about. As the original surface has been removed, the aim is not to restore scoria-cone vegetation but to create a self-sustaining native vegetation that will help to stabilise the slope.

An independent volunteer, Jo Fillery, working in a separate part of the quarry (MU 6) has experimented with a wide range of species not related to volcanic landscapes but present in the Tāmaki Ecological District. This provides further information and, as the planting matures, a seed source for natural regeneration.



CENTRAL LEADER, Friday September 3, 2004 Page 5



Green terrace: Maungawhau weeders Sue Akeroyd, left, and Jo Fillery have created an intricate replanting system.

Photo: JASON OXENHAM

Volunteer weeders tackle exotic pests

Jo Fillery, working for several years with Sue Akeroyd, has rehabilitated the steep upper slope (MU 6) near the Batger Road entrance by removing weeds, stabilising the slope, and encouraging natural regeneration of native species along with supplementary planting. *Central Leader*, 3 September 2004.

On areas of original surface beyond the quarry – at mid-level around the southern slopes – our project is *ecological* restoration. Elsewhere on the Maunga there will be plantings of species selected for their cultural significance; in our area we wish to re-create the pre-cultural vegetation cover. In the absence of total certainty as to just what that was, we focus on naturally regenerating native plants and fast-growing pioneer species – whau, coprosma, māhoe, kawakawa and houpara (five finger) – in the shade of which natural regeneration will re-establish the climax forest type.¹ Species recommendations are given in Appendix 4: Maungawhau Suggested Native Plant Species.

¹ We should be grateful for the large amount of information we do have; a restoration project on a scoria cone at Tower Hill in Victoria, Australia, relied solely on the evidence of a detailed 19th-century oil painting of the original vegetation.

Planting and after-care

Planting is obviously the core component of a revegetation project, but most of our time is spent in site preparation. When seedlings are planted into unstable scree, their roots often become exposed and fail to take firm hold. We experiment with ways to slow movement on the surface long enough for plantings to get established. We make planting holes deeper and wider than normal, add composted weeds or a purchased soil/compost mix, and place rocks and branches



Planting harakeke near the pou at the Owens Road entrance. July 2010.

strategically around the seedling to protect it from rock falls and surface movement. We also create barriers and terracing, laying lengths of cut branches and trunks (e.g. from felled tree privet) horizontally along the contour. The stacked branches are wedged in place against tree stumps or pegs driven into the scoria, halting downward movement. The stabilising effect lasts for a few years. We hope that by the end of this time the roots of newly established trees will be able to hold the slope. A volunteer brought up in a notably steep country, Wales, brings enthusiasm and landscaping skills to this task. But our efforts can be quickly undone by off-leash dogs scrambling up and down the slopes, disturbing the loose surface, dislodging rocks and damaging plants.

Until now, we have focused on encouraging whatever native species exist and removing invasive weeds. Where planting has been necessary, our choice of plants has been limited only by “what works”, although species typical of scoria-cone forest are among those that succeed best in this very dry artificial environment. In the most exposed parts of the quarry, even these species struggle, kept going by heroic watering efforts through summer. Mulching new and established plantings has been well worth the effort.



Weeding the terraced area near the Hillside Crescent entrance. June 2013.

For several years after the trees go into the ground, occasional “releasing” is necessary. On the southern slopes, this may mean cutting back long grass to stop it smothering and outcompeting young plants; kikuyu in particular can quickly swamp a whole planting.

Vines such as honeysuckle – already present in places in the grassland – can pull the leading shoots of juvenile trees downwards, stopping the tree from getting its head up high. Morning glory and climbing dock present a nuisance at Batger Quarry. They can pull saplings down, and grow so fast and lush that they can completely smother the leafy canopy of a young tree.

Boneseed and tree privet both have a nasty habit of seeding themselves into the potting mix in which a newly planted tree is growing, and outgrowing the tree. Broom, wattle, phoenix palm, woolly nightshade and Chinese privet are among the other woody weeds that can hijack a restoration planting. Blackberry makes weeding unpleasant and difficult. Most, with the exception of boneseed and blackberry, are capable of persisting even after a closed canopy is established.

Eco-sourcing

Plants have been supplied to FoM usually from Auckland Council’s Kari Street nursery. As even the best native-plant nurseries cannot confirm the provenance of all of their stock, we cannot be sure that all plants are eco-sourced from the Tāmaki Ecological District. Some have been cutting-grown, so are genetically lacking in diversity and resilience. Even some of the seedlings regenerating naturally on the Maunga may derive from trees in nearby gardens, of unknown origin. Some common species we would like to plant, such as *Coprosma macrocarpa*, are unavailable from any nursery. Further, nursery-grown stock are often in a potting mix containing pumice, an undesirable material to be adding to the site on both archaeological and geological grounds.

For all these reasons, it would be desirable to grow some of our own plants, as some of us are already doing at home, from seed collected on the Maunga or elsewhere in the Tāmaki Ecological District. The FoM volunteer nursery below the kiosk, where we grew pātītī (*Microlaena stipoides*) for the early phase of the grass trials, is well set up and underutilised. We are just beginning to use the nursery to propagate material for our planting programme, sourced from the Maungawhau lava-flow forest remnants.

Physiological varieties, specially adapted to harsh volcanic conditions, may exist. It might be possible, through the Maunga Authority and the Department of Conservation, to propagate scoria-cone plants from seed gathered on Rangitoto and in fragments of scoria-cone forest on the isthmus.



Ecological gardening

FoM volunteers have built up a store of knowledge about what will succeed in various parts of the site, and what will not. A surprising variety of growing conditions – aspect, stability and soil organic matter – exist within a small compass. Trial and error plays a role here, as do conversations with volunteers elsewhere, and with professionals. We have developed a successional approach in which the fast-growing pioneer species whau is allowed to form a temporary canopy which suppresses light-dependent weeds while permanent canopy closes over them. This is a horticultural replication of a natural process (“ecological gardening”).

With more experience, we are becoming more discriminating in our removal of weeds. Herb Robert (*Geranium robertianum*), a dominant weed species in the quarry, seems not to be much of a threat to plantings. Ivy may at least hold the surface stable, but honeysuckle is intolerable.

We have begun to thin our early plantings. In some places, whau has served its purpose as a nurse or pioneer species and an understory of other young trees has grown up. Whau can then

be removed, especially where it is shading shade-intolerant species like pōhutukawa. The trick is finding the right moment, before the whau are so big that taking them down causes unacceptable damage to the undercanopy.

Pioneer species like *Coprosma robusta* tend to lean at angles on the steep rocky terrain. Spindly trees need pruning and thinning; otherwise, they may die off and pull out of the ground.

Not even the best-established plantings have attained a quasi-natural state; they still look rather sparse and open. Understorey shrubs like hangehange do not thrive; nor do ferns, except for a handful of very tough species. A long period of soil formation through the breakdown of leaf-litter may be needed before we have anything resembling a natural state. The quarry project is a long-term one to rehabilitate an extremely damaged site.

Weeding techniques

We remove and dispose of weeds by mainly non-chemical methods. Careless use of herbicides by Council contractors has caused damage to trees in the past, not to mention strife between Council and FoM. We are cautious about herbicide use, but we do recognise that a combination of manual and chemical methods (integrated control) can be useful. Several of us have completed the Growsafe course for users of agrichemicals. Our general approach is to clear weeds by hand initially and to control regrowth by targeted spot spraying and stump pasting.



Kit Howden and Keith Ayton cutting and stump-treating a multi-stemmed privet on the Hillside Crescent boundary. Left untreated, privet re-sprouts from the base.

We remove groundcover and herb-layer weeds in stages to avoid erosion problems or habitat loss for ground-dwelling animals (e.g. skinks and invertebrates). Canopy weeds are also removed in a phased manner to minimise explosion of light-dependent weeds and loss of habitat for animals. Rather than total eradication, we carry out disruptive removal of some weed species, creating spaces for native species to regenerate. Where weed trees are holding banks together, coppicing (cutting to a short stump) and pollarding (pruning the top branches) prevents seed dispersal until a replacement native understorey is well established.

To reach target weed areas in the quarry, we use temporary access paths. We try to work along contours, not up and down the slope. A basic rule of thumb is to place prunings and fallen branches horizontally, not pointing downwards.

Weeds are composted on-site wherever possible. Over the past decade we have worked out, by trial and error, a set of techniques for removing and disposing of particular weed species. These are outlined at the end of this chapter. *Tradescantia*, for example, is left to break down into a useful compost in locally designed “trad bags”. Sometimes it can be better not to remove weeds at all, if there is no intention to plant the area and weeds are the only stabilising vegetation.

Volunteers tend to have a preference for either “macro” weeding (the large-scale heavy work of hacking down privet or bamboo and treating the stumps) or “micro” weeding (the small-scale meticulous work of taking out ground-layer weeds by hand). The roles are complementary.

Another “macro” job is trimming the long grass among plantings in the pasture, using a weed-eater or small sickle. This has allowed excellent survival of these plantings even when a drought year follows. We perform some weed control work right around the southern slopes – releasing planted trees from encroaching weeds, spot-spraying honeysuckle and uprooting stinking iris, patrolling the reserve boundaries for weed incursions, and hand-weeding *tradescantia* under existing native or exotic canopy to promote native regeneration.

Creating a weed-free site over the whole of Batger Quarry would be unrealistic, although Jo Fillery has attained that aim in parts of MU 6. Our goal elsewhere is weed control – the removal of weed seed sources over a sufficiently large area that desirable native plants can outcompete weeds. This requires sustained effort over many years and ingenuity in the absence of major resources. It depends also on the understanding and engagement of neighbours, and on region-wide strategies to control pest plants spread by birds. FoM use the term “bio-trespass” to describe



Tradescantia left to rot down in an ultra large “trad bag”, May 2009. The dark humus revealed in 2012 was used when planting that year.



Micro-weeding on a fragile scoria slope calls for agility and attitude!

the movement of plants and animals into areas where they cause ecological harm. In this context, volunteers can play important surveillance and advocacy roles in a regionally coordinated programme to control weed infestation in ecological restoration areas.

Volunteer coordination

As a rough estimate, FoM volunteers put in at least 1000 collective hours of work on the ground annually. We gather every Tuesday morning, wearing our FoM high-visibility vests, the old orange vests inscribed in now-faded felt pen, or the new yellow ones, professionally screen-printed.

Volunteer numbers each week vary between four and 12 people with diverse skills and interests. Many volunteers live locally; some are students, visitors or new immigrants; a few come from other suburbs. In addition to our regular Tuesday group, independent volunteers work in designated worksites or on specific tasks in their own time, with support from FoM. New volunteers are sometimes referred through Volunteering Auckland, and corporate groups occasionally help on a one-off basis.

Volunteers are encouraged to experiment and take responsibility for ideas they initiate, while decisions on what to do each week largely depend on who turns up. Our yearly round follows a loose seasonal pattern. During the summer months we keep off the dry quarry surface as far as possible, and concentrate on weeding sweeps throughout the southern slopes. At other times of the year we carry out follow-up weeding, revisiting in turn all worksites in our area.

Although we work by discussion and consensus, our leadership has always come from Kit Howden who has a long-term commitment to the project and brings his experience, knowledge and skills to the role.



Volunteer coordinator Jean Barton with cut blackberry and honeysuckle vines. This photo accompanied an article in the *Central Leader* in May 2009 when an act of vandalism allowed cattle into the FoM restoration area, damaging native plants. Fairfax NZ.

Drought

In 2013 we endured the worst drought in 70 years. On areas of original surface, plants survived remarkably well, but even well-established trees struggled in the steepest and sunniest parts of the quarry. In 2014 we brought in weed-free peat-based soil (clean volcanic soil being unavailable) which we bagged and carried to the planting holes for infill planting of low-growing species. We also mulched plants heavily in spring. These measures seem to have helped vulnerable trees and seedlings withstand the summer dry period.

We are fortunate to have access to a water supply near Batger Road, but hose watering is time-consuming and unsustainable year after year, especially if the climate is now changing. Although we have a very drought-prone site, watering can be justified only for the first few years of a tree's life, after which its survival must depend on nature. A low vegetation of flax and mānuka might be a more realistic target in the driest areas. Puka and houpara are proving very drought-resistant.

Weed control notes

These notes cover many of the main weeds we control in our work area, focusing on techniques that are in some way unusual or site-specific. The priority is on manual methods. The main herbicides we use are Vigilant (picloram-based gel) and Roundup (glyphosate) spray and gel. We use residual herbicides such as Grazon (triclopyr) very selectively and with great caution.

<p>Blackberry</p>	<p>We tried pulling out small patches, but the deep roots always break off and regrow. Best to cut stems about 50 mm from ground, scrape to increase surface area and immediately apply Vigilant gel. Larger areas may need spraying with triclopyr or metsulfuron. Follow up for years!</p>
<p>Blue morning glory</p>	<p>Pull out roots, leave elevated on-site to dry out and die. Leave masses in trees without attempts to "tidy" – soon dries up; removal damages trees.</p> 
<p>Boneseed</p>	<p>Cut and stump-treat any plants too big to pull out. Prevent seeding.</p> 
<p>Climbing dock</p>	<p>Dig out tubers, rot down in water in a wheelie bin. Prevent flowering and seeding.</p> 
<p>Ginger</p>	<p>Dig out rhizomes, bag and remove (contractors take away). Slash stems just above root, chop up stems and scatter as mulch. Follow up for remaining root fragments.</p>
<p>Gorse</p>	<p>Hand-pull small plants; cut and paste (Vigilant) large old plants. Contractors spray if widespread (e.g. behind/above the Scout den). Prevent seeding.</p>
<p>Ivy</p>	<p>Several varieties, depends on location. In some sites, need to leave it as removal could destabilise slope. If growing up trees, cut off at base; wait till it has died before removing from tree to avoid wounding tree. Apply Vigilant gel to cut stumps. If growing over fences, spray as per Council/Weedbusters recommendations.</p>
<p>Japanese honeysuckle</p>	<p>Pull out runners and roots; cut and paste (Vigilant) big roots rather than destabilise rocky slopes. Prevent flowering. Spray larger areas as per Council/Weedbusters recommendations.</p> 
<p>Japanese spindle tree</p>	<p>Cut and paste (Vigilant) even small plants. Roots are hard to pull out.</p>
<p>Jerusalem cherry</p>	<p>Pull out small plants; cut and paste (Vigilant) larger plants. Prevent seeding.</p>

<p>Madeira vine (<i>a.k.a. mignonette</i>)</p>	<p>Cut off vines, dig/pull out roots and put in bin of water to rot down. Gather aerial tubers. Follow up for sprouting remnant tubers for as long as it takes.</p>	
<p>Montpellier broom</p>	<p>Pull out small plants; cut and paste (Vigilant) larger ones. Follow up annually as new plants can flower/seed in two years.</p>	
<p>Privet</p>	<p>Pull out very small plants (<300 mm); cut and paste (Vigilant) medium ones. For mature trees, saw branches and paint or spray cut stumps with metsulfuron-methyl. Larger stumps need repeated treatment. On steep slopes where no native trees are present, coppice privet so that their root mass will stabilise the slope.</p>	
<p>Stinking iris</p>	<p>Prevent seeding, collect seeds, fork out rhizomes, cut off leaves and leave on-site, bag and remove roots. Drown roots for six months to kill.</p>	
<p>Tradescantia</p>	<p>Compost down in "trad bags" (Weedfree Waitakere). Trample, and add a starter like blood and bone to speed up the process. Becomes black soil in a year.</p>	
<p>Wattle</p>	<p>Pull out small plants; cut larger ones. Have not found it necessary to treat stumps.</p>	
<p>Woolly nightshade</p>	<p>Pull out small plants; cut and paste (Vigilant) larger ones.</p>	

Five sample Tuesday reports by Jean Barton

Tuesday Report #20

15 September 2009

Greetings fellow weeders

A very focused effort today, which saw the ginger patch completely eliminated. It's now a case of "What ginger patch?"



Keith and Ben eradicating the ginger patch on the western reserve boundary.

In half an hour of determined slog Ben and Keith got it all pulled out, then with David and Oliver continued clearing root fragments, surrounding vegetation, and even planted 3 little whau Kit had brought along. I chopped the rhizomes off the stalks; the rhizomes were bagged and stacked beside the nearby gate in the fence, the greenery was piled up and a lot of wood, concrete etc. previously thrown over the fence was heaped up. Kit improved access to the area, Oliver got a crash course in using Vigilant herbicide gel. As the rest of us left, Kit and David were preparing to go and attend to the Owens Rd plantings which are in need of weeding.

At one point dozens and dozens of school children came along the path above us, heading north, very excited.

If anybody else was working elsewhere on the site, sorry, we missed you.

See you all next week. Jean

Tuesday Report #49

4 May 2010

Hello volunteers

Despite the forecast of morning showers, several of the usual suspects gathered at 0930, to be rained on heavily for about 10 minutes. Chris showed us two versions of her experimental tool-belt; Dorothy showed us the bruise on her face where a branch wielded by Jeremy hit her last week; April dashed home to bring raincoats for the over-optimistic. Kit had a meeting on-site with Darren Kalka and Tony Hartnett of ACC. The rest of us moved along to the site behind the flats, where Jeremy then David joined us.

While Keith and Jeremy prepared the next trees (privet – what else?) for chainsawing, Dorothy, Chris, April and I passed privet branches across the fence and up the slope where Chris and April constructed erosion barriers with them. The green wood was dense and heavy.

After preliminary branch-trimming Keith chainsawed the first of three big multi-trunked privet, then the moment we had the stumps coated with Vigilant, Jeremy had sheets of cardboard stapled in place to keep off the rain – bang, bang, bang, done; none of last week's laborious fiddling with flapping sheets of plastic. Splendid invention, the staple gun – thank you Ben.



Jeremy and Keith hand-sawing privet.

Tuesday Report #49 – continued

Chris dug out a mass of smilax tubers, marking the spot to watch for regrowth. April continued building retaining structures back along the slope above the bins. One minute Dorothy was using loppers to cut the leafy heads off branches, the next time I looked she was a metre off the ground up a griselinia, pulling vines out of the canopy. Probably trying to stay out of range of Jeremy.

When Kit and David joined us we formed a sort of chain to pass more branches up the slope, and carry others back to above the bins.



Dorothy in the griselinia.

Jeremy and Keith took turns climbing into a second large privet to hand-cut branches, somehow dropping them in such a way as to avoid damaging each other, anybody else, and the TV aerial on the nearby roof. They claimed it was all due to their skill rather than sheer luck. This tree was then chainsawed and the trunks trimmed of leafy tops and passed up the hill while Vigilant was applied and covered.

Finally the highlight – a monster with at least 20 trunks. Once more Keith and Jeremy, now suffering severe caffeine deficiency, climbed aloft and sawed off 3-metre branches with fine precision, then Keith chainsawed it, having to avoid two separate wire-netting fences embedded in the trunks – the newer one easier to see than the rusty older one. Ever cautious, we still covered the Vigilant even though rain now seemed quite unlikely.

Where we were working, outside the wooden fence, there is an older netting fence with concrete posts, a couple of metres away, which is probably the true boundary, though it is hard to get clear information from ACC.

Eight of us did at least 21 hours today, a fine effort. Good to have two neighbours, Dorothy and Jeremy, working with us.

At 7pm four Friends attended a very interesting and informative 2-hour talk by Ngarimu Blair; in connection with the volcanic cones he made complimentary mention of FoM as a very keen community group who do a lot of work and weeding on Maungawhau.

Till next week, Jean

Tuesday Report #101

3 May 2011

Greetings workers

No chance of claiming wet allowance today – not a drop of rain fell until we were on the way home.

Those who arrived on time saw the larger plants being delivered right on schedule at 0930 – whau, kowhai, griselinia, astelias – but it was all over by the time I got there.

We gathered up trays of microlaena grass plugs, as many larger plants as we could carry, and the ladders we keep near the gate and walked along the track to the area above it which we cleared of dense tradescantia some weeks back.

Set up the ladders along the ground and clambered up to where we could most gratefully stand on the sturdy terraces Gerald built. Grand job, Gerald!

The idea was to start planting and weeding from top down, but most of us find it difficult to go past weeds, so we ended up weeding our way to the top before beginning to plant.



There were hundreds of wattle seedlings and a few large mist flower clumps. Also some good growth of ferns. Emmanuelle, Keith and I moved up the slope while Dorothy, Lillian and Kit worked closer to the track at first before joining us. Kit also did some track maintenance – old habits die hard.

Cup of tea and gingernuts around 1100, then general finishing off, tree-trimming – dead branches and coprosma crowding pohutukawa – and we were on our way, leaving Kit to work on a bit, then take home the rather desirable kowhais for safe custody till next week. We “hid” the whau etc among trees at the entrance.

Next week probably more of the same – weeding and/or planting.

Cheers for now, Jean

Tuesday Report #138

7 February 2012

Hello Friends

A great day for it today – first day back for me and Keith after our tramping trip. Good to be back into it.

The day started at Batger Rd with a meeting at 0900 to discuss pressing issues we had raised with Council. Kit, April, Keith and I met with Tony Hartnett, Chris Beard (in charge of contractors), Shane Rebus (Envirotech) and Peter Turei of Ngai Tai.

Some of the issues discussed were: the contractors' role – e.g. where do they mow, and where do we think they should mow; signage or the woeful lack of it, needed e.g. to direct people to the summit, guide Coast-to-Coast walkers, greet people at entrances. The Outer Link bus service drops people on Mt Eden Rd nearby, but there is no indication of how to make their way to the summit. Also discussed was the shabby, underwhelming state of the entrances to Maungawhau. We visited Batger, Rautangi and Owens Rd entrances, then left the others continuing along the Coast-to-Coast section. By sheer coincidence, at both Rautangi and Owens Rd we encountered highly knowledgeable FoM supporters who offered their well-informed opinions to the Council staff. Peter commented that visitors, even international ones, respond well to FoM's "home-grown" signs and pamphlets, and seem to appreciate that our local community values and cares for Maungawhau.

Some time after 1000 we returned to Batger Rd with Sel and walked the track to the entrance near Hillside Cres. where we continued our discussions over an early cup of tea. Eventually we started work, spreading out and weeding on both sides of the track. As usual it took a while before any progress was visible, but by the time we finished the area was a lot "cleaner" around our plantings, and April had marked them with stakes. We took out a lot of violets and small cineraria, as well as the usual tradescantia remnants. Our earlier removal of montbretia near the fence was obvious, where there would have been a mass of orange flowers.

We debated how to deal with people taking shortcuts between the track forks – some suggested options were: creating barriers of cut branches, using planting as a barrier, or creating a new track along the "desire line". This last option we didn't favour as the slope is both steep and very loose and fragile at this point.

We also thought about how we would like this entrance to be – for example remove at least part of the fence and extend the mown grass area.

Kit went off to spray patches of blackberry, agapanthus and honeysuckle between Batger and Owens Rd, using 10 litres of Brushoff herbicide. The fine, windless conditions were ideal.

Next week it would be good to finish removing the Madeira vine and other weeds from the carport roof at 326 Mt Eden Rd. But if not that, there will certainly be no shortage of things to do.

Hope to see you then. Cheers, Jean

Tuesday Report #206

16 July 2013

Hello good people

A cold day, but the sunshine lifted our spirits. Also with us was Lisa Loveday, checking out what we and other community groups do, as part of a Council project related to the Eco-events website. I believe photos were taken, though who will reach publication remains to be seen.

After agreeing to have tea at Batger Rd at 1115 (Kit's top priority) we separated into three groups.

Kit and Dorothy, feeling adventurous, set off to climb up and inspect below the concrete wall; Keith and I drove to the summit, then came down the road, over the barrier, over the fence and into the upper edge of the trees, where we worked from north to south on Montpellier broom, with a lot of sundry other weeds like honeysuckle (rather young and spindly), woolly nightshade, ornamental cherry, privet, stinking iris and the occasional moth plant seedling. We made good progress on the broom – most of it pulled out, and the biggest were cut and pasted with Vigilant gel. There was an encouraging variety of native regeneration – karo, coprosma, five-finger, cabbage tree.

Meanwhile, back at the ranch... the planting team of Li, Robyn, Jamie, Margie, April and Sel, with Melissa in support, were putting in flax and astelias on the upper part of the main slope, weeding out and bagging seed-laden veldt grass as they went. Four large bags were filled. As we all know, this site is fiendishly difficult to stand or move on, let alone dig good planting holes in, so work was inevitably slow – but of high quality. None of these plants will be found falling out of their holes in a year's time.

Over tea served from the car bonnet, Dorothy and Kit reported good growth of our pohutukawa plantings below the concrete wall, with only a few losses over summer. Some tree-releasing is needed; blackberry and Japanese honeysuckle are rampant and will need some dedicated work. However a few short years ago there was blackberry all over the main slope – but not any more. Some may remember the big heap of cut blackberry at the foot of the slope.

Incidentally, for those of you who lie awake at night wondering, the first Tuesday report was sent out on Thursday 9 April 2009. The significance of this is that the Friends have worked on the maunga every single Tuesday since then, apart from extreme bad-weather days which you could count on one hand.

After tea the planters resumed work while Keith and I returned with Dorothy to the broom patch – a good decision, as the work seemed to fly along with the extra hands. We found a heap of rubbish and removed glass bottles from it. April moved north along the track, well beyond the planting site, to remove ivy climbing over flax. Around 1300 everybody packed up.

Only four muehlenbeckia and six aspleniums remain for next week's planting.

See you then. Cheers, Jean



Education and Advocacy

Introduction

As an independent volunteer group, the Friends of Maungawhau engage with authorities and the public to protect and preserve Maungawhau. Through our conservation work and interaction with residents and park users, we raise public awareness of the significance of the site. In our advocacy role, we campaign for better management not only of Maungawhau but also of the other neglected and damaged cones.

This chapter outlines what we are doing and what we have achieved as champions and advocates for Auckland's volcanic heritage sites.

- We campaign for the implementation of management policies and for transparent contracts for the care of all the volcanic cones.
- We promote volunteer action to care for the reserve, and support the individual volunteers who contribute to improving the ecological succession of native vegetation on Maungawhau.
- We work with Auckland Council and the Albert-Eden Local Board to address current issues of management and to provide guidance and advice.
- We have consistently recognised Ngāti Whātua's mana whenua status over the land, and support co-management of the volcanic cones by the Tāmaki Collective and Auckland Council.
- We make submissions to local and national governing authorities to review legislation so that natural and cultural heritage sites like Maungawhau are better cared for.
- We hold events such as Love Your Mountain Day to celebrate our volcanic heritage.

Education and public outreach

Education and advocacy are often closely intertwined. Maungawhau needs to be presented to the public as a heritage site deserving of appropriate management and protection. People will be engaged if they understand that there is much to be “loved”, revisited and learned about the volcanic cones. This section focuses on education – i.e. those activities that are addressed to or engage the general public.

Love Your Mountain Day is FoM's signature event, held every summer since 2006. It is organised and run by FoM volunteers, with support from Ngāti Whātua o Ōrākei, Government House and Eden Garden. Our aim is to foster awareness of Maungawhau as a special place to visit, learn about and look after. The event highlights the need for better management and protection of the Maunga, and promotes walking, reduced vehicle use, and volunteering by the local community.





Left: Chinese New Year Festival 2013. FoM volunteers Margie Luby and Oliver Hoffmann with Estella Lee, chairperson of the Chinese Conservation Education Trust.
Right: FoM secretary April Glenday with her 2013 display at the Mt Albert Library.



Karen Jane, event organiser for Love Your Mountain Day 2007-2009, and the wish tree. Photograph by Laura Forest, 2012.

Love Your Mountain Day

Love Your Mountain Day is the only day of the year when Maungawhau is closed to all traffic and Government House grounds are open to the public. Visitors on the day can join guided walks, learn about the Maunga's history, geology and archaeology, enjoy music performances and hang their own wish on the "wish tree" strung with paper cranes. Ngāti Whātua o Ōrākei lead activities such as guided walks, a weaving workshop and, in 2012, a demonstration of mau rākau (traditional Māori weaponry).

For the background to Love Your Mountain Day, see Chapter 1: History and Context.

Other educational and outreach activities

We have organised community planting days on Maungawhau, and hosted events and guided walks on Arbor Day (5 June) and World Ranger Day (31 July), and during the Auckland Heritage Festival. On other occasions we have contributed displays and put up stalls at events such as the horticultural trade show, Grey Lynn Festival and Picnic for the Planet.

Further educational activities have been:

- Making our work and ideas known to many different groups, from Council officers and politicians to casual users of the Maunga.
- Communicating with FoM members and the public through our website, blog, Facebook page, newsletters and email mailing lists.
- Producing brochures, maps, information sheets, display materials, event flyers and leaflets.



Weed Day, 20 March 2011. FoM hosted a loop walk & talk and a weed display for Maungawhau neighbours.

- Making and erecting track signs and plant labels.
- Giving illustrated talks and guided walks to school and community groups, and to organisations such as Rotary and Forest & Bird.
- Responding to media requests for comment upon issues concerning the volcanic cones, issuing press releases and writing “letters to the editor” on topical issues.
- Initiating discussions with neighbouring property owners about disputed or undefined boundaries and informing them about noxious weeds through leaflet drops, door-to-door visits, practical help and liaison with Biosecurity officers.
- Supporting an effective and sufficiently resourced iwi-based guide service (Tāmaki Hikoi) associated with a visitor centre.
- Maintaining good relationships with iwi, by building on personal contacts, taking part and assisting in guided tours and training.
- Proposing that rare native plant gardens be designed and created for educational purposes.

Advocacy for better management

FoM has campaigned over many years on fundamental issues:

- Implementation of the 1986 and 2007 management plans for Maungawhau.
- Protection of the Maunga and zero tolerance for any damage to the site.
- Recognition of iwi aspirations for co-management.
- Appointment of a professional heritage ranger.

To these ends we have made numerous submissions on Council plans, policies and strategies. Our position on key issues is described below.

1. Protection of volcanic and archaeological features

The permanent removal of cattle from the Maunga was finally achieved in May 2009 after repeated requests by FoM and Ngāti Whātua over many years. Initially, FoM tried to get Council to adopt a better grazing regime using sheep, but with erosion increasing, removal of livestock was the only option to preserve the spectacular volcanic and archaeological features of Maungawhau.

Since grazing ceased, FoM has participated in many discussions on weed control and native plant cover for archaeological features. We have persistently stated our views about the futility of an expensive Council-led attempt to establish a monoculture of pātītī (*Microleaena stipoides*) grass on the upper parts of the mountain against the overwhelming



Sue Bulmer examines erosion in the historic reserve. A failed pātītī trial area is visible on the bank behind her.

competition of invasive exotic grasses such as veldt grass and kikuyu. The Manager Regional and Specialist Parks, at a meeting with Kit Howden in 2012, agreed that the programme should be stopped. It has been difficult for all the players – archaeologists, ecologists, arborists, geotechnical engineers and soil scientists – to agree on a practical and economically realistic alternative.

2. A professional ranger service for the volcanic cones

The appointment of a full-time park ranger for the Maunga has been a key issue for FoM since our inception. We have strongly and consistently called for a professional and well-resourced ranger service to provide practical on-the-ground management and oversight.

For decades the Council has operated under a highly compartmentalised management structure and contract-out philosophy, resulting in poor performance, serious errors and a waste of funds.

Our concerns about the high level of risk with no one in a liaison or ranger role were borne out in May 2010 when fencing contractors damaged archaeological features on three volcanic cones. As a result, the Council was fined \$18,000 in the Auckland District Court. It appears that procedures put in place to prevent recurrence have merely given rise to greater cost, complexity and confusion.

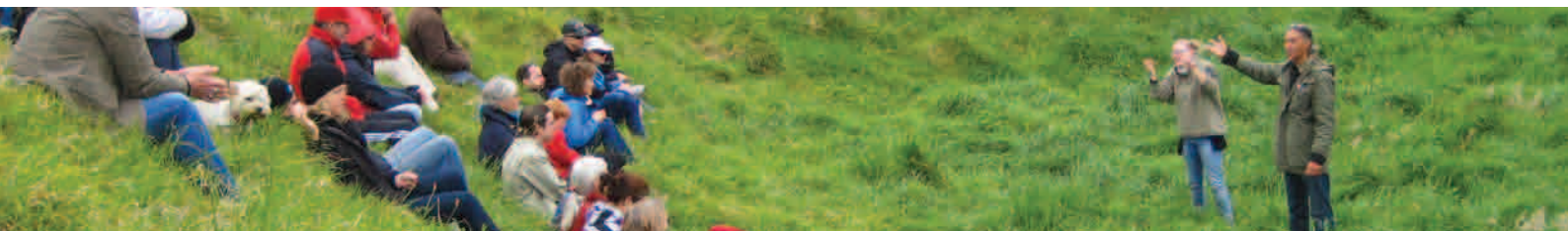
A ranger-based system would ensure that trained specialist staff are available on-site to oversee contractors, volunteers and Council staff. This would provide logistical and planning continuity and help eliminate duplication, risk and unnecessary expense.

Volunteer groups such as FoM would benefit enormously from on-the-ground support and guidance. Visitors and residents would appreciate knowing that the Maunga is valued and being looked after. In a paper presented to the 7th World Ranger Congress in Tanzania, Kit Howden (2012) put forward a cogent argument for a mixed co-management model with a professional ranger service at its heart. As we said in a newspaper article (Glenday 2011), “a dedicated ranger service for the maunga would fit well with the idea of communal responsibility, of working together for a common good”.

In our submissions to the Royal Commission on Auckland Governance 2007, and to the Auckland Governance Legislation Committee 2008, we said that management must be focused on heritage protection, not on satisfying demand for open space and tourism, and that this primary purpose can best be met by a ranger service. In its report the Royal Commission (Salmon et al. 2009: 190) noted that:

The Friends of Maungawhau group suggested establishing a region-wide park ranger or kaitiaki service along with citizens and volunteers to manage Maungawhau, other volcanic cones, regional parks, and other significant parks.

The Royal Commission included in its recommendations (Salmon et al. 2009: 19) that Auckland Council should “appoint a park ranger with responsibility for volcanic cones”. The recommendation was repeated in the *Vegetation Management Plan* (2009: 56).



A 2012 report on rangers in Auckland's regional parks (Auckland Council 2012) highlighted their isolation and the need for better recognition and promotion of their role. Rangers for the volcanic cones would need training and skills in heritage management and the ability not only to supervise contractors but to guide and assist volunteers.

3. Removal of traffic from the Maunga

Constant traffic on the Maunga is incompatible with heritage preservation. Congestion, dangerous traffic conditions and damage caused by vehicles have been obvious for years. We have constantly called for all traffic to be banned from the summit. As argued by Sue Bulmer (2008: 2) in her comments on Council's 2008 *Maungawhau project update*, "the Reserves Act gives right of access in reserves to pedestrians, but not to vehicles".

Since December 2011, buses now park below the kiosk but cars still go up. We believe that the Maunga should be free of all traffic, to limit further damage and to allow Aucklanders and visitors the enjoyment of a splendid sealed and gently inclined pedestrian route to the summit.

4. Tangata whenua

Our relationship with tangata whenua goes back to the founding of FoM. We have consistently supported the aspirations of the Tāmaki iwi for a greater role on the mountain and have unceasingly advocated for changes in the management of the Maunga, often in cooperation with Māori interests. FoM supported the return of ancestral land to mana whenua ownership under the Treaty of Waitangi settlement. We have welcomed and appreciated the active involvement of Ngāti Whātua o Ōrākei in Love Your Mountain Day.



FoM organised a guided walk for the Auckland Heritage Festival 2012. It was led by historian Pita Turei accompanied by NZSL interpreter and FoM volunteer Ginette Rawlinson.

5. Shuttle and guiding services

FoM fully supports continuation of a seven-day shuttle and guiding service operated by Tāmaki Hikoi who play a valuable role in welcoming visitors and presenting the history and heritage of the Maunga. To quote from the 2005 *Conservation Plan* (Sec. 7.3.1):

Descendants of Hua Kaiwaka should be on the mountain every day undertaking their role as *kaitiaki* hosting visitors and tourists. Improved protection of Maungawhau could be achieved through imparting a greater understanding of the cultural and geological values of Maungawhau to visitors as well as greater surveillance.

However, the guiding service needs to become commercially viable and to operate in tandem with a levy system for tourism operators. Since the 1990s, FoM and Ngāti Whātua o Ōrākei have advocated concession fees so that all commercial and tourism operators on Maungawhau contribute to sustainable management. A levy system is best practice in park management, a practice followed elsewhere by the Department of Conservation and other professional park agencies.

6. Visitor centre

The guides currently operate out of the old tea kiosk, refurbished and earthquake-proofed in 2012. In submissions over the past two decades, FoM has argued for the kiosk to be run as a visitor centre with a small café to provide for manaakitanga (hospitality) on an economic basis. It is our belief that the visitor centre must be site-specific and not geared to the general tourist market: it must present the cultural, historic, geological and ecological significance of Maungawhau,

while serving the needs of local residents as well as overseas visitors. We support making the visitor centre available for community use, public lectures and meetings.

7. Other built structures

Our advocacy has contributed to removal of summit pole lights and curb lights in accordance with Māori wishes and the “dark sky” movement, as well as removal of the Telecom masts from the summit. Some FoM members would like all built structures removed from the Maunga, including the trig station and the old Post Office VHF radio receiver hut (now disused), if this would accord with iwi wishes.



The kiosk as it looked in 2007.

8. Geotechnical surveillance

FoM advocate a continuation of geotechnical assessments and monitoring of the stability of Batger Quarry, following the geotechnical survey by Tonkin & Taylor Ltd (2011) and subsequent installation of tilt meters in the concrete facing wall. We seek information about the eroding protective concrete cover (shotcrete) on the sides of the quarry. One recommendation has been to cover the quarry sides with green-coloured concrete, contrary to FoM's preference for a soft engineering approach and a more ecological solution. There are unresolved conflicts here between ecological and stabilisation objectives.

9. Tracks

FoM created and maintain the Batger Quarry track, which provides a popular access route to the Maunga. We continue to advocate for better tracks and track maintenance, and especially for countermeasures to the formation of desire lines (unformed shortcuts) which cause immense damage. We engage with Council to address the erosion caused by off-track travel, uncontrolled animals and rainwater runoff. We urge for provision of clear, attractive and sturdy signage to direct and inform the public.

10. Protection of biodiversity

FoM volunteers maintain small informal trial plots of native species and protect naturally occurring or regenerating vegetation in a number of areas. We have produced various species lists, but see a need for better record-keeping and greater sharing of knowledge among Council staff, contractors, consultants and volunteers. The FoM ecological plan for Maungawhau (Marler 2013) and the map of vegetation management units (see Appendix 2) provide a starting point.



Friends of Maungawhau received a 2010 Good Citizens Award from the outgoing Eden Albert Community Board. Sue Bulmer is centre stage. Another long-time FoM supporter, Wendy John of Friends of Oakley Creek, is on the far left of the photo.



Challenges

Introduction

The Friends of Maungawhau have worked as volunteers and advocates for the Maunga under successive local governments and management policies.

For more than a decade we have consistently lobbied the Council to do more to implement its various strategies for volcanic landscapes, in particular as they apply to Maungawhau.

We are mindful that the issues around the management of this and of the other volcanic sites in Tāmaki Makaurau are not so very different, and hope that a reconciliation of the competing interests on Maungawhau will serve as a useful, albeit imperfect, model for other sites.

The structure of FoM as a group and our interconnections with various authorities and the public present a number of challenges – some with wide implications. This chapter outlines the challenges we face in caring for the Maunga, and the challenges we must meet as a volunteer group to survive and continue working effectively.

Challenges for FoM as a volunteer group

Our structure and scope of activities

Group structure

A committee coordinates the activities of FoM and controls its finances. Our limited membership provides flexibility, yet includes a broad range of skills and talents. Drawbacks are that most of the work is done by a few and it is often difficult to delegate tasks. For those committee members at the forefront, there is the risk of burnout because it is difficult to take time out, and thorny issues are occasionally unresolved or consensus is not reached.

Members include those who are active on the Maunga with weeding, planting and maintenance and those who are in a more supporting role in the background. Members often have clear preferences for either practical volunteer work on the Maunga or advocacy for change at the management level. This makes for an open and inclusive atmosphere. However, the lack of standard membership fees may lessen commitment and make it difficult to elicit help from the wider membership. There is sometimes a lack of communication and it is not very clear what membership provides.



Balance of activities

While the core activities of FoM are weeding and planting on the Maunga, along with advocacy and educational efforts, there are, as is usual in any organised group, always considerable pressures from within the group and outside to expand these activities or even add to them. It is a continuing challenge to see that no one becomes overloaded, so that our activities are conducted in a true volunteering environment and do not become a full-time burden better carried out by salaried personnel.

Leadership and training

As described in Chapter 3: Volunteer Work on the Ground, our work is loosely organised, and individuals can choose which of the proposed worksites and jobs they prefer on any given day. So far, the leadership role has mostly been borne by Kit Howden, with valuable assistance from Jean Barton guiding our weeding work on Tuesdays.

The path by which knowledge about the plants, weeds and the site ecology has been communicated is more diffuse and multi-sourced. Our challenge here is to find equilibrium between the wish of some to continue in the free-for-all mode and others who would like to see a more structured organisation, possibly involving a paid coordinator, with occasional formal discussion meetings away from the mountain and more regular training sessions for the members.

Recruitment

Presently the median age of the volunteers is distinctly biased towards the older generation. It would be nice to attract a greater number of younger people, even if their participation is only of a limited duration. However, we need to balance the advantages of having a more diverse membership with the disadvantages of creating a group that is too large to manage effectively and of spending too much effort on recruiting.

The Tuesday reports, and our small collection of plant guides and leaflets, help to enhance volunteers' knowledge of native and weed species. Giving new volunteers the information and guidance they need, while getting on with the job at hand, is a delicate balance for the more experienced among us.

Finances

FoM has enjoyed generous support from the Albert-Eden Local Board, and the former Eden-Albert Community Board, in the form of grants for plants and supplies. The Local Board has partly funded Love Your Mountain Day since 2011. In past years we have received financial support from the ARC Environmental Initiatives Fund, the ASB Community Trust, the Lion Foundation, Pub Charity, and local businesses. We also raise some money ourselves through the sale of books and T-shirts.



However, continued funding is not assured and, like many other volunteer groups, we spend considerable time seeking and applying for grants. Discussions will need to take place with the Maunga Authority about the need for assured financial help to volunteer groups working on the volcanic cones. There is also the dilemma of whether to continue as a purely voluntary group, with a few people doing many hours of unpaid work, or moving to a structure with a funded administrator.

In connection with all this, we need to actively engage with the authorities to implement a concession system for commercial users and operators on the Maunga. A levy would contribute to the cost of shuttle services and a full-time park ranger.

Public outreach and education

Here again we face a continuing challenge to balance our core activities on the Maunga with the need to respond to and communicate with various outside groups. However, communication is essential for building support for our work. Our website, blog and Facebook page have to be kept up to date, interesting and made better use of.

Organising annual events like Love Your Mountain Day takes considerable volunteer time and commitment, and may be too large a burden to continue indefinitely. The scale, focus and organisation of future Love Your Mountain Days will depend on FoM priorities and volunteer support, Council and Local Board backing, participation by Government House and Eden Garden, and iwi aspirations.

We need to build relationships with local schools (especially at the primary and intermediate levels) and occasionally, without overloading schedules, host groups of students for work on the Maunga. Some of them may later come back to join us as volunteers. Our liaison with the surrounding property owners and residents should be maintained and their interest activated, especially with regard to the spread of weeds across reserve boundaries. Local businesses – particularly the Mt Eden Business Association which has supported our events – should be kept informed about our efforts. Finally, we need to maintain our good contacts with other volunteer groups and organisations such as the Volcanic Cones Society and Mt Eden Planning Group.



Bernadette Papa of the Kāhui Kairaranga o Tāmaki Makaurau (Auckland Weavers Network) has led the raranga workshop on Love Your Mountain Day since 2011. Photo by Laura Forest.

Communicating with authorities and gaining legitimacy for our work

The ongoing super-city reorganisation creates problems for FoM and gives the impression that we are operating, at least for the moment, in a vacuum of management and lacking the necessary consents for our volunteer work. Moreover, FoM see in the emerging administration an emphasis on bureaucracy and planning procedures, over-elaborate documents and weak coordination, at the expense of practical on-the-ground management and direction.

The fact that we are dealing with a great and often shifting number of stakeholder groups generates additional confusion. So far we have dealt with the following organisations: Auckland Council, Albert-Eden Local Board, Ngāti Whātua o Ōrākei, the Tāmaki Collective, Heritage New Zealand, Eden Garden Trust Board, plus several Council-controlled organisations (CCOs) such as Auckland Transport and Auckland Tourism, Events and Economic Development (ATEED).

We need to insist on a clearly defined role for volunteers under the new Council/iwi co-management structure, and the establishment of easy communication channels. The principles laid down in Auckland Council's *Parks Volunteer Charter* (2013b) are a good start.

World Heritage status

Various volcanoes of Auckland, including Maungawhau, are being considered for World Heritage status under UNESCO. The application is to be prepared by the Government and Auckland Council. FoM support the application to meet the *Auckland Plan* objective for the Auckland Volcanic Field to become a World Heritage site by 2020. If this application is successful, there will be much work to be done on the volcanic cones, work that will need coordination, community involvement and – most essentially – a professional ranger service.

Challenges in caring for the Maunga

General considerations

In all our volunteer activities, we need to be mindful of Māori aspirations for the site, and of other valuable features of the landscape, including its geology, archaeology and visual connections within Tāmaki Makaurau. Recreational and open-space use of the mountain has also to be considered (see Chapter 2: The Natural and Cultural Landscape). Here the challenge is whether the status quo should prevail, or a certain reduction or relocation of some activities is needed. There must be a continuing integration and reconciliation of diverse values and needs, and a people-based management approach.

Key issues are:

- damage to features;
- lack of a visitor centre;
- lack of signage;
- slope stability;

- poor tracks and maintenance;
- funds wasted on ill-advised projects; and
- a contract-out ethos without meaningful comprehensive specifications.

Due to the issues arising from management shortcomings, and lack of practical administrative oversight and initiative, FoM have often been forced into a reactive mode in the past, instead of lobbying effectively for positive change. It will be important to ensure that the Council and Maunga Authority are focused on preservation and conservation of Auckland's cones. Should the present management vacuum continue, we must take the initiative and show by example when given no guidance or feedback.

Vegetation

An overall aim of FoM is to nurture and protect biodiversity. On a more specific level, we are challenged to find the appropriate vegetation for the sites we are working on (see Chapter 3: Volunteer Work on the Ground) and to achieve the goal of establishing a self-sustaining plant community. One of our challenges is to keep good records of the species we have planted, and their suitability for the particular location.

FoM have had much debate over the native-versus-exotic relationship. Natives that are, where possible, eco-sourced and natural to scoria-cone or lava-flow forest take priority. Existing exotics are tolerated if they have heritage value or help stabilise slopes, and are non-invasive. Greater flexibility will be tolerated in greatly disturbed areas such as the Batger Quarry. We are challenged to work experimentally, observing results and modifying plant selection. Decisions need to be made whether the established plants are left to themselves or need further sporadic or continuous intervention.



Another challenge is to get authorities to make a policy on removing woody native and exotic plants from archaeological features without increasing biosecurity risks through invasion of weeds.

We would like to utilise part of the Maungawhau nursery to raise specialised native plants for all of the volcanic cones, but this would require a professional manager supported by volunteers and iwi. Further work will be needed to clean up the nursery and make it operational.

We constantly need to adapt to changing weather trends – for instance, watering and averting fire risk in dry summers and, if a wet winter follows, controlling the flush of weeds. As larger trees establish themselves, there is much argument about how dense their canopy is allowed to become and what type of undergrowth there should be.

Herbicide use

At what scale to use chemicals against invasive weeds is a constant discussion topic among FoM members. With this and other techniques used on the Maunga, the appropriate safety training of volunteers has to be kept up to date and aligned with current regulations. Use of herbicides needs wide co-management consultation. FoM's policy is to use them cautiously in combination with manual methods in a programme of integrated weed control.

Hazards and safety

Working as we do on a steep rocky site, FoM volunteers are particularly safety-conscious and well-equipped. Our volunteer coordinator has attended a safety workshop, and we always carry a first-aid kit. We do nothing that might risk life or limb. We have concerns about the stability of the Batger Quarry area, detailed in Chapter 4: Education and Advocacy.

FoM's lapsed 2012 memorandum of understanding (MoU) with Auckland Council states that the health and safety of all volunteers and visitors to the Maunga lies with the Council. The two parties to the MoU were to jointly prepare a Health and Safety Plan. This has not been done. A priority for FoM once the Maunga Authority has started work, will be to formalise an agreement, including not only health and safety matters but public liability insurance which we have always paid for ourselves.



Fire risk

A research report on groundcover for the Auckland volcanic cones (Landcare Research 2011) pointed to a fivefold increase in grass biomass since the end of grazing in 2009. The fire risk results from a build-up of residual dry matter (thatch) and elevated dry matter (long dry grass).

In 2012, Kit Howden, after doing a great deal of research, met with Ngārimu Blair, Council and contractors to look at ways of reducing the fire risk and safeguarding archaeological features. Based on available literature (e.g. Fogarty 2001, Jones 2007), Kit also compiled a list of low-flammability native species, which could be planted where they will slow or stop the spread of fire.

In December 2013 the Council mowed a 10-metre wide firebreak along the southern boundary from Batger Road to Eden Garden, which will protect private properties should a fire occur on the Maunga. However, FoM are still greatly concerned about the fire risk. We need to progress our recommendations, which include declaring the Maunga a smoke-free zone, ensuring that fire-fighting equipment is available for an initial rapid response, giving the guides basic training in fire control, and having a full-time ranger to coordinate such activities.

Working together

Where there are shared concerns or wider issues of heritage park management, there is perhaps a need for a cross-organisational sub-group, in which FoM might participate along with representatives from, for example, Friends of Regional Parks, Volcanic Cones Society, Mt Eden Planning Group, Mutukaroa (Hamlin's Hill) Park Care, Volcano to Sea Project (NZ Landcare Trust), and Forest & Bird. We already work with all these organisations, but as the city moves to a unitary plan, there will be benefits in joining forces, especially if the intention is to integrate parks by joining them with green corridors and walkways.

Looking to the future



NZ Herald feature writer Brian Rudman has consistently supported FoM's views. These Peter Bromhead cartoons accompanied columns about the Council's neglect of Auckland's prime tourist site during the tart-up for the 2011 Rugby World Cup and the need for serious dollars if World Heritage status for the volcanic cones is to be anything more than a pipe dream. Funding in future years remains the million-dollar unanswered question.

True co-management should involve all parties through consultation, consideration and, if necessary, conciliation. With the transition to co-management of the Maunga and a unitary plan for Auckland, we see opportunities for the whole volcanic field to be managed in a more coherent and integrated way. Changes that FoM would like to see include:

- Administrative structures that guarantee decision-making powers to iwi.
- A move away from siloed management, short-term funding allocations, and operations based on easily manipulated annual plan targets.

- Transparent, realistic maintenance performance criteria.
- Development of a co-management model founded on professional park rangers supported by contractors and an engaged community of volunteers.
- A mechanism like the former Maungawhau stakeholders team to enable designated volunteer organisations to be informed and consulted by the Maunga Authority on policies and plans.
- Adherence to the *Parks Volunteer Charter* (Auckland Council 2013b).
- Support and resources for ecological restoration projects on the volcanic cones.
- Action to address boundary issues along adjoining properties and weed control on nearby bush reserves and parks.
- Protection for lava outcrops and cuttings on road reserves in Mt Eden.
- Organisational and financial support for Love Your Mountain Day, and potential development or expansion of the event to other cones.
- Support for the nomination of the Auckland Volcanic Field as a UNESCO World Heritage site, conditional upon better protection and management of the cones as prerequisites.
- Revision of the Reserves Act 1977 and the Council's heritage parks towards a protected-area vision based on international guidelines from the International Council on Monuments and Sites (ICOMOS) and the International Union for Conservation of Nature (IUCN).
- Further archaeological research on the volcanic cones, using up-to-date methods, as an urgent priority.



Where will volunteers stand in the future?

Abbreviations and Glossary

Abbreviations

1986 Management Plan

Turbott, H.A. 1986. *Management plan for Maungawhau (Mt Eden Domain)*. Mt Eden Borough Council, Auckland.

2005 Conservation Plan

Foster, R. and Associates. 2005. *Maungawhau Conservation Plan (Draft)*. Auckland City Council, Auckland.

2006 Conservation Plan

Auckland City Council. 2006. *Maungawhau Conservation Plan: Final Draft*.

2007 Management Plan

Auckland City Council. 2007. *Maungawhau-Mt Eden Management Plan*.

Vegetation Management Plan

Auckland City Council. 2009. *Maungawhau Mt Eden Vegetation Management Plan*.

Glossary

bio-trespass

The movement of plants and animals into areas where they cause ecological harm.

coppicing

Leaving the cut stump of a woody weed like privet untreated (i.e. not poisoned) so that it re-sprouts (but does not seed) and the roots stay alive to avoid destabilising a slope.

desire line

An unofficial shortcut or trample track.

disruptive weeding

repeated rough hand-weeding that aims to create spaces for natives to regenerate rather than to completely suppress weeds.

ecological restoration

The use of ecological principles to restore a habitat, plant community or ecosystem to a state similar to that existing prior to site disturbance or degradation.

hangi

A traditional method of cooking in an earth oven.

macro-weeding

The large-scale heavy work of taking down trees, shrubs and large climbers and treating the stumps.

mauri

The essence or life force that provides life to all living things. A central concept in tangata whenua beliefs about the environment.

micro-terracing

Uneven ridged surface caused by trampling.

micro-weeding

The small-scale meticulous work of taking out ground-layer weeds by hand.

pest plant

A weed that threatens our native plant species or natural ecosystems.

pioneer plant

A plant that establishes itself on open ground and is an early coloniser of bare areas. It is usually fast-growing, often short-lived, and hardy. Pioneer species pave the way for secondary-growth species that are often slower-growing, longer-living but need some shelter to establish.

podocarp

A coniferous tree or shrub endemic to the southern hemisphere. Podocarps have a small bright fruit with a succulent pedestal foot which is attractive to birds. The name podocarp means “foot seed”. Podocarps include five of New Zealand’s greatest trees: tōtara, kahikatea, mataī, miro and rimu.

pugging

Damage caused by animal hooves sinking into the soil, resulting in a compacted, uneven and very muddy surface.

releasing

Clearing weeds by hand from around a native plant seedling so that it remains visible and is not overwhelmed.

residual herbicide

A herbicide that continues to act in the soil or at the surface on weeds that are not visible at the time of spraying.

scoria

A loose material – congealed clots of frothy magma – which accumulates in a fire-fountaining eruption at a stable angle of repose, about 35 degrees. Being porous, there is no surface erosion by water.

shotcrete

Concrete applied by spraying, often onto a reinforced framework.

soil seed bank

The accumulation of great numbers of seeds in the soil under a cover of weeds left to seed year after year (wattle is a good example of this).

stump-treating

Cutting woody weeds down to less than 15 cm and treating the stump with Vigilant (picloram-based gel) or 10% glyphosate spray.

succession approach

This approach can be used to control light-dependent weeds, where these are left in place and native plants eventually shade out certain weeds in a natural successional dominance. This can also be used in regeneration of native plant communities, where pioneers are planted initially, followed by the planting of secondary species.

tuff ring

A raised rim of volcanic ash (tuff) built up around an explosion crater.

vegetation management unit

One of the management units into which the FoM work area on the southern and western slopes has divided. Abbreviated as “MU”.

volcanic bomb

A blob of goeey lava ejected during an eruption and often acquiring a rounded, aerodynamic shape as it cools during flight.

wāhi tapu

Land which is accorded a special status because of its historical, spiritual and cultural significance to Māori.

weed replacement

The replacement of a dense weed infestation, after control, with another weed species as a successional process. An example of this would be large-scale removal of privet trees, with the result that many privet seedlings, along with many other weeds, germinate year after year in a patch that is now without shade.

Appendices

Appendix 1: Statutory Framework

The diagram below illustrates the framework of acts, plans and policies under which Maungawhau is managed and governing authorities are empowered.



Graphic by Harry Reed

The Heritage New Zealand Pouhere Taonga Act came into effect in May 2014, replacing the Historic Places Act 1993. The *Auckland Unitary Plan* will eventually replace existing regional and district plans. *Unitary Plan* rules for significant ecological areas (SEAs) are already in effect.

Appendix 2: Vegetation Management Units

The FoM work area on the southern and western slopes is divided into numbered vegetation management units (MUs). These have easily recognisable boundaries, such as paths or fences, for volunteers to orientate themselves. The management divisions do not imply homogeneity of vegetation type or topography, although that may be true in some cases.

A map of existing vegetation areas, and a list of existing native and weed species in Batger Quarry, can be found in the appendices of the FoM ecological plan (Marler 2013).

The map on the adjacent page shows the relationship of the existing vegetation communities to vegetation MUs. Brief overviews of the MUs are given below.

It is hoped that scoria-cone forest will re-establish (and be re-established) on the lower slopes below Puhī Huia Road. Nature unimpeded will create a natural vegetation type consistent with the landform and underlying geology, provided help is given to control weeds and pests.

MU 1

This strip borders houses on the southeast slope, between the Owens Road entrance and the area adjacent to The Pines. It is exotic grassland dominated by several large redwoods. There is a worn area under the rope swing hanging from a large oak tree.

Notably there is a significantly sized patch of bracken, about halfway along, close to the lower boundary. This is believed to be a legacy of the original bracken community once found in abundance on Maungawhau. Aims of weed management in this area are to protect the bracken stand and to control woody species.

Periodic mechanical cutting will be required along boundaries to reduce the fire risk. An area for passive recreation could be kept open; in other areas, native shrubs could be re-established as there are no known archaeological features.

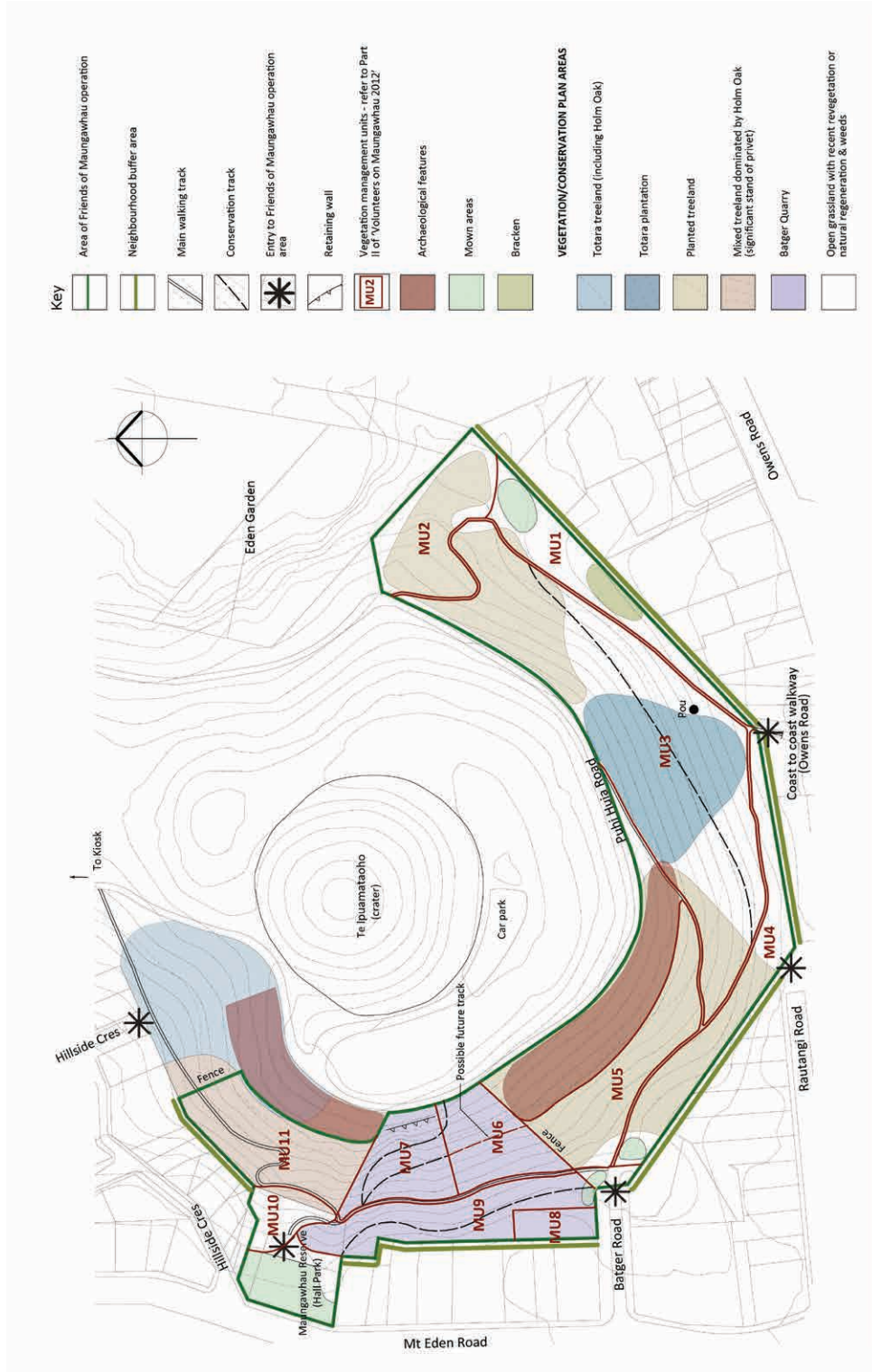
MU 2

The far end of MU 2 (bordering Eden Garden) is mixed treeland with mature tōtara, macrocarpa and silky oak. There is limited grassland and the area is largely shaded. The predominant weeds are tradescantia, veldt grass and stinking iris. *Coprosma* and taraire are regenerating.

MU 3

This large steep area encompasses several vegetation types, and is dominated by tōtara and a few large pines. The natural vegetation type is scoria-cone forest. This conflicts with advice in the 2009 *Vegetation Plan* which recommends lava-flow forest.

In the centre of this MU there is a large patch of tōtara plantation. FoM have recommended that some of the trees be removed to encourage biodiversity. Other mature trees planted in MU 3 include oak, holm oak, monkey apple and pōhutukawa. Archaeological investigation is needed to ensure that the large trees do not cause damage.



Friends of Maungawhau
Vegetation management units (from Ecological Report, Melissa Marler 2013)

Native species have been planted in the grassland by FoM volunteers. The area has several significant trees listed in the 2006 *Conservation Plan*.

Honeysuckle and blackberry are present. Careful hand-releasing is needed around native ferns (e.g. *Doodia australis*) in the grassland and the more shaded treeland areas where coprosma, kawakawa, taraire, pūriri, tōtara, pigeonwood and ferns are regenerating.

MU 4

Below the main walking track, from the Batger Road entrance heading southeast to the Owens Road entrance, is a thin linear section of relatively moist land. It is clearly part of the scoria cone, and yet the 2009 *Vegetation Plan* suggests lava-flow forest as the proposed vegetation type. Possibly closer to the lowest areas, the vegetation would have transitioned towards a more lava-flow forest ecotone.

MU 4 is dominated by 10-year-old regenerated tōtara in the east, and mature oak, monkey apple and plane trees in the west. A few pōhutukawa and pūriri compete with these large trees. Track erosion and runoff is a major issue in this MU. Tree privet appears to be popular with some neighbouring residents. This is not helpful to restoration efforts on Maungawhau.

On the southeastern boundary at the Rautangi Road entrance, FoM supported the successful collaboration between Council and the owners of a large apartment complex to set up a weed control and replanting programme. This was a milestone achievement – a model of how a major weed source can be managed across boundaries.

MU 5

This steep area lies above the main track from Batger Road to Rautangi Road, and is separated from MU 6 by a now disused stock fence. The top half of the area contains visible archaeology. Some of the large tōtara here need to be removed, and the woody native species regenerating on the fertile archaeological features need to be replaced with non-woody ground cover.

MU 5 is a mix of native trees and exotics. The removal of a large pine has opened the canopy, and some revegetation work has been done. Off-track travel and windfall from the remaining pine tree are causing erosion and damage to native plants.

Weeds such as honeysuckle and veldt grass are an ongoing challenge. FoM volunteers carry out weed control and pay particular attention to trial plantings of species such as young tree ferns, *Coprosma rhamnoides* (twiggy coprosma), nikau and tree fuchsia.



Japanese honeysuckle climbing up a young karo tree.

MU 6

The southern upper part of Batger Quarry is managed by an independent volunteer, Jo Fillery, assisted by FoM. The transformation of this once weed-infested, highly unstable, very steep, destroyed scarp is a remarkable achievement. It reflects the time, skill and care employed by a single committed individual. Under the light canopy of pōhutukawa, a wide range of native species are establishing. Weed management is very definitely at a micro scale and is done in a way that avoids any disturbance to the surface. The area would have been scoria cone prior to quarrying, but the original surface is so damaged that the revegetation goals of this site have been modified accordingly, to a blend of scoria-cone and lava-flow species, with other native species that grow well here (and were possibly once found in the Tāmaki Ecological District) and perform a useful function in stabilising the surface.

MU 7

The northern upper part of Batger Quarry contains a large concrete facing wall – a favourite spot for taggers. Geotechnical tilt sensors have been installed, due to the wall's unknown engineering stability.

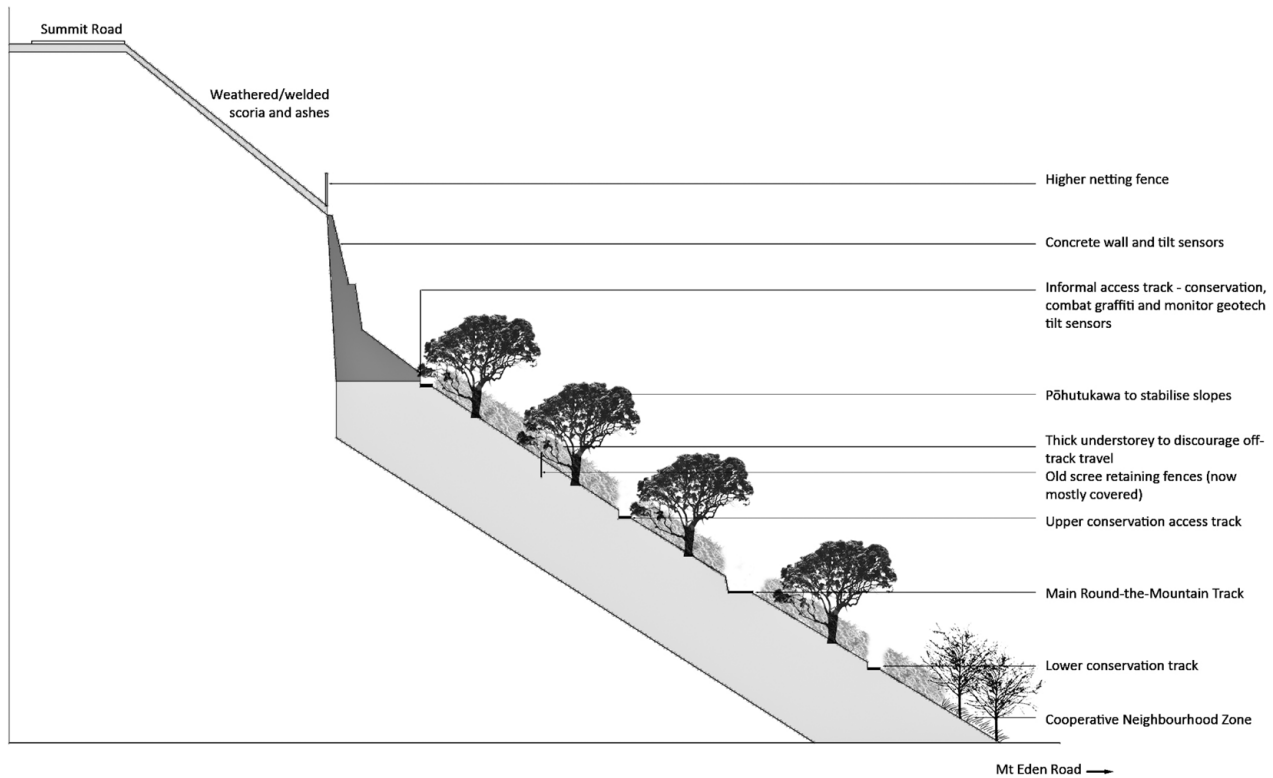
MU 7 is a steep, unstable scarp that has some regeneration, including pōhutukawa, on the shotcrete side of the quarry. There is also a considerable amount of weed which at the moment is performing a function in stabilising the surface and averting landslips. FoM volunteers do only infrequent weed control, to release planted pōhutukawa and other native trees. Tree weeds like privet are coppiced and kept in check, to limit seed dispersal and a worsening weed situation, while their roots are retained to hold the slope.



MU 8

A wide variety of native species including māhoe, nīkau and kawakawa grow densely in this mature rectangle of fairly damp bush backing on to a private property at the base of Batger Quarry. It has the appearance of lava-flow forest, possibly due to its moister environment and its closer proximity to the mountain's lava-flow pedestal. This area is managed by the landowner of this property and is kept in generally good condition and relatively free of weeds.





Friends of Maungawhau

Batger Quarry Transverse Section A-B, Management Units 7 and 9

(Refer Tonkin & Taylor 2011 Report, Appendix E)

Not to scale

MU 9

MU 9, encompassing the lower half of Batger Quarry, is the main area in which FoM volunteers have worked for the past decade. Environmental conditions vary within the area. The southernmost section at the Batger Road end, below the quarry walking track and adjoining MU 6 and MU 8, was once a Council dump site. Somewhat damper than the steep section above the track, it was weeded, terraced and planted over several years in the early 2000s, primarily by Elaine Marshall with help from other FoM volunteers, and has been maintained regularly since then. This section is bounded to the north by a group of special weaving flaxes planted uphill from the northern corner of MU 8. The flaxes were once in full sun, but are now shaded and unhealthy. In 2013 we divided the flaxes and transferred divisions to an area below the kiosk which we had previously cleared of a substantial infestation of Madeira vine.

The middle section of MU 9 lies on the main slope of Batger Quarry and contains some large pōhutukawa trees planted many years ago. Some rehabilitation work was done in the mid-2000s, but after subsequent neglect the slope appeared as a continuous bumpy blanket of blue morning glory. Beneath this canopy grew a jungle of blackberry, climbing dock, Japanese honeysuckle and privet. In early 2009 a core group of volunteers began to take it in hand. The weed clearance has required intensive work, and all major weeds are now down to remnant levels. Tradescantia, difficult to eradicate on a shifting scree slope, has been largely brought under control by hand-weeding and continuous follow-up. There has been infill planting of astelia, aspleniums, rengarenga, ferns, flax, whau and canopy species. Pōhuehue (*Muehlenbeckia*) and trial species such as akeake, kiekie and native jasmine (*Parsonsia*) have been planted near the bottom of the slope. Veldt grass and annual weeds are still present. Whau has needed to be heavily pruned.

The main quarry slope in MU 9 ends to the north in a steep bank planted with flaxes beneath a viewing point from the quarry track. Northwards from this point the loose scoria is held by spindly coprosma, māhoe, kawakawa and flaxes. The heavy vine canopy has been removed, but ivy and veldt grass persist. It has been difficult to establish native species here and understorey vegetation is still very sparse.

Moving further north still, MU 9 faces northwest and is drought-prone. Among the trees and shrubs planted three to four years ago are rangiora, pōhutukawa, māhoe, māpou and astelia. Tree privet has been removed from near the dead pōhutukawa.

A large flame tree dominates the northern end of MU 9. This section has been terraced after removal of honeysuckle, Madeira vine and tradescantia. Planted vegetation including astelia, rengarenga and wineberry is becoming shaded by large whau. Follow-up weeding and infill planting is needed.

The northernmost end of MU 9, adjacent to Hall Park (the small reserve on Mt Eden Road) is a mix of well-established trees, and heavily shaded and open areas. This section has been regularly weeded and planted in a rather random fashion with carex, rengarenga, flax, five-finger and *Coprosma rhamnoides* (twiggy coprosma).

MU 10

Below MU 11, running down to Hall Park, there is a small, steep, very weed-infested slope – jasmine, periwinkle and tradescantia abound. The land is open in the upper section with very little canopy. Further down there are some good-sized native trees. The lower area, visible from the Hall Park entranceway, has been weeded and terraced. Pātiti (*Microlaena stipoides*) was planted on a trial basis in 2011; native shrubs, ground-cover plants and herbaceous species were added later. The planted section requires ongoing weeding and management. Its upper perimeter is kept clear of the encroaching carpet of weeds which, at present, is beyond the capacity of FoM volunteers to tackle.



Comparison of MU10 planting in October 2011 and August 2014.



Wire netting and re-sprouting tree privet around a pōhutukawa tree, March 2011.

MU 11

This area, closest to Hillside Crescent, contains an impressive canopy of predominantly mature holm oak, with some understorey plants including weeds. There are a few mature tōtara, and a significant area of maturing tree privet. FoM volunteers have coppiced some of the privet and planted scoria-cone forest species among them to assist restoration. MU 11 requires considerable weed control.

The collapsing fence below the track and the rather steep drop to the houses below indicate land stability issues. Exotic plants and a few large privet on the private land hold the slope on the domain boundary.

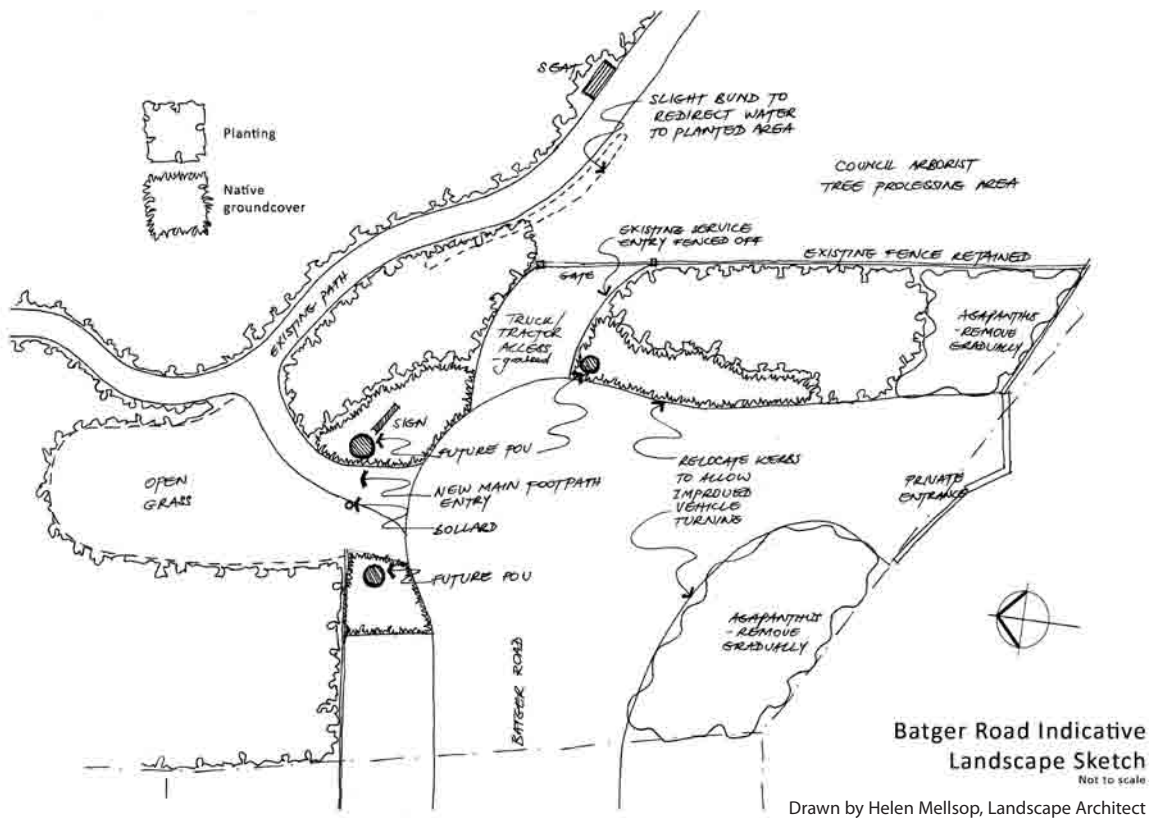
The uphill section of MU 11 closer to Batger Quarry was planted in pōhutukawa, which was ringed with wire netting to prevent browsing by livestock. FoM volunteers have removed as much as possible of the wire netting embedded in the trunks of many of the trees. Volunteers have also chainsawed and stump-treated privet that were outcompeting the pōhutukawa. Contractors have assisted but, as with all MUs, continuous weeding is now needed to combat weed reinfestation. Montpellier broom and woolly nightshade have been virtually eradicated by volunteer efforts.

Appendix 3: Entrance Concept Drawing

In their present state, the entrances to the Maunga are shabby relics of the grazing era. Visitors approaching on foot gaze at farm gates and fences, and wonder which way to go.

Over the years, FoM have held many informal discussions with Council and iwi about designing entrances that would impart a true sense of place. The Te Aratakihaere pou¹ at the Owens Road entrance, sculpted by Carin Wilson, and the pou whenua erected beside the caretaker's house by Ngārimu Blair, are today the only indications that one is entering a historic and valued landscape.

As part of this report project, FoM commissioned a series of sketches to show how points of entry to the Maunga might be redeveloped – to welcome visitors, impart a sense of arrival and expectation, and indirectly guide people to pathways. The following concept drawing of the Batger Road entrance is an example of how pedestrians and service vehicles might be accommodated, deteriorating tracks and washouts remedied, and native plants and pou used to evoke beauty and respect. It is intended as a starting point to stimulate further discussion.



¹ The inscription reads: *Mai i Te Pou Hawaiki ki te kapu a kai o Mataaho me hikoia ēnei ara onamata e tātou ki ō tātou tūpuna.* (From Te Pou Hawaiki to the food bowl of Mataaho, let us walk these ancient paths with our ancestors.)

Appendix 4: Maungawhau Suggested Native Plant Species

The following table is a list of native plant species suitable for planting on Maungawhau. It is drawn from four sources, as described in the reference key below. While there are similarities among the source lists, there are also discrepancies which may arise from the lack of any comparable site in Auckland.

FoM's working list includes some trialled species that are absent from the other source lists. Conversely, a few species recommended by others, such as mingimingi and hangehange, have not done well in our experience and have been removed from our working list.

The table does not include species such as karo which regenerate in abundance on Maungawhau, or existing planted species such as rimu, miro, kauri, whārangi and tree fuchsia (kōtukutuku) which do not occur naturally on volcanic substrate.

There is often more than one Māori name for a species. We have not attempted to provide all known Māori names in the table below.

Reference key

- 1 = *Plant Lists* (Part 5: (B)) in Auckland City Council. 2009. *Maungawhau-Mt Eden Draft Vegetation Management Plan*.
- 2 = *Plant list of suggested species for different areas* (Appendix F) in Marler, M. 2013. *Ecological restoration/rehabilitation framework for Batger Quarry (and adjoining units) Maungawhau*.
- 3 = *Vegetating the slopes* (Section 8.3; Tables 1, 2 and 3) in Julian, A. 2005. *Maungawhau-Mt Eden Conservation Plan, Appendix 4: Ecological Component*. Auckland City Council.
- 4 = Friends of Maungawhau. Working plant list kept by FoM.

Plant use key

- A = Suitable for planting on archaeological features
 B = Food for birds
 H = Provides habitat for geckos, lizards, or butterflies

Species	Common name / Māori name	Reference	Form	Plant use
<i>Acaena</i> spp.	bidibid / pipiripi	1, 2, 4	Groundcover	A
<i>Adiantum hispidulum</i>	rosy maidenhair	4	Fern	A
<i>Alectryon excelsus</i>	tītoki	1, 2, 3	Medium tree	B
<i>Aristolelia serrata</i>	wineberry / makomako	4	Medium tree	
<i>Arthropodium cirratum</i>	rengarenga lily	2, 4	Clump-forming	A, H
<i>Asplenium oblongifolium</i>	shining spleenwort / huruhuru whenua	1, 2, 4	Fern	
<i>Astelia banksii</i>	coastal astelia / wharawhara	1, 2, 3, 4	Small shrub	A, B

Species	Common name / Māori name	Reference	Form	Plant use
<i>Astelia solandri</i>	perching astelia / kōwharawhara	4	Epiphyte	
<i>Austroderia fulvida</i>	toetoe	4	Tall grass	
<i>Beilschmiedia tarairi</i>	taraire	1, 2, 3, 4	Large tree	B
<i>Blechnum novae-zelandiae</i>	kiokio	4	Fern	A
<i>Brachyglottis repanda</i>	rangiora, pukapuka	4	Tree	
<i>Carex breviculmis</i>	short-culm sedge	4	Sedge	A
<i>Carex flagellifera</i>	trip-me-up / mānaia, maurea	2, 4	Sedge	A, H
<i>Carex inversa</i>	creeping lawn sedge	4	Sedge	A
<i>Carex lambertiana</i>	forest sedge	4	Sedge	A
<i>Carex solandri</i>	forest sedge	1, 3, 4	Sedge	A
<i>Centella uniflora</i>	centella	4	Groundcover	A
<i>Coprosma lucida</i>	shining karamu / karamū, kāramuramu	1, 4	Large shrub	B
<i>Coprosma macrocarpa</i> subsp. <i>minor</i>	karamū, kāramuramu	1, 2, 4	Small tree	B
<i>Coprosma rhamnoides</i>	twiggy coprosma	1, 2, 4	Small shrub	A, H
<i>Coprosma robusta</i>	karamū, kāramuramu	1, 2, 3, 4	Large shrub	B
<i>Coriaria</i> spp.	toot / tutu	4	Shrub	Toxic
<i>Corokia cotoneaster</i>	korokio	1, 2, 3, 4	Shrub	A, B
<i>Cordyline australis</i>	cabbage tree / tī kōuka	1, 2		B
<i>Corynocarpus laevigatus</i>	karaka	1, 2, 3, 4	Large tree	B
<i>Cyathea medullaris</i>	black tree fern / mamaku, kōrau	2, 4	Tree fern	
<i>Cyathodes juniperina</i>	mingimingi	1, 2	Shrub	
<i>Dichondra repens</i>	Mercury Bay weed	4	Groundcover	A
<i>Dianella nigra</i>	NZ blueberry / tūrutu, piopio	2	Flax-like	A, H
<i>Dodonaea viscosa</i>	akeake	4	Small tree	
<i>Doodia australis</i>	rasp fern / pukupuku	1, 2	Groundcover	A
<i>Dysoxylum spectabile</i>	kohekohe	1, 2, 3, 4	Large tree	B
<i>Entelea arborescens</i>	whau	1, 2, 4	Shrub	
<i>Freycinetia banksii</i>	kiekie	4	Vine	
<i>Gahnia setifolia</i>	cutty grass / māpere	4	Sedge	A
<i>Geniostoma rupestre</i>	hangehange	1, 2, 3	Shrub	
<i>Geranium solandri</i>	native geranium	4	Herb	A
<i>Griselinia lucida</i>	puka, akapuka	1, 2, 4	Tree	

Species	Common name / Māori name	Reference	Form	Plant use
<i>Haloragis erecta</i>	haloragis / toatoa	1, 2, 4	Bushy herb	A
<i>Hebe stricta</i> var. <i>stricta</i>	koromiko	1, 2, 3	Shrub	
<i>Hedycarya arborea</i>	pigeonwood / porokaiwhiri	1, 2, 3, 4	Medium tree	B
<i>Hymenophyllum sanguinolentum</i>	filmy fern / pipiri	1	Small fern or epiphyte	A
<i>Knightia excelsa</i>	rewarewa	1, 2, 3	Tall tree	B
<i>Kunzea ericoides</i>	kānuka	1, 2	Medium tree	H
<i>Leptospermum scoparium</i>	mānuka	1, 2, 3	Small tree	H
<i>Leucopogon fasciculatus</i>	mingimingi	1	Shrub	A, B
<i>Libertia ixioides</i>	NZ iris	4	Herb	A
<i>Litsea calicaris</i>	mangeao	1, 3	Large tree	B
<i>Machaerina sinclairii</i>	machaerina / tūhara, pēpepe	4	Grass	A
<i>Macropiper excelsum</i>	kawakawa	1, 2, 3, 4	Shrub	
<i>Melicytus ramiflorus</i>	whitey wood / māhoe	1, 2, 4	Small tree	B
<i>Metrosideros excelsa</i>	pōhutukawa	1, 2, 3, 4	Large tree	B
<i>Microlaena stipoides</i>	meadow rice grass / pātiti	1, 2, 4	Grass	A
<i>Microlaena avenacea</i>	bush rice grass	4	Grass	A
<i>Muehlenbeckia complexa</i>	wire vine / pōhuehue	1, 2, 3, 4	Groundcover / climber	A, H
<i>Myoporum laetum</i>	ngaio	4	Tree	B
<i>Myrsine australis</i>	red matipo / māpou	1, 2, 3, 4	Small tree	B
<i>Olearia furfuracea</i>	akepiro	1, 2, 3, 4	Shrub	
<i>Oplismenus hirtellus</i> subsp. <i>imbecillis</i>	bush panic grass	4	Grass	A
<i>Pellaea falcata</i>	sickle fern	2, 4	Fern	A
<i>Pellaea rotundifolia</i>	button fern / tarawera	1, 2, 4	Small fern	A
<i>Peperomia urvilleana</i>	peperomia / wharanui	4	Herb	A
<i>Phormium cookianum</i>	coastal flax / wharariki	2, 4	Flax	A, B
<i>Phormium tenax</i>	flax / harakeke	1, 2, 3, 4	Shrub	A, B
<i>Phyllocladus trichomanoides</i>	tānekaha	2, 3, 4	Tree	
<i>Pneumatopteris pennigera</i>	gully fern / pākau, pākau-roharoha		Fern	A
<i>Podocarpus totara</i>	tōtara	1, 2, 3	Large tree	B
<i>Polystichum richardii</i>	common shield fern / pikopiko	4	Fern	A
<i>Pomaderris amoena</i>	tauhinu	2	Shrub	

Species	Common name / Māori name	Reference	Form	Plant use
<i>Pomaderris kumaraho</i>	gumdigger's soap / kūmarahou	4	Shrub	
<i>Pomaderris phyllicifolia</i> var. <i>ericifolia</i>	tauhinu	3	Shrub	
<i>Pseudopanax arboreus</i>	five-finger / whauwhaupaku	2	Tree	B
<i>Pseudopanax crassifolius</i>	lancewood / horoeka	4	Tree	
<i>Pseudopanax lessonii</i>	five-finger / houpara, parapara	2, 4	Tree	B
<i>Pteridium esculentum</i>	bracken / rārahu	1, 2, 4	Tall fern	
<i>Pteris tremula</i>	shaking brake / turawera	1, 2	Fern	A
<i>Ranunculus reflexus</i>	hairy buttercup / mārūrū	4	Herb	A
<i>Rhopalostylis sapida</i>	nīkau	1, 4	Palm	B
<i>Rubus australis</i>	bush lawyer / tātarāmoa	4	Vine	
<i>Scandia rosifolia</i>	angelica, rose-leaved anise / koheriki	4	Herb	
<i>Schefflera digitata</i>	seven-finger / patē	1	Small tree	B
<i>Solanum aviculare</i>	poroporo, pōporo	2, 4	Shrub	
<i>Sophora chathamica</i>	coastal kōwhai	2, 4	Tree	B
<i>Trichomanes reniforme</i>	kidney fern / kopakopa, raurenga	1	Fern	A
<i>Uncinia uncinata</i>	hook grass / kamu, matau-a-māui	4	Groundcover	A
<i>Urtica incisa</i>	scrub nettle / ongaonga	4	Herb	A, H
<i>Vitex lucens</i>	pūriri	1, 2, 3, 4	Large tree	B

Appendix 5: Maungawhau Naturalised Exotic Plant Species

The following table is a list of naturalised exotic plant species that FoM volunteers are removing on Maungawhau.

Legally declared “pest plants” in New Zealand are those plants listed in a Regional Pest Management Strategy (RPMS) or in the National Pest Plant Accord (NPPA) list of species banned from sale, distribution and propagation. The *Designated pest plant* column in the table below indicates weed species that are listed in the current Auckland RPMS.

Some weed species are difficult to control and have a detrimental effect on the growth and regeneration of native plants, but are not classified as “pest plants”. They include, for instance, cineraria, *Cymbalaria*, violet and veldt grass. In the FoM work areas, we try to control all environmental weeds that threaten native vegetation.

Common name	Species	Designated pest plant
agapanthus	<i>Agapanthus praecox</i>	✓
apple of sodom	<i>Solanum linnaeanum</i> (= <i>S. sodomeum</i>)	
arum (Italian)	<i>Arum italicum</i>	✓
arum (lily)	<i>Zantedeschia aethiopica</i>	✓
asparagus (bushy)	<i>Asparagus aethiopicus</i>	✓
asparagus (climbing)	<i>Asparagus scandens</i>	✓
banana passionfruit	<i>Passiflora tripartita</i> var. <i>mollissima</i>	✓
bear’s breeches	<i>Acanthus mollis</i>	✓
black nightshade, black inkweed	<i>Solanum nigrum</i>	
blackberry	<i>Rubus fruticosus</i>	✓
blue morning glory	<i>Ipomoea indica</i>	✓
blue spur flower	<i>Plectranthus ciliatus</i>	✓
boneseed	<i>Chrysanthemoides monilifera</i>	✓
broom (Montpellier)	<i>Teline monspessulana</i>	✓
broom (Spanish)	<i>Spartium junceum</i>	
broom (wild)	<i>Cytisus scoparius</i>	✓
brush wattle	<i>Paraserianthes lophantha</i>	✓
carex divulsa	<i>Carex divulsa</i>	✓

Common name	Species	Designated pest plant
castor oil plant	<i>Ricinus communis</i>	✓
cineraria	<i>Pericallis x hybrida</i>	
cleavers	<i>Galium aparine</i>	
climbing dock	<i>Acetosa sagittata</i> (= <i>Rumex sagittatus</i>)	✓
convolvulus, great bindweed	<i>Calystegia silvatica</i>	
cotoneaster	<i>Cotoneaster glaucophyllus</i>	✓
cymbalaria, ivy-leaved toadflax	<i>Cymbalaria muralis</i>	
elaegnus	<i>Elaeagnus x reflexa</i>	✓
fennel	<i>Foeniculum vulgare</i>	
fuchsia (Bolivian)	<i>Fuchsia boliviana</i>	✓
gorse	<i>Ulex europaeus</i>	✓
hackberry, nettle tree	<i>Celtis australis</i>	
hawthorn	<i>Crataegus monogyna</i>	✓
hemlock	<i>Conium maculatum</i>	✓
Himalayan honeysuckle	<i>Leycesteria formosa</i>	✓
inkweed (red)	<i>Phytolacca octandra</i>	
ivy (cape)	<i>Senecio angulatus</i>	✓
ivy (English)	<i>Hedera helix</i>	✓
ivy (German)	<i>Delairea odorata</i>	✓
Japanese honeysuckle	<i>Lonicera japonica</i>	✓
Japanese spindle tree	<i>Euonymus japonicus</i>	✓
jasmine	<i>Jasminum polyanthum</i>	✓
Jerusalem cherry	<i>Solanum pseudocapsicum</i>	
kikuyu grass	<i>Pennisetum clandestinum</i>	✓
lantana	<i>Lantana camara</i>	✓
lily of the valley vine	<i>Salpichroa origanifolia</i>	
loquat	<i>Eriobotrya japonica</i>	✓
Madeira vine, mignonette vine	<i>Anredera cordifolia</i>	✓
Mexican daisy	<i>Erigeron karvinskianus</i>	✓

Common name	Species	Designated pest plant
mile-a-minute	<i>Dipogon lignosus</i>	✓
mistflower	<i>Ageratina riparia</i>	✓
monkey apple	<i>Syzygium smithii</i> (= <i>Acmena smithii</i>)	✓
montbretia	<i>Crocasmia x crocosmiiflora</i>	✓
moth plant	<i>Araujia sericifera</i>	✓
nasturtium	<i>Tropaeolum majus</i>	
onion weed	<i>Allium triquetrum</i>	
oxalis	<i>Oxalis</i> species	
periwinkle	<i>Vinca major</i>	✓
phoenix palm, date palm	<i>Phoenix canariensis</i>	✓
privet (Chinese)	<i>Ligustrum sinense</i>	✓
privet (tree)	<i>Ligustrum lucidum</i>	✓
Queensland poplar	<i>Homalanthus populifolius</i>	✓
ragwort	<i>Senecio jacobaea</i>	✓
red dead nettle	<i>Lamium purpureum</i>	
rice-paper plant	<i>Tetrapanax papyrifer</i>	
smilax	<i>Asparagus asparagoides</i>	✓
spur valerian, false valerian	<i>Centranthus ruber</i>	
stinking iris	<i>Iris foetidissima</i>	
sweetpea shrub	<i>Polygala myrtifolia</i>	✓
Taiwan cherry	<i>Prunus campanulata</i>	✓
tuber ladder fern	<i>Nephrolepis cordifolia</i>	✓
tutsan	<i>Hypericum androsaemum</i>	✓
umbrella sedge	<i>Cyperus eragrostis</i>	
veldt grass	<i>Ehrharta erecta</i>	
violet	<i>Viola odorata</i>	
wandering willie	<i>Tradescantia fluminensis</i>	✓
wild ginger	<i>Hedychium gardnerianum</i>	✓
woolly nightshade	<i>Solanum mauritianum</i>	✓

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Vision Statement

It is the vision of the Friends of Maungawhau to assist in bringing the mountain back into a state of natural balance, based on native flora and fauna, without endangering its archaeological and geological heritage, while public access is maintained in a benign and sustainable manner.

We warmly welcome new members and invite discussion on the role of conservation volunteering under the Parks Volunteer Charter (Auckland Council 2013), particularly in relation to heritage reserves. www.maungawhau.co.nz

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Maungawhau walking tracks map by Ian Fish

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 Donations are appreciated and are tax deductible.

MAUNGAWHAU A Short History of Volunteer Action

The Friends of Maungawhau is a long-established conservation volunteer group dedicated to protecting Maungawhau/Mt Eden and the volcanic cones of Tāmaki Makaurau. This publication tells their story against the backdrop of the rich cultural history of the mountain and its subsequent degradation and neglect. It describes the park management issues that the Friends have confronted over many years, and looks towards a more inclusive approach that values the wealth of knowledge and expertise gained by volunteers.

With the enactment of Treaty legislation returning 14 cones to Māori ownership, 2014 is a pivotal year for Auckland's maunga and for the Friends of Maungawhau. This account of their ongoing efforts to restore scoria-cone vegetation to a former quarry site and to inform people about the mountain's cultural, geological and ecological significance is a valuable record that will engage and inspire all those who care for our volcanic heritage.



ASB Community Trust

Te Kaitiaki Patea o Tamaki o Tai Tokerau

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