Queen Elizabeth Park

Resource Statement

Queen Elizabeth PARK

greater WELLINGTON REGIONAL COUNCIL | Parks

Contents

History & Cultural Heritage

1. History of Queen Elizabeth Park

The history of the district now within the Queen Elizabeth Park is well recorded in a number of archival and published sources. Dating from the 1830s, and continuing through to the 1880s, it was a significant occupation site for local Maori centering on the villages of Whareroa and Wainui. As this occupation declined, the land was taken up by the European farmers who had moved into the area. In the mid-twentieth century, a new occupation occurred. Although the encampment of United States Marines during World War II lasted only a few years, its impact was significant. Soon after, the land used for camps was considered as suitable for a large regional park, one of Wellington's first. From 1953, Queen Elizabeth Park provided recreation facilities for residents from the wider Wellington region. From 1990, it has been under the management of the Wellington Regional Council.

1.1 Early Maori occupation

In Maori tradition it is recorded that the voyager Kupe, came to Te Whanganui a Tara (now known as Wellington Harbour) as part of his extensive travels. Several place names within the harbour and in the surrounding district have come from Kupe.[1] The next recorded explorer was Whatonga. Settlement of the lower North Island was undertaken by peoples who claimed descent from Whatonga. These included Ngai Tara, Rangitane, Muaupoko and Ngati Apa. These iwi extended out from Wellington over to Porirua harbour and along the western coast. At the beginning of the nineteenth century, the Kapiti Coast was generally occupied by the Muaupoko and Ngati Apa peoples.[2] The land that is currently located within the Queen Elizabeth Park was an important area of occupation. The waterways between the sandhills were so numerous that it was said that canoes could be paddled from Paekakariki to Waikanae.[3]

In 1819 and 1821, two significant raids from the north brought the people of the Horowhenua and Kapiti coasts into conflict with Ngapuhi, Ngati Toa, Ngati Whatua, Waikato and Maniapoto. Soon after this, a series of migrations to the western coast from Kawhia and Taranaki occurred and brought groups such as Ngati Toa, Ngati Mutunga, Ngati Tama, Te Atiawa, Ngati Raukawa and several others to different places around the district. The migrations began from Kawhia in 1821 when Ngati Toa, Ngati Rarua and Ngati Koata left their homelands having faced an increasingly hostile relationship with several Waikato groups. They travelled to northern Taranaki and were given refuge by the local iwi. As pressure from northern iwi continued to build, by 1822 both Kawhia and northern Taranaki groups undertook a great heke (migration) south travelling down to the Rangitikei area.

1 Waitangi Tribunal *Te Whanganui a Tara me ona takiwa*. Wellington:Waitangi Tribunal, 2003, pp.17-43
2 Janet Davidson in Baldwin, Olive, *Kapiti Coast: history of New Zealand's Paraparaumu Beach, Paraparaumu airport and Kapiti Island,* Paraparaumu, Fields Publishing House, 1993, p.32
3 Geoff Thompson in Baldwin, op cut, p.58

Rangihaeata and whanau, possibly in the vicinity of Whareroa.[4]
Oliver, Richard Aldworth 1811-1889 :Rangi-Hira (Flash of Lightning), the wife of the chief Rangihaeta.
Alexander Turnbull Library. C-054-020

Although initially the relationship with the local Ngati Apa and Muaupoko people was peaceful, over time matters deteriorated until a general warfare erupted. At around 1823, Te Rauparaha and Ngati Toa, in addition to a number of northern Taranaki peoples, conquered and occupied Kapiti Island. By 1824, the tribes of Whatonga-descent from all over the southern North Island and northern South Island gathered together a large fighting force to attack Ngati Toa on Kapiti Island. At the battle of Waiorua, however, the Whatonga tribes were defeated. Soon after this battle, a significant heke named Nihoputa came south from Taranaki and took up places formerly occupied by the Whatonga people many of whom had fled after their defeat at Waiorua.[5] On the arrival of this migration, land was apportioned by Ngati Toa to the various groups for settlement. One section of land, originally known as Ngapaipurua and stretching from Te Uruhi to Paekakariki, was apportioned to Te Puketapu who established themselves at several places including Whareroa (now located within Queen Elizabeth Park).[6] Tamiora Love later suggested that when Puketapu arrived in the Whareroa district, Ngati Huri were in occupation but that they moved on down to the Arapaoa (Arapawa) Island in the Marlborough Sounds.[7] Crown official Donald McLean later recorded the ceremony that took place in recognition of the land transfer:

> *The Ngatiawa [including Puketapu] after their arrival assisted in finally conquering the district. They presented the Ngatitoa at a public feast with two large canoes and other produce on which occasion the Ngatitoa chiefs publicly transferred their rights…*[8]

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4 The documentation at Alexander Turnball Library suggests that the coastline behind the whanau group is the Paekakariki Coast. If this is the case, then this group could be located at one of the villages to the north of Paekakariki, either Wainui or Whareroa

5 Waitangi Tribunal, op cit, pp.17-43

6 Native Land Court, Wellington Minute Book No.2, p.234

7 Ibid, p.219

8 26 Nov 1850, Donald McLean to the Colonial Secretary, Appendices to the Journals of the House of Representatives, [AJHR] 1861, C1, p.258

It has been said, that about ten years after Puketapu had been in occupation, Ngati Maru took up their first occupation around Whareroa.[9] Tamiora Love later claimed that Ngati Maru came to Whareroa as a result of an unnamed Ngati Maru woman marrying a chief in Wanganui named Arama Karaka. When this chief brought his new wife to live at Whareroa, her Ngati Maru whanau later came as well.[10] However, great changes were to occur within a matter of years.

By the late 1820s, Ngati Raukawa, who had close links with Te Rauparaha, came to the Horowhenua coast from Waikato and in 1832, further northern Taranaki people also came south. The increased numbers of people and their various interconnections brought tensions among the Kawhia and Taranaki groups located on the western coast especially as Ngati Raukawa traditionally had been enemies of northern Taranaki iwi. By 1834, these tensions erupted into a battle named Haowhenua which took place in the Otaki district between Ngati Raukawa on the one side and Taranaki iwi on the other. These groups were assisted by several others including different Ngati Toa hapu on each side. Although the battle itself is regarded as being inconclusive, it signaled the end of the general alliance that had existed between the northern migrants. It also destabilised the occupation of the Horowhenua, Kapiti and Wellington districts as various groups feared reprisals and ongoing conflict. Several major migrations resulted. Ngati Mutunga left Wellington for the Chatham Islands. Northern Taranaki groups took up increased residence on their lands in Nelson and Marlborough.[11]

In addition, many groups changed their occupation places along the western coast. Te Atiawa groups were said to have retired south of the Kukutauaki Stream, just to the north of Waikanae. The Ngati Toa chief Ropata Hurumutu crossed over from Kapiti and built and occupied the Wainui pa with Ngati Haumia. Aperahama Mitikakau and his Ngati Maru people, moved north from their previous occupation in the vicinity of Titahi Bay and occupied Whareroa Pa where some Ngati Maru were already living.[12] Ngati Maru were also living at the small settlement of Tipapa (within the park area), a place said to have been given to them by the Ngati Toa chief Te Pani. Tipapa remained occupied until about 1840 although both Whareroa and Wainui remained as important villages for much longer.[13]

After the realignment of occupation that took place following the battle of Haowhenua, relations with neighbouring peoples could be sometimes difficult. In 1837 it was said that the Ngati Maru of the Whareroa district insulted the Te Atiawa chief Reretawhangawhanga. A war party of four hundred men assembled and travelled from Waikanae to Whareroa. Reretawhangawhanga chose not to kill the Whareroa people but as retribution for the insult that had been made, he destroyed the potato crops of the Whareroa people.[14]

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9 Native Land Court, Wellington Minute Book No.2, p.235
10 Ibid, p.211
11 Waitangi Tribunal, op cit, pp.17-43
12 Carkeek, Wakahuia *The Kapiti Coast: Maori history and place names,* Christchurch, Capper Press, 1978 (reprint), p.42
13 Ibid, pp.42 and 144
14 Ibid, p.43

1.2 The arrival of Europeans

From the 1830s onwards, European ships, including whaling boats, regularly took up moorings in between Kapiti Island and the coast as this stretch of waterway provided a safe anchorage. Shore-based stations were located on the Island and along the coast from the early 1830s. At their peak, in 1839, the stations operated 23 boats and collected 466 tuns of oil. One of the stations was at Wharemauku pa, in close proximity to the park and located at Raumati.[15] Within eight years, however, the peak had passed. In 1847 only three boats operated and their yearly harvest was 29 tuns of oil.[16]

One of the Pakeha who inhabited the western coast before the signing of the Treaty of Waitangi was Edward Bolton who had come to New Zealand in 1837 as a whaler. He went to live at Whareroa with a Ngati Maru woman although it is not recorded who she was or how long he stayed there.[17] At some time before 1840, Evans, the owner of a local whaling establishment, needed a large quantity of timber to build various works at his station on Kapiti Island. He made arrangements with Ngati Toa chiefs Ropata Hurumutu and Tungia to cut a stand of white pine that was located in the vicinity of Whareroa. The payment was blankets, guns and "a little" rum. Bolton, who, was asked to oversee the project, later noted: "I was there for two or three weeks and thirty or forty natives were employed in getting the timber from the ground which was a big swamp." The spars, some of which measured almost 60 feet, were dragged to the Whareroa stream and then floated down to the sea. Altogether 63 logs were got out in this manner and once at sea were lashed together into a raft and towed to Kapiti Island.[18]

From 1839, however, the days of the whalers were giving way to more intensive European settlement. In 1839, the New Zealand Company arrived in Wellington with plans of establishing a colony. Amid rumours that the British Government would soon intervene in New Zealand to seek sovereignty over the islands, the Company had fitted out a ship named the *Tory* and their officials voyaged to New Zealand to buy land for their colonisation scheme. As settlement became established, Company officials toured the surrounding district. In March 1840, when Edward Jerningham Wakefield journeyed to Whanganui, he travelled along the beach highway that is now located within Queen Elizabeth Park.

> *The day was again extremely hot, with scarcely a breath of wind stirring; and I repeatedly stopped to sit down and eat a water-melon. We crossed several small streams, at the mouth of which were fortified villages. These were Wainui or 'large river'; Whareroa, or 'long house'…At each of these I was pressed by some of the inhabitants to 'haera ki uta' or 'go inland', meaning me to accept of their hospitality; but I had determined to get to Waikanae and so refused them all.*[19]

This beach highway remained an important travel route north. The Wellington to Wanganui mail service was established in 1841.[20] Dating from the 1840s, a Cobb and Co. route between Wellington and the north proceeded along the western beach including the area now within the park. The beach would remain the main thoroughfare in the area for many decades.[21] By the late 1850s, it is said that large carriages capable of

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15 Wellington Regional Council, *Queen Elizabeth Park Management Plan, Part 2 Resource Statement,* Wgtn, Wellington Regional Council, July. 1993 , p.46
16 Cyril Browne in Baldwin, op cit, pp.52-3
17 Carkeek, op cit, p.48
18 Ibid, p.48
19 Wakefield, Edward Jermingham, *Adventure in New Zealand*, New York, De Capo Press, 1971 (reprint) p.98
20 A.C. Wilson in Baldwin, op cit, p.101
21 Geoff Thompson in Baldwin, op cit, p.58

carrying 24 passengers with 20lb of luggage each and pulled by up to six horses were plying the coastal route. It is also said that an accommodation house, of which there were many along the route, was being operated at Whareroa.[22] By 1865 a vehicular road had been established over the hills from Pauatahanui to Paekakariki along the same route as the Hill road is today. This brought more traffic heading north. At Paekakariki, wheeled transport would access the beach and travel north from there, fording the various streams along the way. The use of the beach road continued and although never established as a legal road the beach route was named Old Coach Road. By the turn of the twentieth century, the beach road was still in use providing access for the beachfront sections that were being developed at Raumati and Paraparaumu.[23]

Use of the Paekakariki Beach Highway, c.1840s.[24]
[Brees, Samuel Charles] 1810-1865 :[Group of Maori and pakeha near beach, probably Paekakariki looking towards Pukerua. Between 1842 and 1845]. Alexander Turnbull Library. B-031-004

1.3 A snapshot into life at Whareroa in 1846

Several of the Wellington regional parks have a connection with the pursuit of the Ngati Toa chief Te Rangihaeata that took place in 1846 after a series of disturbances in the Hutt Valley between Maori who were in occupation and the colonial troops acting under Governor Grey's directions. The background to this situation is described in the Resource Statement for Battle Hill Farm Forest Park. Amidst reprisals between troops and Maori who had been forced to leave the Hutt Valley, escalation of events led to the killing on 2 April 1846 of two settlers who had remained in the Hutt. This was followed by an attack on Boulcott's Farm on 16 May resulting in six British soldiers being killed. Although these attacks involved Whanganui Maori who had Ngati Rangatahi affiliations, Te Rangihaeata's men were implicated with being involved. Plans were laid to attack the chief's pa located at Pauatahanui. On 30 July, a party of militia and police, as well as 160 Te Atiawa under the chiefs Te Puni and Wi Tako, set off from the Hutt to converge on Te Rangihaeata's pa. This group travelled the Maori track that leads through Belmont Regional Park. When they reached the pa site at Pauatahanui, they found it deserted and set off in pursuit of Te Rangihaeata. Eventually, in the Horokiri Valley, they encountered Te Rangihaeata's party in a makeshift fortification which was attacked. [A full account of the battle is detailed in the Resource Statement for the Battle-Hill Farm Forest Park.] After several days, Te Rangihaeata's party left the battleground traveling northwards through the hills.

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22 Wellington Regional Council 1993, op cit, p.47
23 Stanley Ellen in Baldwin, op cit, p.97
24 The documentation at Alexander Turnball Library suggests that the coastline behind the group may be the Paekakariki Coast.

Ropata Hurumutu and his wife Oriwia, with, Hohepa Tamaihengia and his wife Riria [date unknown] Alexander Turnball Library

Te Atiawa forces caught up with Te Rangihaeata's party several days later and a brief skirmish occurred on Pouaha Hill behind the Paripari pa of Paekakariki. Maori from Wainui pa had been involved in this engagement.

British soldier William Tyrone Power had been involved in the pursuit of Te Rangihaeata but had returned to Porirua after the Horokiri battle. On hearing of the news that Te Rangihaeata had been found and engaged, he travelled north towards Wainui pa. Power noted that after a slow journey of clamouring over rocks before Paekakariki, the road to Wainui was over "a fine beach, as hard and as smooth as a macadamised road."[25]

> *As I approached Wainui, I could distinctly hear shots in the mountains above, showing that the fighting was still going on, so I quickened my pace in hopes of joining our party before nightfall.*

When Power reached Wainui, he found Captain Stanley, a detachment of seamen from the frigate *Calliope* and armed police under Major Durie. Together Power and Stanley decided it was too late in the day to try to ascend the hills and join the fighting but resolved to go first thing the following morning. This was not to occur, however.

> *Both his good intentions and mine were knocked on the head, however, by the arrival of a party of the Wainui people from the scene of action who told us that the whole force would be down in the course of the evening. Presently the main body made its appearance, all of them apparently in high glee, shouting, laughing and firing their muskets as they came along….*[26]

There had been casualties, however, with several killed and news of this changed the mood of things with Power recording "…the arrival of the parties bearing the bodies of the dead and wounded changed the laughing shouts into lamentation and the loud wailing tangi arose from all sides."[27]

It appears that Te Rangihaeata and his people had again been able to slip away. Power learnt from eyewitnesses that the fugitives were in a bad way facing starvation. In fact reports from several of Rangihaeata's party who came down from the hills and surrendered confirmed that some persons had starved to death during the pursuit from the Hutt.[28] Power set about ensuring that the Maori allies who had come down from the hill to Wainui were well provisioned.

> *I made arrangements with Urumutu [sic], the chief of Wainui, to furnish the friendly native with 3000lbs. of pork and 300 baskets of kumeras; and I procured some flour and tobacco from Kapiti. I had no money to make these purchases, but Urumutu was perfectly satisfied to take a [cheque] payable at Porirua or Wellington. It was a pleasant instance of candid and unsuspicious trustfulness….*[29]

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25 Power, William Tyrone *Sketches in New Zealand, with pen and pencil: from a journal kept in that country July 1846 to June 1848,* Christchurch: Capper Press edition, 1974, p.25
26 Ibid, pp.25-6
27 Ibid, p.26
28 29 Aug 1846, New Zealand Spectator and Cook's Strait Guardian. Also Power, op cit. p.27
29 Power, op cit, p.27

On 21 August, as the tangi continued, Power decided to return to Porirua. Three days later he was back at Wainui to see what decision had been reached regarding the pursuit of Te Rangihaeata. He found that a major hui was taking place. Two rows of temporary huts had been raised each 100 feet long. Speeches were made and a hangi of the pork and potatoes organised by Power and Hurumutu had been put down. A major feature of the hui was a haka which Power estimated involved 600 people.[30] It began with the groups organised into two sections of Ngati Toa under Puaha and Wellington Te Atiawa under Wi Tako. These two groups fought a mock battle beginning with an attempt to creep up towards each other as if to achieve surprise. Then "within a short distance of each other, they suddenly started up and rushed together with a terrific yell."[31] Both groups then formed into one line and the Wainui people joined in. Power described the impact the haka had on him.

> *One must suppose hell to have broken loose to imagine such yells, screams, hideous contortions of face and body, firing guns, clashing tomahawks and frightful sights and sounds. Many of the women joined in the dance, nearly naked, throwing up their arms, distorting their faces, and every muscle convulsed….*[32]

Following such a display of power and defiance, the gathered Maori groups decided that they would not pursue Te Rangihaeata and that matters were to rest. Therefore, Te Rangihaeata and his people reached Ngati Raukawa supporters further to the north. He ensconced himself at Poroutawhao, a swamp pa belonging to Ngati Huia of Ngati Raukawa of whom Te Rangihaeata was also a chief. The Government took no further action to dislodge him. With the fighting over Te Rangihaeata remained at Poroutawhao.

1.4 The purchase of land in the Whareroa District

The villages of Wainui and Whareroa remained important centres of occupation. In 1847, it was reported that 450 acres of land were in cultivation at Wainui. The land around the pa was all sand and not suitable for cultivations, so the potato and kumara grounds were located some distance away.[33]

During 1849, the Native Secretary Henry Tacy Kemp, travelled around all the kainga of the greater Wellington district, including Wainui and Whareroa, and reported in some detail on the features of each settlement. In the case of Wainui, the people were in the process of moving from their old village to a new site nearby. Kemp reported:

> *Wainui is one of the new villages laid down by the Government. It is a desirable situation for a settlement of the kind, as it not only has the benefit of being near the coast, with a very fair share of good land, but it also has the additional advantage of being close to the new public road and may now easily convey their wheat either by land or water to the mill at Porirua in which the Natives of Wainui have a share… At Wainui, the Natives have commenced again to clean the flax, and is usually their evening's occupation. The old or present Wainui pa is in a state of dilapidation and unhealthy, but in the course of a few months the Natives will probably remove to the new village which is more sheltered and in every other respect more convenient. They have a Day School under the superintendence of one*

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30 Ibid, p.29
31 29 Aug 1846, *New Zealand Spectator and Cook's Strait Guardian.*
32 Power, op cit, pp.29-30
33 Native Land Court, Wellington Minute Book No.2, p.215

> *of the young chiefs and apparently well conducted. Their cultivations are in good order, particularly the kumara, and the soil at the head of the valley is very rich although the extent of land is very limited.*[34]

A total of 195 persons resided at Wainui, 31 of these being children. A majority of 157 persons were recorded as belonging to the Church of England, the rest being Wesleyans. Sixty one persons were noted as being able to read and write and a further seven being able to read. Thirty three students were attending the school. The settlement was made up of 40 huts and two churches. Nine war canoes were recorded. Stock included nine horses, nine cows and two sheep, but also 40 pigs and 30 goats. Three acres of wheat were being grown as well as five acres of maize, 18 acres of potatoes, three acres of kumara and a further acre of other garden produce. Half a ton of flax had been prepared for market.[35]

Of the neighbouring village of Whareroa, Kemp recorded that Mitikakau remained the chief.

> *Although the pa is small, it is one of the most compact and in perhaps better order than any I have yet visited. Their cultivations which are some little distance inland are also in excellent order and they appear, on the whole, to be a very industrious little body of people. They have two weatherboarded barns, and several stacks of wheat unthreshed and they also prepare a considerable quantity of flax for the European market… They have cattle and horses and appear to be in a very healthy and prosperous state.*[36]

A total of 100 persons lived at Whareroa including 23 children. As with Wainui, most of the people (76 persons) belonged to the Church of England and the rest were Wesleyans. Although there was no school at the village, 12 persons could read and a further 21 persons could read and write. The kainga was made up of 32 huts and one church. Kemp counted ten war canoes belonging to the village. Although only four horses and nine cattle were recorded, 100 pigs were also owned. Cultivations included three acres of wheat, four of maize, 13 of potatoes and seven of kumara. Two and half tons of flax was ready for market.[37]

On 26 November 1850, Land Purchase Officer Donald McLean wrote to the Colonial Secretary that various Te Atiawa groups had expressed a wish to transact land at Whareroa. He had learnt, however, that Ngati Toa, although acknowledging Te Atiawa rights to "possess and occupy" the land, objected to their dealings and claiming the primary title to the land. In response, Te Atiawa, whilst acknowledging that Ngati Toa that were the "original conquerors", noted that they had needed the assistance of other groups such as themselves to hold the lands against Muaupoko, Ngati Apa and Ngati Kahungunu.[38] For the moment, the matter was left in abeyance.

There were also tensions at this time between the Taranaki groups who occupied the Whareroa area. Some wished to sell the land and return to Taranaki where increasing troubles between Maori and settlers were arising.[39] Others, however, wished to remain. During these negotiations, Ngati Maru sought to survey the land, but it is said that the Puketapu chief Pirimona seized an axe and cut the survey chain.[40]

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[34] 1 Jan 1850, H.T. Kemp to Colonial Secretary, found in the New Munster Gazette, 21 Aug 1850, Vol.III No.16, pp75-6
[35] Ibid, p.76
[36] Ibid
[37] Ibid
[38] 26 Nov 1850, Donald McLean to the Colonial Secretary, Appendices to the Journals of the House of Representatives, [AJHR] 1861, C1, p.258
[39] Native Land Court, Wellington Minute Book No.2, pp.239-40
[40] Ibid, p.211

Eventually, Ngati Toa were said to have offered the land for sale to the Government in the late 1850s. They soon found that some resident hapu such as Puketapu and Ngati Maru were not in favour.[41] Hamapiria Waiho later noted: "The people armed themselves with axes to kill the elders. On the arrival of the Ngati Toa matters took a more amicable turn. The Ngati Toa said 'Let a reserve be made for those who do not wish to sell.'"[42]

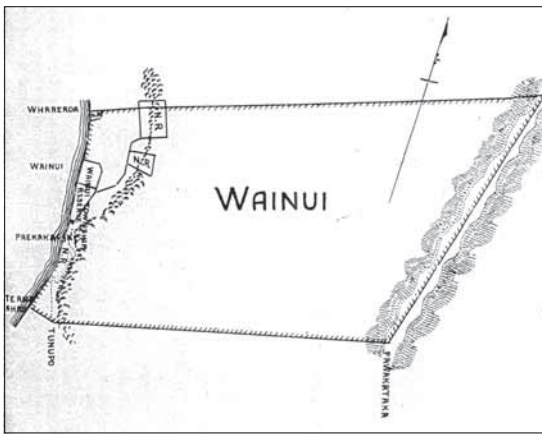
On 27 November 1858, Crown Lands Officer Searancke reported that a purchase had been completed for £850 for a block estimated as being 34,000 acres and stretching all the way from the Whareroa stream four and a half miles to the south and over into the hills. Therefore land now included in the Queen Elizabeth Park had been acquired through this transaction. Whereas 5,000 acres was pastoral land, the rest was bushy and heavily timbered. Several reserves were made two of which were within the park boundaries: 135 acres at Wainui and 17 acres at Whareroa.[43] It was claimed that Pirimona of Puketapu had excepted the land from sale.[44] In addition, a 50-acre reserve was made for the Puketapu chief Tamati te Whakapakeke.[45] Of these reserves Searancke later wrote: "The reserves appear to be large; but when the number of natives resident within the boundaries is taken into consideration they could not in justice be made smaller."[46]

1.5 The decline of Maori settlement

In the decades after the sale of the surrounding land, the occupation of Wainui and Whareroa gradually declined. For a period in the 1860s, however, government officials feared that these villages, and others in the area, might become centres of insurrection as troubles over land developed within Taranaki. In September 1860, Searancke, who was involved in land purchasing activities over in the Wairarapa, received news for him to return to Wellington as there were rumours of happenings among the Maori of the western coast that caused concern in those ever-cautious times. The concern was mainly due to the fear that the various groups of Maori who had originated from Taranaki and who were then dispersed throughout the Horowhenua, Kapiti and Heretaunga (Hutt Valley) districts, may respond and join their relations in Taranaki who were beginning to support the King Movement and its increased opposition to Pakeha settlement. In Wellington, Searancke was told the following story of Wi Tako, the Te Atiawa chief of the Heretaunga.

> *On the 7th [September] Wi Tako, with about thirty seven followers in all and an escort of thirty men from Waikanae and Whareroa who had arrived two days previously, left the Hutt for Waikanae. They were all mounted on horseback marching in regular order two and two, were nearly all armed with either single or double barrelled guns and the majority had either two or three cartridge boxes full of ammunition.*[47]

The groups travelled the 36 miles to Whareroa and arrived there four days later.



Purchase Map of Wainui Block, November 1858

41 Ibid, p.237
42 Ibid, p.205
43 27 Nov 1858, Searancke to the Chief Commissioner , AJHR, 1861, C1, p.283
44 Native Land Court, Wellington Minute Book No.2, p.236
45 Ibid, p.237
46 6 July 1859, Searancke to the Chief Commissioner , AJHR, 1861, C1, p.285
47 28 September 1860, Searancke to McLean, Alexander Turnball Library, [ATL] MS-Copy-Micro-0535-004

> *They ….at once proceeded in company with the residents there to cultivate and plant all the old plantations. These completed, they felled a large piece of bush for later planting. On Tuesday last, the 25th, Wi Tako and party arrived at Waikanae having strongly urged all the Natives of Wainui, Whareroa and Uruhi to be strong and industrious to plant food for themselves.*

Searancke explained that increased planting was not only occurring in this location, but all the way up the coast as far as Whanganui. On investigation, Searancke found that Whareroa, Wainui and other Maori were preparing themselves for any emergency that might arise in those increasingly turbulent times. Searancke also recorded:

> *"They all, both the old residents and the new arrivals express themselves anxious that peace should be preserved in this district and I am still of opinion that no outbreak or disturbance of any sort will take place without some extraordinary provocation."*

After the wars in Taranaki, the villages of Wainui and Whareroa seem to have declined over the following decades. In 1874, the census recorded only 8 persons at Whareroa all of whom were adults. At Wainui, there were 14 people - eight adults over 15 years old, and six children. Four years later, in 1878, the census recorded 20 persons at Whareroa – 12 adults over 15 years old and 8 children. At Wainui there were only six people, one of whom was a child.[48]

G.L. Adkin later told Carkeek that during the 1890s when he was a boy, he visited Whareroa pa where he saw houses that were still occupied by Maori. When he revisited the site a few years later, the houses had gone and the place was deserted.[49]

1.6 European settlers

From the 1850s, several Pakeha families came into the Whareroa/Paekakariki area to farm the land which included areas currently within the Queen Elizabeth Park.

Captain Henry Lynch of the 65th Regiment of Foot arrived in New Zealand in 1846 and was soon engaged in the action against Te Rangihaeata at the Battle Hill conflict in the Horokiri Valley. In 1852 it is said that he was granted property stretching from the north of Paekakariki through to Paraparaumu which he named Emerald Glen.[50] Whether this was actually within the park is unlikely as this land was only sold by its Maori owners in 1859. At some point it does appear, however, that some of the park's land was occupied by the Lynch family.

From 1860, John Telford established a sheep farm know as 'Waremoko' and this extended around and south of current-day Raumati and presumably included the northern part of the park. In August 1879, William Bentinck Howell leased much of this land off Telford for £100 per annum for 10 years. The 1,335-acre run carried 800 sheep. In 1884 Howell agreed to buy another 600 acres or so, on deferred payment, with the result that he then held an approximately 2,000 acre farm that extended all the way down to Whareroa Stream. Howell continued leasing and acquired a right of purchase of the whole farm by the late 1880s. He began draining the swamps in between the sandhills and establishing pasture.[51]

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48 AJHR, 1874 G7, p.17 and 1878 G2, p.20
49 Carkeek, op cit, p.158
50 Wellington Regional Council 1993, op cit, pp.48-9
51 Geoff Thompson in Baldwin, op cit, pp.58-9

In the meantime, Arthur MacKay, who had arrived in New Zealand in 1840, was granted land in the vicinity of the park in 1870 with his brother.[52] Dating from 1876, the family leased more of the Whareroa plateau including, presumably, areas that are currently in the southern part of the park.[53] The land north of Paekakariki was described as being rough with stands of high manuka covering places.[54]

At one stage, the Smith brothers – Francis, Isaac and Stephen – came to farm in the Whareroa district.[55] Eventually, Herbert Phillips, Secretary of the Wellington firm Levin and Co., bought the land from the Emerald Green area (midway in the park) up to Poplar Avenue (Raumati South) as a hobby farm for his retirement. There he sought to create a model farm raising sheep, cows and pigs.[56]

As the farmers took up land, communication routes into the district improved. A track road, roughly in the same position as today's highway, was built to MacKays homestead by 1871 and onto the Lynch's lands.[57] By 1900, a road from MacKays crossing to the Old Coach road on the beach at the Whareroa Stream, had been established.[58]

Although there had been a significant railway building period in the lower North Island by the 1870s, the Kapiti Coast had missed out. In 1874 a line was built extending from Wellington to the Hutt Valley, over to Wairarapa as far as Woodville, through the Manawatu Gorge and on to Palmerston North where branch lines extended down to Foxton and north to Wanganui. By 1878, public pressure had risen for a western coast railway line to link Wellington with Foxton. A number of routes were considered. The one chosen was from Wellington up the Ngaio Gorge to Johnsonville and on to Paekakariki. The work that began on this route in 1879, and was completed through to Pakekakariki, was soon brought to an end when the Government was voted out of power in October of that year. A Royal Commission, established to examine various railway developments within the country, recommended that the western line be discontinued. In response, several prominent Wellingtonians formed the North Island West Coast Railway Company and worked with the Government to gain permission and assistance to recommence the work. Beginning in September 1882, work on the line started from both ends – Paekakariki and Longburn. The two lines met at Otaihanga on 3 November 1886. The Company was allowed to operate the line for 25 years, and in December 1908, the line was purchased and taken over the Government.[59]

After the building of the railroad, villages at Paekakariki, Paraparaumu and Waikanae were soon established. Raumati was settled as a village from 1908. The current road from Paekakariki to Paraparaumu, which now makes up one of the boundaries of the park, was completed just before the turn of the century.[60] From the 1920s, the Raumati – Paraparaumu area developed as a holiday resort with people from Wellington building seaside cottages there.[61]

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52 Wellington Regional Council 1993, op cit, p.49
53 Geoff Thompson in Baldwin, op cit, p.58
54 Ibid, p.69
55 Wellington Regional Council 1993, op cit, p.49
56 Geoff Thompson in Baldwin, cp cit, p.69
57 Stanley Ellen in Baldwin, op cit, p.97
58 Ibid, p.99
59 Geoff Thompson in Baldwin, op cit, pp.57-8
60 Ibid, p.63
61 Ibid, p.61

1.7 Encampment of the United States Marines

United States Marines Camps Russell and MacKay, 1942/43.
Alexander Turnball Library

A significant development within the park's history was the locating of three large campsites to house United States Marines during World War II. In May 1942, Lt Colonel Twining arrived from the United States to consider the establishment of bases and training camps in the Wellington region for the imminent arrival of the troops. As a major focus of the training in preparation for the Pacific campaign would be on beach landing and defence, the sandy western coastline provided the ideal conditions. In addition, the area between Paekakariki and Paraparaumu was the closest rural coastline of this nature to Wellington. Three camps were to be established to house 15,000 men. One was built adjacent to the MacKays Crossing entrance to the park and named Camp Russell. Across the road, and outside of the park's boundaries, Camp MacKay was set up on the area today occupied by Whareroa Farm. The third installation – Camp Paekakariki – was located around what is now the southern entrance to the park.[62]

Land for the camps was taken for temporary occupation under wartime regulations with Camp Russell including land from the MacKay family and Camp Paekakariki being located primarily on Maori land within the Wainui Block. The Public Works Department was given only six weeks to establish the camps but this was accomplished, although it took a large force of 150 tradesmen to achieve this. Pre-fabricated huts were erected, roads, streets and paths were laid out, and water, sewerage and electricity utilities were established. The first camp built was Camp MacKay.[63]

On 14 June 1942, the 5th Regiment of the 1st Division, United States Marine Corps arrived at Camp MacKay. Their stay only lasted for six weeks, however, with the soldiers soon disembarking with other units for the first American ground offensive in the Pacific – the invasion of Guadalcanal (Solomon Islands). On their departure, the building of the other camps in the area continued in anticipation of the arrival of further troops.

After six months of fighting on Guadalcanal, the 2nd Division was withdrawn and several regiments returned to Camp Russell for rest and recreation and continued training. American author Leon Uris recalls the response when he and the other troops were told of their return to the Paekakariki camps.

> *A roar of cheers greeted the news and there was a lot of handshaking and backslapping. We were going back to the land we loved. I couldn't help feeling soft about it even after so many years of traveling from pillar to post in the Marine Corps.*[64]

The 8th Regiment occupied Camp Paekakariki, the 2nd at Camp Russell and the 6th Regiment at Camp MacKay. They remained until October 1943.

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62 Bevan, Denys *United States forces in New Zealand, 1942-1945,* Alexandra: Macpherson, 1992, p.96. Also Wellington Regional Council 1993, op cit, p.50

63 Bevan, op cit, pp.149-50. Also Wellington Regional Council 1993, op cit, p.50

64 Bioletti, Harry *The yanks are coming: the American invasion of New Zealand, 1942-1944,* Auckland, : Random House NZ, 1995, p.159

Although there were some huts located at the camps, the main form of accommodation was tents with wooden floors. The marines were always keen to improve their living conditions as one New Zealand electrician who worked at the camp later recalled:

> *They thought nothing of shinning up a pole and attaching a wire to connect a toaster or a light. They always wanted electric lights in their tents and they would rip out the fittings in the ablution blocks in order to replace their kerosene lamps. There were several accidents in connection with illegal installations.*[65]

The landscape around the camps provided opportunities for training. The rural land enabled practising with mortars and other artillery. Once a shell misfired and landed in Paekakariki township.[66] Marches up the steep Paekakariki Hill Road, nicknamed the 'Little Burma Road', kept fitness levels up. Training also focused on amphibian landings. Despite the apparent safety of the Paekakariki beaches, one serious incident occurred on 20 June 1943 during a night exercise. The series of landings taking place, which were code-named Marnavex, involved Marine units landing against opposition and encountering live firing by machine guns and artillery. In heavy surf, one of the landing craft got stuck on a sandbar and had to be towed off.[67] As this took place, the landing craft was swamped by a wave sending many crew and soldiers over board. Quick action saved many lives but nine personnel, all naval crew, were lost, their bodies being recovered over the following days. The news of the tragedy was not publicly announced at the time.[68]

The establishment of the camps brought changes for the local community. Building Camp Russell meant tearing up the Paekakariki golf course. In addition, temporary buildings including a milk bar, florist, dry cleaner and a bakehouse were erected off the camp sites on private land to provide extra facilities. One local resident later recalled: "Alongside the school at Paekakariki was the first 'take-away' that I can ever remember where the troops could buy sausages, chips, hamburgers, etc. It made a fortune."[69] It is said that as the area north of the camps at Paraparaumu and Waikane were 'dry' whilst Paekakariki had a liquor licence, the marines who visited north "were essentially those who were looking for family relationships whereas those who were wishing to enjoy the wine, women, song and excitement went south…"[70]

United States Marines in camp lining up between huts at the military camp at Paekakariki: June 1942
Alexander Turnbull Library, PAColl-0783-2-0249

On 29 October 1943, the withdrawal from the camps began and was completed in four days. In some cases stores such as food items were given to the local Paekakariki population rather than transport it. In other cases, things were deliberately destroyed as one local resident recalled:

> *…refrigerators, washing machines, you name it, were run over by the bulldozers or burnt. Nothing was allowed to go on the market to be sold. If they couldn't take it with them it was destroyed.*[71]

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65 Ibid, pp.165-6
66 Ibid, p.167
67 Ross McPherson in Baldwin,op cit, p.77
68 Bioletti, op cit, p.162
69 Ibid, p.168
70 Macdonald Garioch-Clunie in Baldwin, op cit, p.81
71 Bioletti, op cit, p.167

After their departure from Paekakariki, the troops headed to Tarawa Atoll (now part of Kiribati) to storm the Japanese positions on the island. This occurred on 20 November with the Division suffering 3,300 casualties in only three days of fighting. The Division went on to campaigns in Saipan and Okinawa.

In 1962, commemorative gates were built at the MacKays Crossing entrance to Queen Elizabeth Park. In 1992, the 50 year anniversary was marked with local celebrations.

1.8 The establishment of a regional park

Soon after the departure of the Marines, the Government considered what it would do with the land it had temporarily acquired. In April 1941, the Hutt County Council had approached the Minister of Internal Affairs, concerned that likely future housing subdivision in the Raumati-Paekakariki area would lessen public access to the coast. The Council proposed that a 200-metre coastal strip be retained in public ownership. Instead of limiting the response solely to acquiring this coastal strip, the Government began to consider other options. In 1945, Cabinet directed that a committee be created to report on possible future utilisation of the land acquired for the Marines' camps. One set of suggestions came from the Wellington City Council Town Planner in August 1947. He envisaged that the area now in the park would become a significant holiday and recreational resort for the region. It was estimated that a mixture of self-contained family units, cabins with shared communal facilities, hostels and camping grounds should be built that would be sufficient to accommodate up to 5,000 persons a night. The Town Planner noted that a swimming pool would be required for when beach conditions were dangerous and that a community centre would be built with shops, a restaurant-cafetaria, a cinema to seat 1,500 persons, a social hall with library and dance hall and a health centre. Two golf courses were to be established which the Town Planner had been advised "could be made one of the finest courses in the Dominion". He expected that on peak days crowds of up to 40,000 people would come to the park and this would cause transport difficulties that would be solved by extending the railway directly into the park. He even contemplated the possibility of a small airfield for private planes to land on.[72] Based on reports such as this which supported the feasibility of establishing a resort, the Crown began to purchase additional land to increase the area of the park.

Despite the Town Planner's enthusiastic report, the first committee did not come up with any specific recommendations. In June 1948, Cabinet directed that the development of the land be put on hold for several years. In the meantime, the land was to be farmed by the Department of Lands and Survey with a 450-acre dairy unit being established on a share-milking basis for city supply purposes whilst the remaining 1,200 acres would be run as a sheep and cattle farm.[73]

No definite steps were taken towards the development of the park until 1951 when Cabinet directed that a second committee of representative departments and local councils be formed to develop the 1,630 acres "for the purpose of recreation and for the health and welfare of the population…"[74]

One of the matters that had held up development had been the possibility that the highway north would be taken right through the middle of the park. By the beginning of 1952, however, the decision had been made to take the road around the eastern borders of the land held by the Crown.

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[72] 25 Aug 1952, Report of Special Planning Committee, ATL 75-156-05, file 54/74, p.1
[73] 3 Dec 1951, Regional Planning Officer, WCC to Wgtn Regional Planning Council, ATL 75-156-05, file 54/74
[74] 28 Aug 1947, Mawson to McKillop, ATL 75-156-05, file 54/74

When the new committee reported in August 1952, they believed they were dealing with a "gem of national importance" and held high aspirations for what could be achieved:

> *The committee visualises the ultimate completion of a central resort which the population of New Zealand will be anxious to visit and where facilities of all kinds and descriptions, not excluding first class accommodation… will be provided for the enjoyment of all comers whatever their financial resources may be.*
>
> *Undoubtedly this project is a milestone in the history of New Zealand and the committee has approached the problem with this thought in mind.*[75]

Such grandiose comments were often repeated by those involved. At one point the Major of Wellington described the reserves as being "a bigger Hagley Park for the city."

Of the 1,627 acres in the park, 700 acres was to be set aside for recreation, 125 acres for picnics and camping, 100 acres of roading, 412 acres as foreshore reserve and 290 acres remaining as farmland to continue the dairy operations. The recreation area was envisaged as being "an immense playground with facilities of every nature catering for the welfare and enjoyment of the population on New Zealand." It was seriously believed that as this park was midway between Invercargill and Auckland, that it would be magnet for holiday makers.[76]

As plans for the park proceeded, steps were taken to formally acquire the necessary land. With the land that had been used for the Marine Camp, instead of compensation being paid for the occupation, negotiations to formally take the land and award full compensation occurred. Other pieces of land, including the 20-acre Whareroa Maori reserve were taken under "better utilisation" clauses available in public works legislation, while several blocks held by members of the MacKay, Lynch, Smith, McKenzie and Budge families were negotiated for.

A view overlooking Paekakariki with the land now in Queen Elizabeth Park to the north, c.1960s: Alexander Turnbull Library, 1/2-046845; G

[75] 25 Aug 1952, Report of Special Planning Committee, op cit, p.4
[76] Ibid, pp.10 & 13

During development, the park was given several different names including the Whareroa Recreation Reserve and the Paekakariki Reserve. By the time of the August 1952 report, Marine Park was favoured. This name had a dual linkage with the Marines camped there during the War and the marine environment that was a key feature of the park.[77] Within a matter of months it was renamed Queen Elizabeth Park to coincide with the 1953 Royal Visit during which the Queen officially opened the park. By then the park had been legally established by the Queen Elizabeth Park Domain Act 1953. The park was to be administered by a Board which would operate through until 1990 when the Wellington Regional Council took over administration. The Board was made up of representatives of central government departments and local authorities. The Board and the park were funded from levies on local authorities as well as profits from the Lands and Survey farms located within the parks boundaries as well as neighbouring Whareroa farm. As a separate agreement, the Wellington City Council, in response to a perceived shortage of sports grounds, took a lease-in-perpetuity over 230 acres of land to develop into playing fields.

Soon after the park was officially opened, a set of bylaws were passed for the control and administration of the domain. They included clauses that sought to protect the users of the park and some restrictions relating to dogs, fires, rubbish and camping are of obvious necessity. There were others, however, that were somewhat interesting.

- *Dangerous Weapons*: Except with the prior written permission of the Board, no person shall within the Domain carry or use any weapon or instrument of a dangerous character (including, but without limiting the generality of the foregoing provisions, any bow and arrow, catapult or shanghai).
- *Throwing Stones, etc*: No person shall throw any stick, stone, or other missile within the Domain.
- *Sports and Games*: No person shall play at or engage in any sport or game in the Domain… if he is expressly forbidden to do so by any person authorised by the Board.
- *Musical Instruments*: No person shall, if forbidden to do so by any person authorised by the Board (either generally or in any particular case), use of play any instrument (musical of otherwise) or loudspeaker in the Domain, or cause in any way any sound or noise that disturbs or annoys… other occupiers or users of the Domain.

Any breach of these bylaws brought a £20 fine.

1.9 Early development of the park

In August 1957, a motor camp was established on a 33-year lease to licensees, and over the next five years roading was improved, two bowling greens were created, a children's playground was built as well as other picnicking and holidaying conveniences and facilities. By 1962, plans for the park remained grand with commentators speculating that the park would eventually have sufficient facilities to host the Empire Games if not the Olympics.[78] By 1965, however, only a putting green and paddle boat pool had been added. A decade later officials insisted that "development to date is just a fraction of what is necessary so that the public may obtain the maximum use and enjoyment of the reserve."[79]

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[77] 25 Aug 1952, Report of Special Planning Committee, op cit, p.39
[78] 13 Sept 1962, *Kapi Mana News*, WRC File QEP. A.
[79] Report "Queen Elizabeth Park Domain" , c.Feb 1975, WRC File QEP.O, Vol.3

The surrounding suburbs always meant that pressures were on the park to be utilised in various ways. In 1958, local residents were annoyed that the motor camp had gone ahead as they saw that land as being better suited to be taken out of the park and used for housing.[80] Also during the early 1960s, residents of Paekakariki were active in seeking a direct road to Raumati South running through Queen Elizabeth Park.[81]

The possibility of fire has always posed another constant problem for park staff. When a fire erupted in October 1957, the first firefighters on the scene were twelve children who were trying to beat out the flames which had started in a flax clump. A few adults soon joined them. Although phonecalls were put through to the local fire brigade, they were attending a house fire at the time and could not come. As neighbouring residents assumed the fire brigade would be there soon, few came to assist the firefighting attempts. Several hours were spent fighting the fire until darkness fell and the civilian firefighters went home exhausted. The fire was not out however, and was only brought under control the following day. This was not achieved by the extinguishing the fire as there was no water source at the park. Instead firemen had to create backburns to bring the fire under control. By then, all the fern and scrub had been burnt from Raumati South to the Whareroa Stream. park administrators recognised the need for firefighting equipment at the park.[82]

Another hazard of the time arose from members of the public finding unexploded ammunition. During the 1950s rifle ammunition was found in the sand dunes, 2lb artillery shells were uncovered by surveyors and tractor work by the railway line exploded some ammunition ordinance. Occasionally Paekakariki schoolchildren would bring ammunition they had found to class. The Army worked with park staff and conducted a thorough scan of the whole park clearing away any ammunition that was uncovered.[83] Nevertheless, from 1958 to the early 1980s, 13 recorded finds of ammunition have been uncovered within the park.

The Wellington Tramways Museum began operating in the park in 1964 beginning with a 21-year lease. In 1966, the Kapi-Mana Kennel Society began to rent and occupy a half acre area of the park at the Paekakariki end. The bowling clubs folded in 1967 due to a lack of playing members. By 1970, a concessionaire ran the amusement facilities which included the shop, boating pool, putting green, trampolines and a 'chair-o-plane.' However a call for expression of interest to establish one or two golf courses in the park lapsed from want of response.[84] The great vision that once operated for the park seemed at an end.

During the early 1960s, overcrowding on the beach could occur during the height of summer resulting in parking chaos and pressure on the park's resources.[85] Over the next decade, this high level of use continued until degradation of the sand dunes and vegetation in the park was being noted.[86] Over the years, public criticism of the park's facilities could be quite strong. In 1968, one writer to the editor of the Evening Post noted the funding that had been available the park since 1953 and commented:

> *What has the Council to show for it? A set of bathing sheds and a junk heap of old trams. Let the Council spend its efforts and its money cleaning up Queen Elizabeth Park and the marine drive to make it accessible to all. At present it is a disgrace.*[87]

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80 25 Nov 1957, *Evening Post*, WRC File QEP. A Vol. 2
81 22 Mar.1962, Secty Paekakariki Raetpayer's Association to Sec QEP Board, WRC File QEP. A.
82 Report by J.S Reid, c.28 October 1957. Also 29 Oct 1957, J.S. MacDonald Note, WRC File QEP. A Vol.2
83 25 September 1957, Macdonald to Army HQ. Also 2 Oct 1957, J.S. MacDonald Note, WRC File QEP. A Vol.2
84 Annual report for1971, WRC File QEP. 8 Vol.1
85 See WRC File QEP. A.
86 Report "Queen Elizabeth Park Domain", c.Feb 1975, WRC File QEP.O, Vol.3
87 Ibid

Nevertheless, the park remained a popular destination for picnickers. Whereas in 1961, peak numbers were recorded as being 1,100 a day, the year 1967 was recorded as having record numbers with the caretaker being sure that 10,000 visitors had been in the park on the busiest days. By 1967, the trams were carrying 34,000 passengers per annum. In 1970, over 100 organised social events were held in the park and it was chosen as the site for harrier, orienteering and motorcross competitions.[88]

As the park was increasingly viewed as a regional asset, in 1972 special legislation was passed to change the membership of the Board and ensure representation from all regional local authorities. This meant a 12-member Board. All local authorities contributed towards the operation of the park and the Lands and Survey funding came direct from an annual budget instead of relying on farm profits. This had been necessary as increased development on Whareroa farm as well as drought and a drop in the prices of farm produce had meant that since 1966 there had been no profits available for the park's administration.[89]

As the park became more popular and used in the 1970s, many problems arose for the administrators. In December 1970, the Park Caretaker wrote of the impact of high volume usage.

> *Tremendous crowds of visitors come to the park every week-end and organised picnics and barbeques have got well under way. The mess and rubbish left lying about by these visitors is unbelievable and broken bottles unaccountable and has to be seen to be believed.*[90]

The caretaker experienced ongoing problems with vandalism, the changing rooms and toilets being particular targets. He also complained about the requirement he had every day of opening and closing the gates. Closing was worse. The caretaker would travel the whole park, but even then people would just stay in and then knock on his door at all hours of the night to be let out.[91]

Four years later, things had not improved with the same problems being experienced. Rubbish and broken bottles were still the curse of the caretaker who described it as "sickening". The condition of the toilets were described was often beyond belief. Vandals still plagued the park and the shop had been broken into four times during the summer. Amidst all this, the caretaker still had to attend to the park gates: "I wonder if the Board realise that this chore has to be done by me every night of the year. I never get a break from it and can never have even one day completely off – let alone a weekend or annual leave."[92]

A regional recreation survey conducted in 1974 revealed the importance of the Kapiti coast, including the area included within Queen Elizabeth Park, for Wellingtonians from around the region.[93] Throughout the 1970s, Kapiti coast, along with the Wellington Harbour, was found to be the most extensively use area for coastal recreation in the region. The Coast maintained local attractions for those immediately resident in the area as well as attracting persons from around the region. Not surprisingly, the most popular activities along the Kapiti coast, including within the Queen Elizabeth Park, were picnicking, beach combing, walking, swimming and surfing. Picnicking and swimming was more popular for those aged between 20 and 40 years of age, whilst beach combing and walking appealed more to over 40 year olds.[94]

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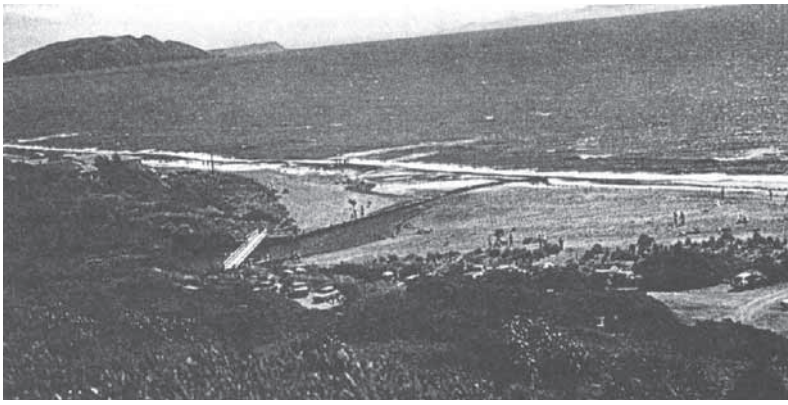
88 Annual report for1970, WRC File QEP. 8 Vol.1
89 Report "Queen Elizabeth Park Domain", c.Feb 1975, WRC File QEP.O, Vol.3
90 26 Nov 1970, caretaker report for Oct and Nov 1970, WRC File QEP. 17 Vol.1
91 Caretaker report for August and Sept 1971, WRC File QEP. 17 Vol.1
92 Caretaker report for December and January 1974. Also report for February and March, WRC File QEP. 17 Vol.2
93 Wellington Regional Planning Authority, *Regional Recreation and Conservation Study,* Wgtn 1974
94 Wellington Regional Planning Authority, *Opinion Survey on Attitudes to Coast and Harbours,* Wgtn 1979

Through to the 1980s the park remained popular with organised groups. In 1986 a park survey identified that 66 groups used the park at least once a year for organised events. In 1988, almost 40% of respondents to a survey identified coming to the beach as the main reason to come to the park, just over 20% prioritised swimming whilst a further 20% highlighted walking as their main reason to visit the park. A further 10% pointed to activities within the park whilst 6.5% stressed shellfish gathering as the main reason for their visit.[95]

In the local government reorganisation of the late 1980s, the management and administration of Queen Elizabeth Park was transferred to the Wellington Regional Council. By the time that the Wellington Regional Council took over Queen Elizabeth Park, approximately 422,000 people used the area per year. This made it the most popular of all the regional parks.

This popularity arises due to the park's accessibility, the range of activities that can be enjoyed there and the sunny and mild climate of the Kapiti coast. The use of the park, however, is very seasonal with intensive use in summer and greatly lessened use in winter. The most intensive use is from December to February. Double the number of visitors use the park during summer compared to the winter months.

At present the park is accessed by two main vehicle entrances – one at Paekakariki and the other as MacKays Crossing. Although there has long been a suggestion to link the two access points within the park, this has been resisted due to the impact it would have on the park's character and management difficulties it could bring. Other ideas for development over the years have included the persistent planning for a golf course, the establishment of an entertainment arena and the extension of the concepts of machinery and transport museum.



Queen Elizabeth Park beachfront: Wellington Regional Council

1.10 Archaeology of Queen Elizabeth Park

Archaeology in New Zealand

New Zealand has many archaeological sites that tell unique and wonderful stories of our history.

Our archaeological sites include sites and places where people lived and worked, where they made or gathered food and resources, and where people fought and died. They may be sites associated with the first people in New Zealand, Polynesian voyagers who became the Maori. Later settler communities such as European sealers and whalers, settlers and farmers, and Chinese goldminers also left many sites through the country.

All our archaeological sites are important, no matter how small or similar to other sites. Every site contributes something to the story of our country.

Archaeological sites in Queen Elizabeth Park

The physical environment is a major influence on where archaeological sites are found on the Kapiti coast, and the nature of these sites. The Kapiti coast is distinguished by a

[95] Wellington Regional Council, *Wellington Regional Recreation Survey*, Wgtn 1988

broad flat band of coastal dunes, behind which is a steep wave cut scarp which rises to the ridges and hills of the Tararua Ranges.

Queen Elizabeth Park stretches along the coastal dunes. It contains both low rolling dunes and low former wetland areas between the dunes.

McFadgen (1997:6) states the dunes "… are the single most important factor influencing land form; the age and distribution of vegetation, wetland and soils; and where the Maori lived in pre-European times. Understanding them is a prerequisite to understanding both the natural and cultural history of the region."

The dune sands are made up of material brought to the coast by rivers and moved along the coast and inland by wind and wave action (McFadgen, 1997). The dunes are dynamic, that is, the sand moves around and deflates and reforms dunes. All along the coastal plain the landward dunes are interspersed with areas of peat swampland, which also is significant in terms of human occupation. The swamp areas would have been rich sources of food and raw materials, including birds, eels and plant species. The coast was a hugely rich source of fish and shellfish.

Material excavated from archaeological sites in the Kapiti region shows that moa were being hunted in the pre-European period (McFadgen, 1997:14). A heritage and archaeological study of Queen Elizabeth Park was completed by Susan Forbes of Kotuku Consultancy Ltd in April 2005 (Kotuku Consultancy 2005). She noted that the park is a place of regionally significant heritage and archaeological values.

There is physical evidence of virtually continuous occupation for the entire coastal foredune area of the Park. The main evidence for this are the food collection and preparation areas, commonly known as middens. Middens usually contain shellfish, and occasionally have fishbone, birdbone, and remains of ovenstones from cooking ovens.

Sites in the park also include pa, pits and some burials. Pa are defensive sites where people would retreat during battles or conflict. They are usually located on higher dunes or ridges, for strategic advantage, and may have been defended by ditches and banks dug into the ridge, or by rows or palisaded posts.

There are a number of known burials in the dunes of the park. People were often buried in dunes, and sometimes their bones were later gathered up and reburied. These burials are of very great significance to iwi, and for that reason their locations are not made public.

Although they are not "archaeological sites" as they post-date 1900, the two WWII military camps in the park have been recorded. The 1st and 2nd divisions of the United States Marine Corps were camped in or near the park between June 1942 and October 1943. Three camps were built: Camp Russell was located in the park beside the present day entrance at MacKays Crossing, Camp MacKay was located on the other side of State Highway 1 from Camp Russell, on land now occupied by Whareroa farm, and Camp Paekakariki was located at the southern end of the park, partially in what is now park land and partially in what is now Paekakariki township. The combined capacity of the camps was about 15,000 men.

The substantial camps were made of prefabricated buildings, and had streets, sewerage water supply and electricity.

There are no visible archaeological remains of the camps. However there is strong "tradition" in the Paekakariki community that when the Marines left they buried large quantities of ordinance in the sandhills, including ammunition, vehicles and stores. The locations of these dumps, if they exist, is not known. However since 1958 various items have been relocated throughout the park, giving credence to the "myth". Items found include "bombs", large quantities of ammunition, parachute flares and artillery shells. The opinion of the NZ Army is that the finds are more a matter of "poor housekeeping", that is, material inadvertently lost or left behind, than being indicative of large dumps. Whatever the origin, further buried ordinance remains likely throughout the park.

Considering the wide range of heritage values within the park boundaries, archaeologists have encouraged park managers to consider the whole park as an archeological site and seek advice from Historic Places Trust prior to undertaking any earthworks. Heritage documents relevant to the park are: Kapakapanui, 1998; Bowman, 2001; O'Keeffe, 2005, McFadgen, 2005.

Recorded archaeological sites:

Archaeological sites in New Zealand are recorded by the NZ Archaeological Association. Sites are referred to by the mapsheet on which they are located and then by their site number. So R26/30 is the 30th site recorded on the R26 mapsheet.

Mapsheet	Site number	Easting	Northing	Site type	Date recorded
R26	30	2675600	6025700	midden	2000
R26	31	2675600	6025900	midden	1989
R26	93	2675800	6026200	middens/ovens(pa)	1998
R26	94	2675100	6024200	pa	1963
R26	99	2675700	6025800	midden	1978
R26	249	2676500	6027200	midden	1998
R26	250	2676900	6026200	midden	1998
R26	251	2676700	6026000	midden	1998
R26	252	2675960	6026790	midden	2003
R26	286	2675700	6024600	midden/ovens	1998
R26	287	2676400	6024400	pits	1998
R26	292	2675610	6025730	midden	2003
R26	293	2675530	6025600	midden	2003
R26	294	2675480	6025590	midden	2003
R26	295	2675440	6025310	midden	2003
R26	296	2675420	6025260	midden	2003
R26	297	2675390	6025230	midden	2003
R26	298	2675380	6025190	midden	2003
R26	299	2675300	6025000	midden	2003
R26	300	2675300	6024990	midden	2003
R26	301	2675140	6024640	midden	2003
R26	302	2675120	6024560	midden	2003
R26	303	2674980	6024280	midden	2003
R26	304	2674990	6024300	midden	2003
R26	308			burial	2001
R26	313			burial	2002

(continues overleaf)

Mapsheet	Site number	Easting	Northing	Site type	Date recorded
R26	315	2675250	6023920	midden	2000
R26	317	2675490	6025460	midden	2003
R26	318	2675360	6025130	midden	2003
R26	319	2675150	6024620	midden	2003
R26	320	2675820	6026350	midden	2003
R26	321	2676040	6027020	midden	2003
R26	324	2675846	6026015	Midden	2003
R26	323	2675201	6024386	Midden	2003
R26		2676400	6024400	Military camp – Camp Russell	2004
R26		2675200	6023900	Military camp – Camp Paekakariki	2004

Potential for unrecorded sites

From what is known of the nature, type and location of the currently recorded sites and the environment of the park there is extremely high potential for further unrecorded sites. The majority of known sites in the park are middens, which have been recorded in the dune sands. As the dunes are very active and the sand shifts a great deal, many more unrecorded sites are probably located within the dunes.
Such unrecorded sites are most likely to be midden, ovens or burials but other sites are also possible.

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Physical Environment

2. Topography, Geology and Landforms

2.1 Physical features and topography

Queen Elizabeth Park is situated on the southernmost portion of an extensive coastal dune system on the West Coast of the southern North Island. These dunes have been piled up at the foot of the Tararua Ranges by a steady onshore wind. Roughly one third of the 637 ha comprises a relatively unmodified dune system with a patchy covering of coastal scrub and mown grass. To the north and east ephemeral wetlands on low relief, consolidated inland dunes have been converted for pastoral use.

Eighty five percent of the land is flat, to gently undulating (0-3°). The more recent dunes, closest to the coast, are roughly 27 m above sea-level and the consolidated dunes behind these are generally lower than 20 m. This low relief means that the area is accessible to a wide cross-section of the community.

Two streams that have their headwaters high in the hills meander across the park to discharge into the sea. They have deep channels with easily eroded banks.

Unmodified coastal and inland dune communities have become rare in the Wellington region due to growing urbanisation and demand for coastal real estate. Sand dunes are extremely sensitive to trampling and the resulting disturbance can result in a blow out. In this situation sand from the dune becomes mobile and moves rapidly inland engulfing everything in its path. High numbers of summer visitors compound this problem as they move back and forward between the ocean and the sheltered dunes.

This narrow strip between the coast and the bush clad hills offers a splendid feeling of isolation for visitors to the park and this is complemented by spectacular views of Kapiti Island and the setting sun.

2.2 Geological history of the Wellington region

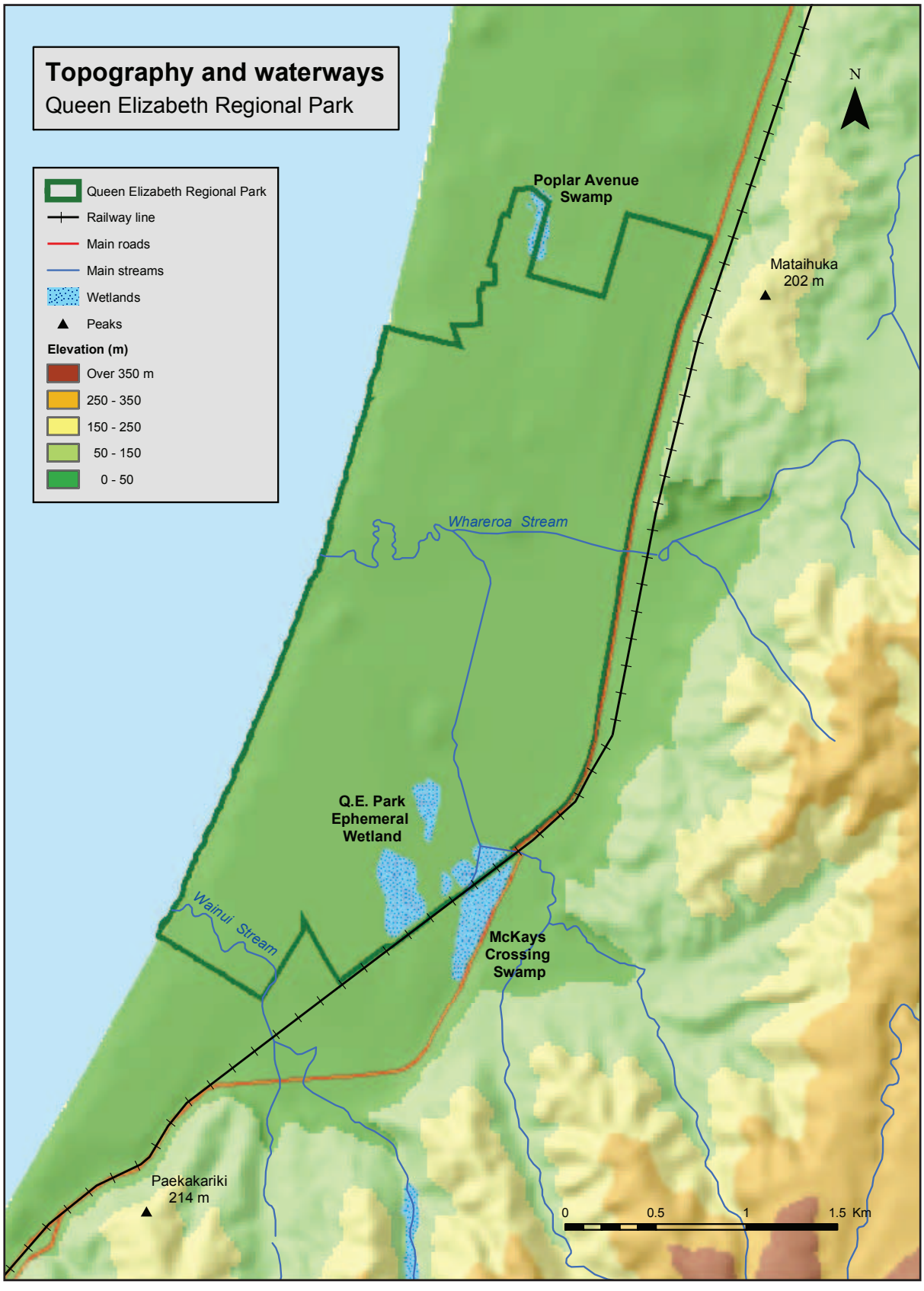
New Zealand's landscape has resulted from the interplay of tectonic and climatic processes over both geological (millions of years) and human (decadal) time scales. Information about these processes in the Wellington region is provided in Stevens, (1973) and a synopsis in the Battle Hill Farm Forest Park Resource Statement (GW, 2006a). Movement continues to occur on Wellington's fault lines. Climate also plays a large part in shaping the land. Many geological and climatic events in the past have left traces in the regional environment that help to explain the creation of the landscape as it is today. By understanding the processes and their effects scientists can also predict what might happen as a result of future climate changes.

2.3 Geology of Queen Elizabeth Park

The history of the dunes at Queen Elizabeth Park dates from about 6000 years ago when sea levels were higher than they are today (Adkin, 1951). As the sea retreated sand was deposited on the shore and blown inland by the steady wind.

Map 1 Location of Queen Elizabeth Park

Map 2 Topography and waterways



A number of phases of dune formation have been recorded and the sediments related to these are known as the Foxton, Taupo, Motuiti and Waitarere dune-sands (Cowie, 1963). This trend of deposition at the coast (progradation) has changed over the past century to one of erosion north and south of the park. Vegetated dunes in Queen Elizabeth Park are the only area south of the Paraparaumu cusp not actively retreating at present (Gibb, 1978). The dunes in the park are therefore valuable examples of a once far more extensive system.

The low-lying land at Paekakariki formed during a cool climate, glacial period in the Pleistocene, about 1.8 million years ago. At this time there was little vegetation on the hills and erosion rates were high. Streams and rivers carried large volumes of sand and gravel and created an apron of gravel fans at the base of the Tararua and Ruahine Ranges, reaching out into Cook Strait. These gravels have been exposed in a road cutting on State Highway One, 350 m south of MacKays Crossing (Kenny & Hayward, 1993). Sea level at this time was some 120-200 m below the present level as a lot of water had been withdrawn from the oceans to form ice sheets. Because Cook Strait is quite deep here (more than 200 m below present sea level) these gravel plains, known as piedmont plains, fell steeply to the sea which was not much more distant from the hills than the present coast-line is today.

The sea level has risen and fallen many times since then but the gravels remain under the park. Superimposed on these gravels are marine sand deposits and further alluvial gravels and, more recently, sand dunes. It is possible to distinguish between alluvial and marine deposits because the latter contain the mineral mica which is derived from volcanic rock transported here by the sea, whereas the local greywacke generally lacks mica (Stevens, 1974). The alluvial deposits also tend to be less rounded than the marine deposits (Adkin, 1951).

Aerial view showing dunes of different ages at the northern end of the park
Photo: ©Institute of Geological & Nuclear Sciences Ltd

About 6000 years ago the sea level reached what is known as a Post Glacial Maximum, during a period known as the Climatic Optimum when mean annual temperatures were about 2°C higher than today. At Queen Elizabeth Park the sea was lapping at the foot of the Tararua Ranges where State Highway One runs today. As sea level retreated marine sands were exposed and were blown by the wind into sand dunes.

Sand continued to be supplied to the coast by longshore currents that carried sediment from as far away as Mounts Taranaki and Ruapehu and the Wanganui Basin and also local sediments from the Tararua and Ruahine Ranges. The last six thousand years have seen a number of dune building phases the earliest of which was the Foxton Phase. This took place from 5,500 –1,800 years ago. A dune building phase covers the time from the formation of the dune complex to its stabilisation by vegetation and the initiation of soil development.

Following the stabilisation of these dunes a new advance was initiated which can be differentiated from other phases because the sand contains pumice from the last Taupo eruption, dated about AD 230 (Adkin, 1951). This eruption consisted of a number of small and large explosions culminating in one final and violent explosion which produced the bulk of the Taupo Pumice (Thornton, 1985). Dunes of this era are known as the Taupo Phase.

The advance of the Motuiti dunes took place about 750 years ago. This date was determined by radiocarbon dating a totara tree stump rooted in soil that formed on Foxton Phase dunes and probably killed by advancing sand (Cowie, 1963). Motuiti dunes are associated with the versatile soils of the Foxton series.

The Waitarere dunes represent the youngest of the dune building phases and form a narrow strip at the coast. They are less than 160 years old. These dunes also occur as small patches where previously stabilised dunes of the Motuiti Phase have been wind eroded after a loss of vegetation. For many years Waitarere dunes were actively eroding until most of the drifts were brought under control by extensive planting programmes in the early 20th century.

As the dune system grew, drainage behind the dunes was impeded and dune slacks, or wetlands, evolved. In these wet areas layers of peat were laid down over the sand by marsh plants and peat-lands were created along with their associated Paraparaumu soils. Carbon14 dating technology for woody peats such as these, that inter-finger the oldest Foxton dunes at nearby Waikanae, gives them an age of between 5,320 and 4,800 years before the present (Fleming, 1972).

Since the Post Glacial Maximum the coast from Wanganui to Paekakariki has been building out into the sea (prograding) supplied with sand by the rivers and streams of the region. This process is occurring fastest in the shelter of Kapiti Island resulting in the formation of a cuspate foreland at Paraparaumu, 7 km north of Queen Elizabeth Park. Two longshore currents are at work here, one has a net southward movement from Taranaki, the other has a northward movement from Pukerua Bay. Between about 4000 BC and AD 150, the entire shoreline from the Paraparaumu cusp south was advancing (Gibb, 1978). All of this shoreline except the vegetated dunes in Queen Elizabeth Park is now eroding.

Queen Elizabeth Park and the Kapiti Coast

Gibb puts this down to a combination of natural and human induced factors. As the cuspate foreland at Paraparaumu grows, sediment from the north is being deflected offshore to form sandbanks instead of reaching the beach south of Paraparaumu. The construction of State Highway One and the Main Trunk railway line has also cut off the supply of sediments from the hills between Paekakariki and Pukerua Bay.

To compound the situation houses were built on the fragile foredunes of the beach both north and south of the park. Following a number of storms in the 1970s, seawalls were built in an effort to prevent erosion near these houses. Severe storms occurred in September 1976. While it is uncertain how much erosion occurred during those storms, it is clear that the rate of erosion along the park shoreline has increased significantly since 1976. Gibb argues that a wide beach is critical for protecting the fore-dune from erosion by the sea. The sea walls erected on the active beach effectively reduce the area where the energy of storm waves can dissipate. Thus, the full force of storm waves is directed at the seawalls and erosion continues behind them. A fuller discussion of erosion in Queen Elizabeth Park can be found in a 2001 coastal dunes management document (Boffa Miskell Ltd, 2001).

The unmodified nature of the dunes in Queen Elizabeth Park has been recognised by the Geological Society of New Zealand as having regional significance (Kenny & Hayward, 1993). Dunes such as these are fragile and are threatened by urbanisation. Because they are stable with a good cover of native vegetation, have never had coastal protection and represent a number of dune building phases means that they are an extremely well defined landform of scientific and educational value. It is not known whether current erosion north and south of the park threatens the dune system within the park itself. Management should seek to avoid or prevent activities and developments which modify the landforms of dunes (WRC, 1993). Care also needs to be taken to maintain an intact vegetation cover because the sand of the dunes is easily eroded by wind and rain.

3. Soils

3.1 Soils of the Wellington region

Soil is a product of the environment in which it develops. It results from the interaction between the parent material from which it derives; the slope and aspect of that material; the climate (temperature and rainfall) and the biota (in particular vegetation) that grows on it. Soil takes time to develop.

The soils of the Wellington region have formed on greywacke and argillite rock; slope debris (colluvium); river deposits (alluvium); wind blown silt (loess); sand and peat. They have formed on generally hilly terrain under a climate where temperatures and rainfall vary markedly. These soils have formed during the last ten thousand years, mainly under forest.

In order to understand the differences and similarities of soils they have been named and classified into groups. Maori were the first people in New Zealand to name different soils (Bruce, 2000). Since then various Classification Systems have been used. The New Zealand Genetic Soil Classification (NZG) (Taylor, 1948), was developed in the early 20th century, describing soils according to how they were formed. The present New Zealand Soil Classification (NZSC) (Hewitt, 1998), describes soils as they are.

Soils within groups are given a series name based on a location where that soil was first described.

The largest (and most widespread) order is the brown earths. These form on materials derived from sedimentary rock in a climate where the soil rarely dries out and is not waterlogged in winter (Molloy, 1988). Other orders found in the Wellington region are: organic soils; gley (wet) soils; ultic (leached/illuviated) soils; podzols (leached with an horizon of accumulation); pallic (pale) soils; recent soils; and raw soils (very recent). Within these orders there are 33 soil series in the Wellington region.

3.2 Soils of Queen Elizabeth Park

The soils of the park have formed on a coastal sand landscape with a sand-plain behind dunes, sloping back to a peaty swamp where the water table is at the ground surface. Those soils closest to the coast (Waitarere series) are only about 100 years old while the soils of the back-dunes (Foxton series) and the sand plain have formed on dunes that stabilised 2000-3000 years ago (Molloy, 1988). Water retention is very poor in the soils of the dune crests and flanks and not much better in the back-dunes where the soil has higher levels of organic matter. The peaty and silty soils in the park (Paraparaumu & Waiwhetu series) are poorly drained but versatile with low potential for erosion. The following soil descriptions are from Bruce (2000). (See Map 3, ***Soils***)

The young soils on the beachfront dunes are thin, sandy soils of the **Waitarere** series. In the short time since the dune has had a cover of vegetation there has been very little modification of the loose sand except for the darkening of the top few centimetres with organic matter. These soils are extremely drought–prone and liable to severe wind erosion if the vegetation is disturbed. They are recommended as suitable for conservation purposes.

NZSC: Typic Sandy Recent soils
NZG: Recent soils

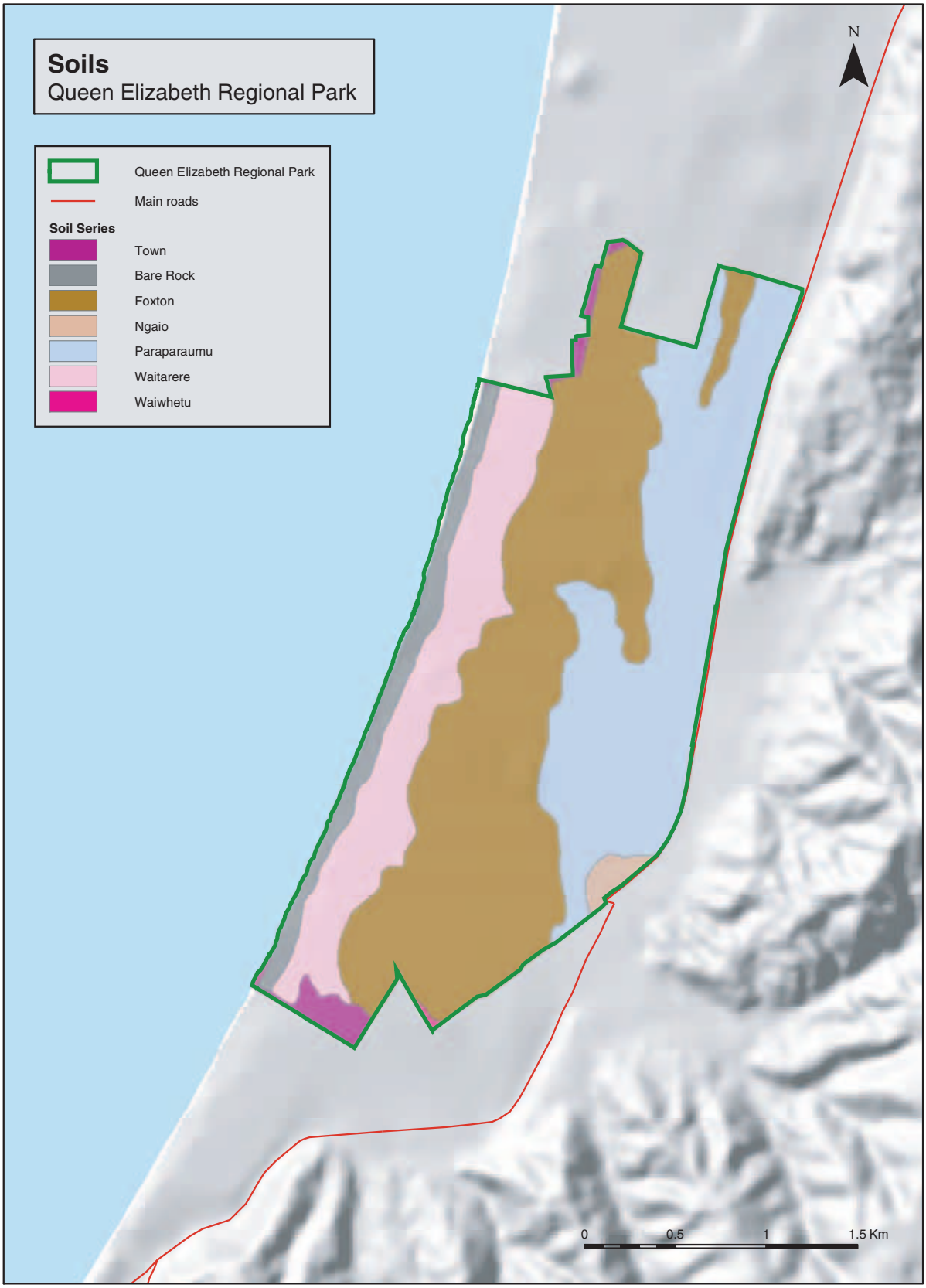
Soils of the **Foxton** series are far more developed than those of the Waitarere series. They show well differentiated horizons with thin blackish, sandy topsoil on yellowish brown weakly developed subsoils grading into greyish sand. These soils are found in sand filled back-dune depressions. They have a higher clay content than the younger Waitarere soils and a greater ability to hold plant nutrients. Care is needed to avoid wind erosion if the topsoil is exposed.

NZSC: Typic Sandy Brown soils
NZG: Yellow Brown sands

Paraparaumu soils are more versatile than the free draining sandy coastal soils. They are widespread in inter-dune swales (low marshy depressions) on the Kapiti Coast, but best known from Taupo Swamp, Plimmerton. A thin black peaty loam surface layer overlies brownish loamy peat. The underlying material consists of well-decomposed peat interspersed with sand. Surface layers have varying amounts of blown sand or alluvial ash from hillsides but low potential for erosion. When drained these soils have high potential for market gardening. However, some drainage processes on peat soils are irreversible and restoring the hydrology may not be enough to enable regrowth of the original vegetation.

NZSC: Acid Humic Organic soils
NZG: Organic soils

Map 3 Soils


Soils
Queen Elizabeth Regional Park
Queen Elizabeth Regional Park
Main roads
Soil Series
Town
Bare Rock
Foxton
Ngaio
Paraparaumu
Waitarere
Waiwhetu
N
0
0.5
1
1.5 Km

Waiwhetu series soils occur in depressions and abandoned flood channels. They are frequently flooded and water tables are high. These silty soils have a dark, greyish brown surface horizon overlying pale olive silt loam subsoils with prominent brownish mottles grading, with greater depth, to gravels. With drainage these soils become more versatile, suited to horticulture and cropping.

NZSC: Mottled-acidic Fluvial Recent soils
NZG: Recent soils

4. Climate

4.1 Regional climate

The climate of Wellington is dominated by the proximity of the region to the ocean (in particular Cook Strait) and by the topography. Mountain ranges on either side of Cook Strait channel mid-latitude westerly winds to create the distinctive "Windy Wellington" weather.

The area around Cook Strait is noted for its high winds. This is because wind follows the path of least resistance and rather than pass over the Ranges on either side of the Strait the wind bends and is funnelled through the Strait. Thus wind from the west can become a "nor'wester" by the time it has bent around the hills (Dickson, 1986). The wind will also have increased in speed as a result of being squeezed through the gap. Average wind speed in the narrows of the Strait is 33 km/hr but maximum gusts of 237 km/h were recorded at Hawkins Hill during the Wahine storm in April 1968 (Goulter, 1984; Reid, 1998).

Migratory anticyclones move east across New Zealand every six to ten days. These are interspersed with troughs of low pressure. This pattern of northwesterly followed by southwesterly wind can become more complex when a wave of depressions or blocking anticyclones occur.

The air mass travels over the ocean before reaching Wellington and can arrive laden with moisture. As the air moves up over the hills the temperature falls until moisture condenses out as rain. Thus the higher altitude parts of the region receive more rainfall per year than the coastal areas (Salinger *et al*. 1986). The West Coast from Porirua Harbour north receives 1000-1200 mm per year while in the Tararua Ranges rainfall varies between 2000 mm at Kaitoke to 6400 mm on the main divide. Despite this overall pattern the distribution of precipitation in the region on a daily basis is more complex. Intense rainfall can occur at both low and high altitude (Lew & Blackwood, 1995). Rain falls throughout the year with peaks in winter and spring due to the increased frequency of depressions that cross the region at these times.

The range of temperatures for Wellington is small compared to the rest of the country. This is because the maritime location and wind have a moderating effect on temperatures. The average winter mean temperature is 8.2°C and the average summer mean temperature is 16.4°C. The night/day temperature difference is also small (Salinger, 2000). Temperature does vary markedly within the region because of the rugged topography (Goulter, 1984). Variation in altitude (and therefore cloud cover); local winds; and aspect; all affect temperature.

4.2 Climate at Queen Elizabeth Park

Queen Elizabeth Park has warm summers and mild winters. The annual rainfall of 1000-1100 mm is low for the region. Anecdotally, this is the sunniest part of the region with lighter winds than elsewhere. Nevertheless, winds are steady and strong enough to build sand dunes. There is no climate station in the park so the data from nearby stations has been used.

Mean annual temperature on the Kapiti coast is 12.9°C, 0.4° higher than Kelburn. This is mainly the result of higher daytime temperatures (Salinger, 2000). Monthly mean air temperatures range from 8.3°C in July to 17.2°C in February. Air frosts occur, on average, 10 times a year at nearby Paraparaumu Airport and it is probably fair to assume that a similar number occur on low-lying land in the east of the park due to the ponding of cold air. An air frost occurs when the temperature on a screen 1.2 m above the ground reaches 0°C. Frost tender plants such as whau (*Entelea arborescens*); titoki (*Alectryon excelsus*) and nikau palm (*Rhopalostylus sapida*) are difficult to establish where the original canopy has been damaged or destroyed (Gabites, 1999).

Rainfall, although low for the region, is still well within the national average. Most rain arrives from the northwest. Periods exceeding 14 days without rain are common in the summer months but otherwise are rare (Goulter, 1984). There are no records of snow on the Kapiti Coast. (See Map.4, ***Regional Rainfall***)

Average monthly sunshine hours are high for the region, 114 hrs (Jun) – 235 hrs (Jan). This equates to 48% of possible sunshine hours per year, which is the same as Kelburn.

Wind at the coast is steady and not as strong as at Kelburn because the winds have not been squeezed through the Strait or forced to accelerate over hills. The average daily wind run varies from 312 km/day (March) to 432 km/day (October/November). Gale force winds (Beaufort scale 8 or 63-74 kph) occur several times a year compared with 47 times a year at Wellington Airport. The prevailing wind is from the northwest, driving dune-building processes. When dry it can also carry a significant quantity of salt.

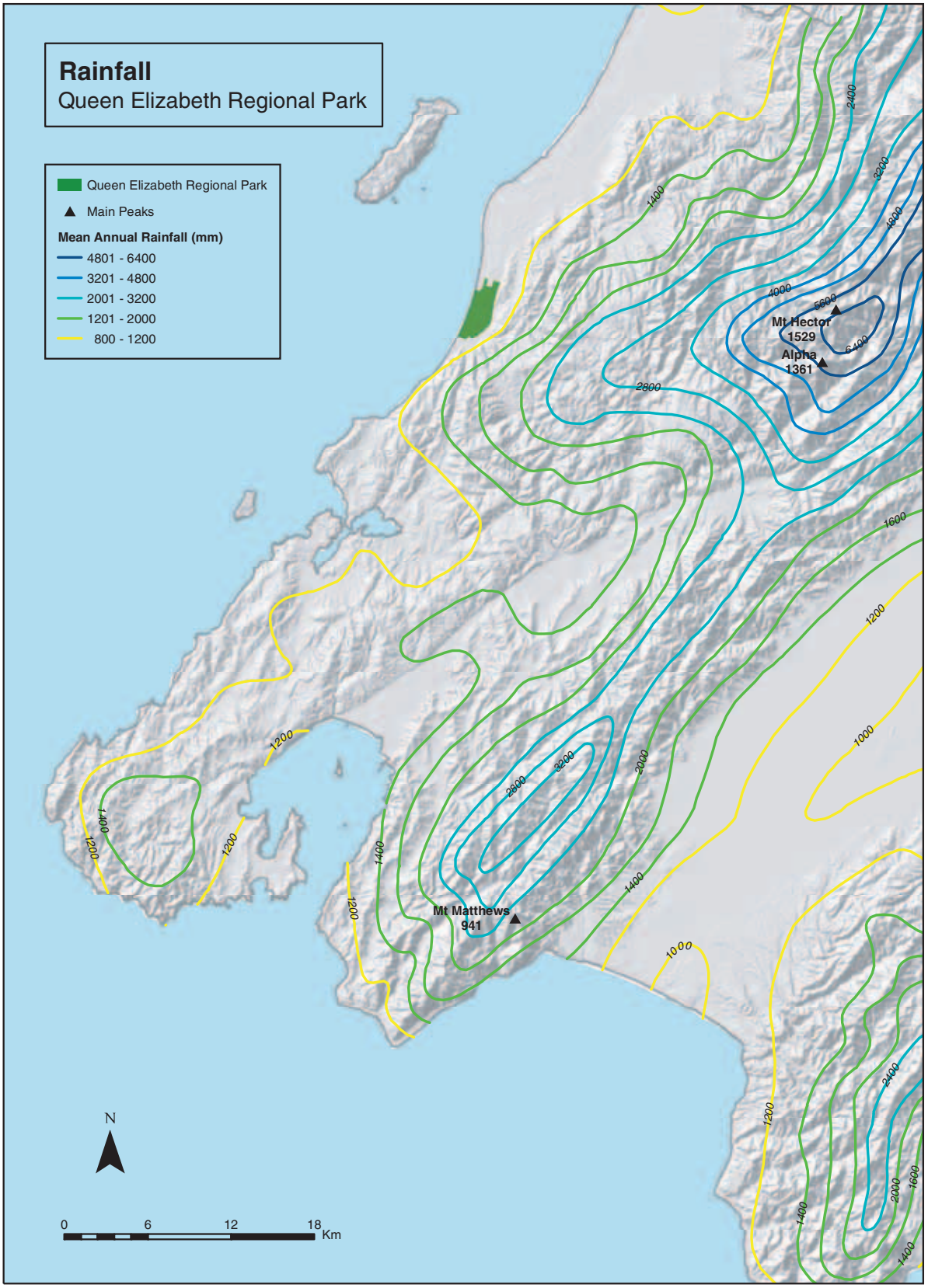
5. Waterways

5.1 Hydrology

Two streams pass through Queen Elizabeth Park and discharge into the sea, Whareroa Stream to the north and Wainui Stream to the south. Both have their headwaters in the hills to the east of the park where the land is steep and stony.

The Whareroa has the larger catchment where the main land-use is largely pastoral (cattle). It has two branches, one of which passes through an extensive wetland system at MacKays Crossing. In the park the drainage system of this stream has been greatly modified in order to facilitate drainage of the peat-lands. It is only once it reaches the dune area that it regains the meandering pattern it would have had in the past. In the past the water quality in this stream has been affected by a number of factors: a lack of vegetation at the stream edge (riparian strip); trampling and contamination by stock; erosion; and nutrient run-off. The stream is now being restored–farm stock have been fenced off in recent years and riparian plantings are being completed by the Friends of Queen Elizabeth Park.

Map 4 Regional rainfall



Whareroa Stream planting

MacKays Crossing Swamp

A branch of the Whareroa passes through a wetland at the back of the dunes. Known as MacKays Crossing swamp, the wetland is divided in two by the main trunk railway-line, which also marks the eastern boundary of the park. The water table in the swamp fluctuates annually because of differences in rainfall and evapotranspiration between the summer and the winter months. In summer during prolonged dry periods parts of the swamp are quite dry and areas of open water decrease. This fluctuation is quite normal for dune wetlands. Impermeable barriers such as the railway embankment and a clay causeway will also affect the drainage pattern. There has been some wetland restoration work completed on this swamp recently, as mitigation for a new alignment of SH1 which passes through the wetland.

The Wainui catchment is almost entirely in native bush, passing briefly through pasture and a motor camp to a small lagoon at the beach. Once in the park the stream channel deepens and it meanders through the sand dunes to a small lagoon. Water quality is good in this stream as evidenced by the freshwater fish population.

There is a further area of wetland in dune slacks near Poplar Avenue. Dune slacks are moist hollows among the dunes where the sand behind or in the lee of a dune has blown out so that the water table is at the surface. Areas like this are often referred to as ephemeral, or temporary, wetlands because they may be dry for long periods of time. Water levels in these wetlands vary with rainfall and drainage. The natural drainage of this wetland has been modified by urbanisation of the nearby dunes.

Significant levels of groundwater are stored in an underground aquifer in the alluvial gravels beneath the park. However, the hydrology of this particular system is poorly understood. It is not known whether or not the aquifer is confined or how vulnerable it is to contamination. There is sufficient water to draw off up to 1600 m3 per day via a bore near MacKays Crossing (WRC, 1993).

Biodiversity

6. Flora

6.1 Pre-historic vegetation on the Kapiti Coast

The Kapiti Coast is part of the Foxton Ecological District. This long strip of Holocene sand dune country with its several associated wetlands, lagoons and several estuaries forms the most extensive sand dune system in New Zealand (McEwen, 1987). Queen Elizabeth Park is at the southernmost tip of the Foxton Ecological District. Prior to the arrival of the humans, a mosaic of plant communities reflecting the different groundwater conditions and microclimates would have been found in the park. Widespread dune forest and swamp vegetation once covered 36,000 ha along a 120 km strip between Paekakariki and Wanganui (Cockayne, 1909). These represent various zones of vegetation including coastal dune shrub-lands, wetland and ephemeral wetland, and swamp forest.

The foredunes would have been covered with spinifex (*Spinifex sericeus*) and pingao (*Desmoschoenus spiralis*), while at the rear of the dunes, tauhinu (*Ozothamnus leptophyllus*), sand coprosma (*Coprosma acerosa*) and sand daphne (*Pimelea arenaria*) would have been common. On the foredunes where the sand is continuously moving, the temperature fluctuates rapidly and drying wind carries salt and abrasive sand. Tough leaved, sand binding plants such as spinifex, pingao, shore bindweed (*Calystegia soldanella*) and ice-plant (*Disphyma australe*) once thrived in this environment. The prostrate shrubs, sand coprosma and sand daphne and the more upright tauhinu also assisted in holding the sand.

These plants can still be seen on the dunes today in association with exotic species. Sand binding and dune building plants play a large part in shaping the topography of the land. Pingao forms low broad dunes and thrives on the lee side of dunes where there are regular additions of sand. It will succumb if the sand supply ceases (Moar, 1970). Spinifex builds dunes of a regular profile, and is restricted to areas close to the coast unlike pingao, which may be found far inland. The exotic marram grass (*Ammophilia arenaria*) builds high dunes, which may collapse over time as the grass roots have a low tolerance to salt water.

Typical foredune plant community

Kohekohe, a typical coastal forest tree

In the dune slacks, (wet depressions behind the dunes), different species are restricted by their moisture requirement, causing zonation (Esler, 1969). Primary dune slacks are formed when dunes grow rapidly, cutting the top of the beach off from the sea. This occurred at Paekakariki when sea level retreated following the Climatic Optimum. Secondary dune slacks result from a dune blowout where erosion down to the water table has occurred. The water table under a dune system fluctuates seasonally, with many dune slacks flooded in winter and dry in summer. When an area is not always wet it is known as an ephemeral wetland. At Queen Elizabeth Park the hydrology is complicated by groundwater in the alluvial gravels below the dunes, not to mention the effects of land-drains, roads and a railway embankment.

The pattern for the nearby Himatangi dune slacks, which are very similar to those in the park, has been described by Moar (1970). *Ficinia nodosa* is the first rush encountered, followed by: *Apodasmia similis*; *Schoenus nitens*; *Epilobium billiardiereanum*; *Juncus holoschoenus*; and *Cortaderia toetoe*; manuka (*Leptospermum scoparium*); and *Olearia solandri* as the soil becomes progressively wetter. In shallow depressions you may find, *Myriophyllum votschii*; *Limosella lineata*; *Ranunculus acaulis* and *Selliera radicans*. *Carex pumila* is more numerous on wet flats rather than on dry. Many of these species are no longer present in Queen Elizabeth Park.

There would have been a mix of wetlands present in the park. Forests of titoki (*Alectryon excelsus*), ngaio (*Myoporum laetum*), mahoe (*Melicytus ramiflorus*), kohekohe (*Dysoxylum spectabile*), tawa (*Beilschmiedia tawa*) and wharangi (*Melicope ternata*) would have been found in suitable sites between the sea and the swamp forest at western edge of the park. The remnant stumps of the swamp forests, dominated by kahikatea (*Dacrycarpus dacrydioides*), swamp maire (*Syzygium maire*), pukatea (*Laurelia novae-zelandiae*) and cabbage tree (*Cordyline australis*), can still be found on the wetter peaty soils.

6.2 Human impacts on the vegetation

Human induced changes to New Zealand's natural environment began after Polynesians settled about 1000 years ago. There is evidence of major fires throughout the country that caused extensive deforestation (most occurring roughly 750 years ago) (McGlone, 1989). Early Europeans would have further reduced the forest left on the lowlands as they cleared land for agriculture or felled trees for timber or firewood.

When botanist Leonard Cockayne arrived in the early 20th century, the sand country had already been settled by Europeans for 50-60 years. Since that time, much of the wetland habitat has been cleared and drained for grazing and horticulture and farmers have filled in dune slacks to extend productive land. Many of the dune slack plants from Cockayne's lists (1909 & 1911) are now rare because of the loss of these habitats.

The fragile foredune vegetation suffered the effects of fire and stock grazing. The resulting lack of vegetative cover accelerated erosion of the dunes.

Sand stabilisation schemes encouraged the widespread planting of exotic vegetation such as marram, lupin (*Lupinus arboreus*) and pine trees, resulting in the displacement of native dune communities. Pest plants have also wrought huge changes on this fragile ecosystem, as many exotic species can outcompete the native species in dune ecosystems.

6.3 Vegetation of the park today

Vegetation in Queen Elizabeth Park has been greatly modified and much of the park is now farmed pasture. The areas of native vegetation that remain are either regenerating areas or the rare remnants of plant communities that are now among the most threatened eco-systems in the region (Milne & Sawyer, 2002). Three-quarters of the park is now largely in exotic pasture grasses and is farmed. The 150ha coastal dunes strip contains a mix of exotic and native vegetation, while there are remnant wetlands (at MacKays and Poplar Avenue) and a native forest remnant near MacKays. The coastal dunes, wetlands and bush remnant have been listed as Ecosites in the Kapiti Coast District Plan. Wetlands have been created in recent years and there is an intensive native planting programme underway.

Pingao

6.4 Significant vegetation

Coastal Dunes

The park's coastal dunes were recognised as a Recommended Area for Protection in the 1992 Protected Natural Areas Programme Survey of the Foxton Ecological District (Ravine, 1992). The dunes are one of the last Kapiti Coast unmodified dune systems, in terms of landform. The dune system is a foredune-swale-relict foredune complex .While the vegetation has been modified over the years through the effects of fire, grazing and exotic pests, remnants have survived. The diversity of vegetation types on the foredune and relict foredune is still regarded as high, compared to other areas in the ecological district. The swale areas have been more impacted by human modification.

Spinifex

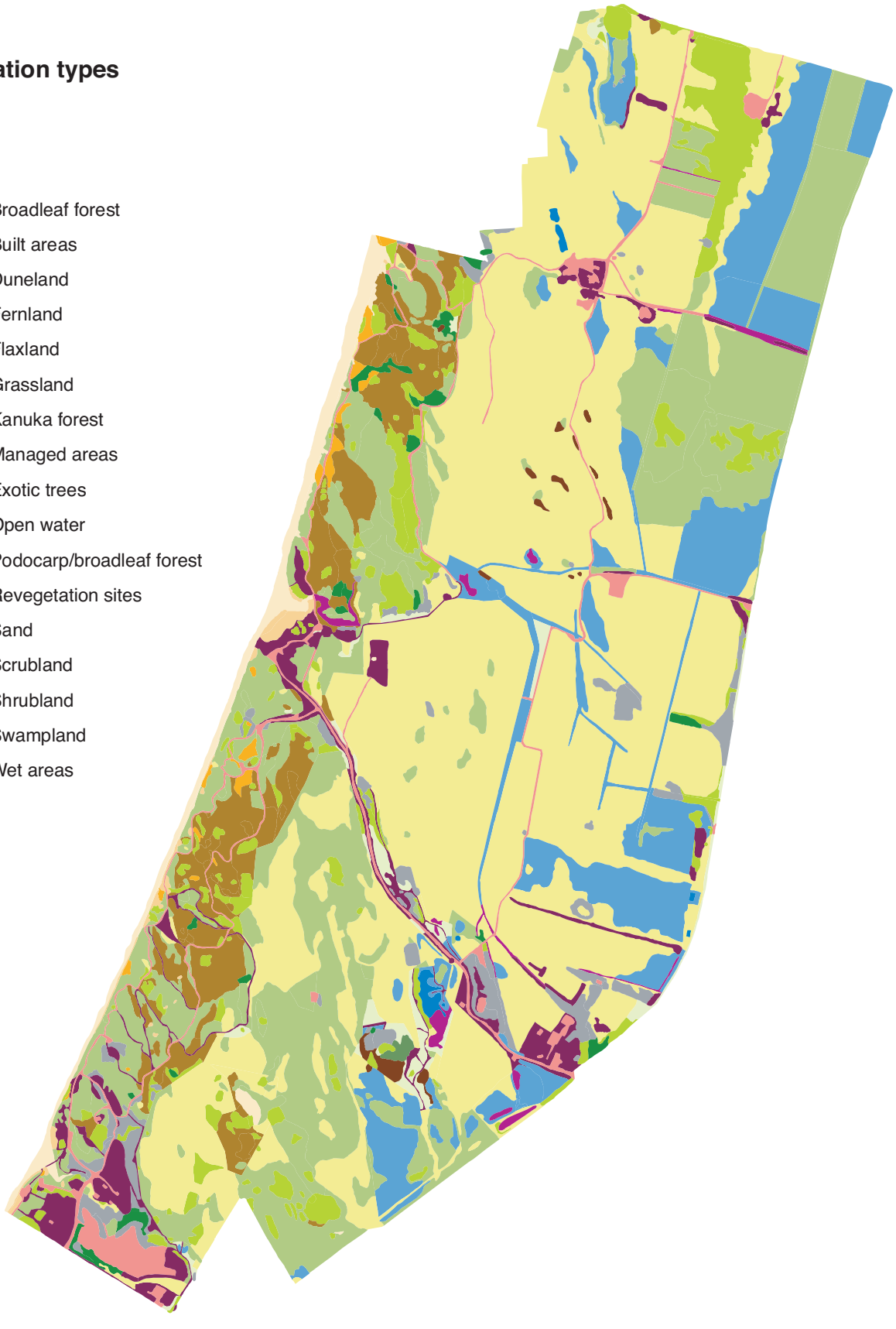
While marram is now the dominant foreshore vegetation on the dunes, naturally occurring spinifex can still be found at Whareroa Beach. It is thought that the only pingao present on the dunes at Paekakariki has probably been planted in the past. Patches of the rare sand coprosma are still present at Whareroa, while other rare species such as *Carex pumila*, can also be found on the dunes. Much of the foredune habitat has been lost due to coastal erosion over the past twenty years, but efforts are now being made to replant spinifex and encourage dune-rebuilding through the use of these sand-binding plants. The mid-dunes are covered largely in taupata-flax/bracken-*Muehlenbeckia complexa*, interspersed with exotic grasses.

On the back dunes, native regeneration north of Whareroa Stream is more advanced than on the dunes to the south. Here patches of mahoe-taupata forest can be found amongst large areas of blackberry (*Rubus fruticosus*). Within the small bush remnants are kaikomako (*Pennantia corymbosa*) and native broom (*Carmichaelia australis*, which is rare on sand dunes). In one of the little pockets in the centre of the dunes is a large, old wharangi, which must have survived there for quite some time.

Sand Coprosma. Photo: Jo Fagan

Map 5 Vegetation and landcover

Queen Elizabeth Park



Wetlands

A 17 ha complex of wetlands at MacKays Crossing was fenced in the early 1990s to protect it from grazing animals following the discovery there of a nationally rare native grass, *Amphibromus fluitans*. Other uncommon species in this area include beds of bamboo sedge (*Eleocharis sphacelata*) and floating platelets of the watermeal (*Wolffia australiana*) in open water areas; the buttercup *Ranunculus amphitrichus* and the milfoil (*Myriophyllum propinquum*) at the wet silty margins; and a number of short turf plants *Hydrocotyle pterocarpa*, *Gratiola sexdentata* and *Centipeda minima* (Ogle, 1981). In recent years, two wetland areas have been created at MacKays through the excavation of water bodies.

The Poplar Avenue ephemeral wetland in the north of the park is a dune slack that has been grazed in the past but is now fenced off and regenerating in native plants. The wide variety of wetland plants, including swamp umbrella fern (*Gleichenia dicarpa*) a species uncommon around Wellington, indicate the area of land where at times the water table is close to or above the surface. This is an *Isolepis prolifera* sedge-land with occasional *Carex virgata* grading at the north into manuka with ferns, *Baumea tenax* and *Carex* species. The sedge B. *tenax* is locally uncommon and poniu, or marsh cress (*Rorippa palustris*) which is also found here, is locally significant (Mitcalfe *et al*., 2002).

Kahikatea in fruit

The Whareroa Stream bisects the regenerating shrub-lands of the park and provides habitat for moisture loving plants. Near the mouth of the stream there are fine examples of two localised sedges, Bolboschoenus caldwellii and Schoenoplectus tabernaemontani (Ogle, 1981).

Bush remnant

In the south of the park at the edge of MacKays Crossing wetlands, fertile Foxton series soils support a remnant of kahikatea forest. Once relatively common this forest type is now extremely rare. This remnant is dominated by kahikatea and pukatea, with some tawa, swamp maire and matai (*Prumnopitys taxifolia*). This and one other remnant at Omarupapaku or Round Bush, just north of Foxton are the only remaining examples of this forest type on the Kapiti Coast (Carnahan, 1957).

7. Fauna

7.1 Birds

7.1.1 Queen Elizabeth Park as bird habitat in the wider Wellington region

The diversity of birdlife found in the Wellington region and the Kapiti Coast today reflects the extensive changes that have occurred in the area since the arrival of European settlers. A number of forest and wetland bird species have become extinct in the region (apart from in sanctuaries such as Kapiti Island and Karori Wildlife Centre) since that time. These include: North Island saddleback (*Philesturnus carunculatus rufusater*), NZ thrush (*Turnagra capensis tanagra*), NZ robin (*Petroica australis longipes*), NI kokako (*Callaeas cinerea wilsoni*), NI weka (*Gallirallus australis greyi*), stitchbird (*Notiomystis cincta*), banded rail (*Rallus philippensis*), little spotted kiwi (*Apteryx owenii*) and huia (*Heteralocha acutirostris*). Habitat loss and the introduction of predatory mammals have been two of the major causes of this decline. The native birds that remain are much depleted in number and many are now confined to the large tracts of forest that still exist in the ranges in the northern and eastern parts of the region.

Male paradise duck

Variable oystercatcher

Spur-wing plover

Tui

Kaka (*Nestor meridionalis septentrionalis*), rifleman (*Acanthisitta chloris granti*), whitehead (*Mohoua albicilla*), long-tail cuckoo (*Eudynamys taitensis*) and tomtit (*Petroica macrocephala toitoi*) are no longer seen or heard in the smaller remnants of bush in farmland or in the urban areas of Wellington, but are found in the larger forested areas, such the Tararua Ranges.

Dune slacks support a wide variety of wildlife, notably waterfowl. Two thirds of our native bird species depend on wetlands for at least some part of their lifecycle (Moore *et al*., 1984). The wetlands also support fish and eel species, amphibians and insects. In the past this type of wetland reached as far north as Foxton and was called the "Great Swamp" by early settlers. There were extensive flax swamps, lakes and smaller bodies of water and swamp forest. Less than 300 ha remain of this swamp which once covered almost 2,000 ha (Dixon, 2002).

The Kapiti coast would once have supported a very diverse indigenous bird fauna because of its mild climate and large range of habitats (Ravine, 1992). The majority of these lowland habitats have now been lost and many species gone from the area. Kapiti Island, a native bird sanctuary however, is just 5 km east of Queen Elizabeth Park and to the east lies the Akatarawa and Tararua Ranges. If habitat can be restored in the park, many species could return.

7.1.2 Surveys of bird species

Annual bird monitoring was initiated in the park in 2002. This monitoring is conducted in spring and transect lines have been established to reflect the range of habitats present. These include farmland, wetlands, native forest, dune vegetation and the coastal interface. Queen Elizabeth Park has a high diversity of bird species because of these different habitats and seabirds, wetland waders and forest birds have all been recorded. The number of species recorded during the monitoring have increased over time since 2002 and numbered 45 by 2005. It is hoped that this increase is due to the restoration work underway in the park. A high proportion of introduced passerine birds are found in the dunes and the densities of these birds are higher than found in other ecosystem types (Falla *et al*., 1975). The most common species recorded in the park have been yellowhammer (*Emberiza citrinella*), goldfinch (*Carduelis carduelis*), silvereye (*Zosterops lateralis*) and blackbird (*Turdus merula*). In terms of native bird species, fantail (*Rhipidura fuliginosa placabilis*), grey warbler (*Gerygone igata*), tui (*Prosthemadera novaeseelandiae*) and kereru (*Hemiphaga novaeseelandiae*) have also been observed.

Bellbird (*Anthornis melanura*) have been recently recorded by ranging staff during the winter months (not during the surveys) and the yellow-crowned kakariki (*Cyanoranphus auriceps auriceps*) have also been seen. This latter species is regarded as threatened and is listed as being in gradual decline (Hitchmough, 2002). In the restored wetlands, dabchick (*Poliocephalus rufopectus*), pied stilt (*Himantopus himantopus leucocephalus*) and shoveler (*Anas rhynchotis variegata*) have been recently recorded.

7.2 Freshwater fish

The Wellington region has many rivers, streams, lakes and wetlands that are home to a variety of freshwater fish. The fish recorded here include 8 introduced species and 23 native species (Strickland & Quarterman, 2001). One native species (grayling, *Prototroctes oxyrhynchos*) has become extinct since the arrival of Europeans. With some exceptions (eels, *Anguilla* spp., lamprey, *Geotria australis* and giant kokopu, *Galaxias argenteus*), the native species are all small, most of them less than 200mm long, and they tend to be solitary, nocturnal and secretive (McDowall, 2000). The most common fish are redfin bullies (*Gobiomorphus huttoni*).

Many fish migrate between fresh and saltwater to complete their lifecycle. Five of these migratory species contribute to the dwindling whitebait fishery. Some, like the koaro, are excellent climbers when young and can climb significant barriers to reach well into stream headwaters. Natural and built barriers may prevent less agile species like banded kokopu (*Galaxias fasciatus*) and inanga (*G. maculatus*) from getting upstream.

Many native fish spawn amongst forest litter in podocarp/broadleaf forest along stream margins when these are wetted by high flows (McDowall, 2000). Others spawn in grass along stream margins in estuaries. Today much of this habitat has been degraded by deforestation and urbanisation. Many streams no longer enter the sea through an estuary but have been redirected through pipes.

The two streams in Queen Elizabeth Park each have very different fish habitat, but are both open to the sea, allowing the passage of migratory fish. Wainui Stream originates in bush clad hills that offer cool, dark, shaded conditions; a stony substrate with low nutrient input. Flow velocities in the stream are relatively high except over the short distance through the sand dunes. This is good habitat for fish. Wainui Stream is home to a number of freshwater fish species including giant kokopu and also longfin eel (*Anguilla dieffenbachii*). Both of these species are listed as being in gradual decline under the New Zealand Threat Classification System (Hitchmough, 2002).

Sixty percent of the Whareroa Stream catchment is farmed and the stream has comparatively high light exposure. In the peatlands and consolidated dunes near the coast this stream comprises a large network of drainage channels. At the coast the Whareroa passes through native coastal vegetation that provides good spawning habitat for inanga (Taylor & Kelly, 2001). Giant kokopu and longfin eel have also been recorded here. An unusual golden eel was found recently by Mike Joy (pers. comm.). Earthworks completed on the Whareroa Stream banks in 2005 raised concerns about the disturbance to fish life and a long-term study by a Massey University masterate student was initiated.

Bellbird

Yellow-crowned kakariki

Banded Kokopu

Giant Kokopu

There are no records of surveys in MacKays Crossing Wetland. Poplar Avenue Wetland had no flowing water at the time it was surveyed and dissolved oxygen levels in the standing water may be too low to sustain fish life (Joy & Hewitt, 2002). Brown mudfish (*Neochanna apoda*) are present in other similar wetlands on the Kapiti Coast.

Queen Elizabeth II Regional Park freshwater fish statistics				
Wainui Stream 1984	Wainui Stream 1989	Wainui Stream 2002	Whareroa Stream 1965	Whareroa Stream 2005
giant kokopu	koura	common bully	banded kokopu	banded kokopu
koura	longfin eel	giant kokopu	giant kokopu	giant kokopu
longfin eel	redfin bully	longfin eel	inanga	redfin bully
shortfin eel		redfin bully	koaro	common bully
		shortfin eel	koura	shortfin eel
		shrimp	lamprey	longfin eel
		torrent fish	longfin eel	koura
			shortfin eel	shrimp

Table One: Queen Elizabeth Regional Park freshwater fish statistics (NIWA nzffd, October 2003).

Common gecko. Photo: Rod Morris

Ornate skink. Photo: Nic Gorman

7.3 Lizards

There are eleven species of lizard in the Wellington region (seven skinks and four geckos) (Parrish, 1984). As with the bird species, these fauna will have suffered from habitat loss and predation by introduced mammals. Common (*Oligosoma nigriplantare*), brown (*O. zelandicum*) and copper skink (*Cyclodina aenea*) are likely to be present in the open country and vegetated dunes of the park. The ornate skink (*C. ornata*) prefers forest habitat but can survive in very small remnants similar in size to that in Queen Elizabeth Park. Of the geckos, one species is confined to Mana Island, while forest (*Hoplodactylus granulatus*) and green gecko (*Naultinus elegans*) may be present, but require woody vegetation. The common gecko (*Hoplodactylus maculatus*) survives in coastal sand dunes and is likely to be present in the park. No official recordings of lizard species have been made in Queen Elizabeth Park.

7.4 Invertebrates

Knowledge of invertebrate diversity is limited in New Zealand, because of a lack of information about most species and their distribution. The vast majority of the indigenous invertebrates are forest-dwellers and it is likely that these species have suffered from the same impacts as the birds and lizards. No studies of invertebrates have been completed in Queen Elizabeth Park, but common insects such as cicada, dragonflies and stick insects have been noted. Brockie, (1957) summarised the invertebrate fauna of the West Coast sand dunes. Moths were the most common insects, followed by flies, then beetles. Slaters, sandhoppers, millipedes, slugs, snails and spiders were also common. Some searches for the katipo spider (*Latrodectus katipo*) have been completed on the dunes, but no evidence of their presence has been found. The introduced spider from South Africa, *Steatoda capensis* was identified during this search and may have displaced katipo (Griffiths, 2002 and pers. comm.)

Environmental Management & Land Uses

8. Ecosystem and Environment

8.1 Queen Elizabeth Park's ecosystems

One of the goals of the Queen Elizabeth Park management plan is to protect and enhance indigenous ecosystems within the park. This ecosystem approach reflects a recognition that everything is interconnected and processes which occur in an ecosystem are as important as the species living within them. Defining ecosystems is not simple, as they generally lack concrete boundaries and biological communities are complex, with continuous variation across landscapes. In the late 1980s ecological districts and regions across New Zealand were defined, using landscape and ecological patterns. Queen Elizabeth Park is part of the Foxton Ecological District, which covers the western coastal side of the Manawatu Ecological Region and runs from the Tangahoe River, near Hawera in the north to Paekakariki in the south. This ecological district is characterised by its dune topography and associated vegetation, mild climate with high sunshine hours (McEwen, 1987).

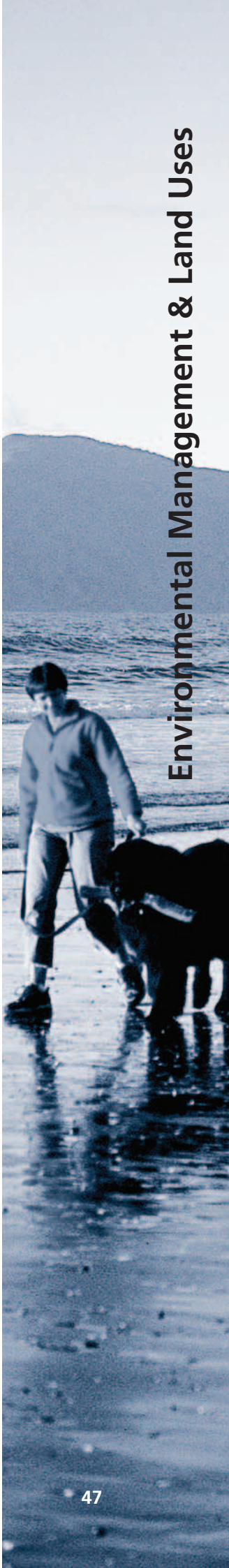
A numerically-based approach to ecosystem classification has recently been developed by the Land Environments of New Zealand (LENZ), (Ministry for the Environment, 2003). Within LENZ, ecosystem patterns are mapped through consideration of 15 environmental drivers, combining climate, landform and soil variables such as temperature, solar radiation, water supply, slope, soil drainage, soil fertility, etc. While the environmental drivers in LENZ were chosen primarily because of their importance for tree species growth, they are also useful for depicting the distribution of other organisms.

Throughout New Zealand, LENZ has defined and mapped these 'environments' at different scales. Five environments of the most detailed LENZ classification level are found in the park. Two of these environments are very depleted nationally. Within the dunes, there is an environment which occurs largely within the Wellington region, but only has 19% of its type left under natural cover. The bush remnant near MacKays wetland is also within an environment which has largely been cleared for agriculture. These remnants are important seed sources for future restoration efforts.

8.2 Impacts of introduced pests on the vegetation

Possums (*Trichosurus vulpecula*), rabbits (*Oryctolagus cuniculus*), hares (*Lepus europaeus occidentalis*), mustelids (*Mustela* spp.) and rats (*Rattus* spp.) have major impacts on the ecological values of the park. Cats (*Felis catus*), mice (*Mus musculus*), hedgehogs (*Erinaceus europaeus*) and magpies (*Gymnorhina tibicen*) are also contributors to the decline of native flora and fauna.

Possums eat leaves, seeds, fruit and seedlings of plants and are also known to predate native birds and insects. Possum damage varies between plant communities and possums will often target certain preferred food sources, such as kohekohe and tawa (Pekelharing, 1995). Possums have colonised the Wellington region since the late 19th century and caused great damage to the vegetation during this early invasion phase. The vegetation change is now more gradual, but ongoing impacts can be seen where



possums are not controlled. Rabbits and hares browse on seedlings and interfere with the regeneration process. Mustelids and rats prey on birds, invertebrates and lizards.

Pest plants have the potential to significantly change the composition or structure of native habitats. They are especially damaging to coastal dune ecosystems because of the natural low stature and fragility of the native vegetation. There are a number of aggressive introduced species, such as boxthorn (*Lycium ferocissimum*) and boneseed (*Chrysanthemoides monilifera*) that thrive in these conditions. These pest plants interfere with regeneration and compete with indigenous plants for space and soil nutrients. The wetlands are also vulnerable to pest plant invasion, especially from species such as blackberry and Japanese honeysuckle (*Lonicera japonica*).

8.3 Control of introduced mammalian pests and weeds

Possums

Possums have been controlled in the MacKays bush remnant in and in the northern dunes bush remnants for a number of years. Bait stations have been established in the MacKays bush remnant and pulses of toxin are used to keep possum numbers low. In the northern dunes, Timm's traps have been placed on trees. These are baited four times a year.

Rabbits and hares

These pest animals thrive in the farmland of the park, but cause a great deal of damage to both planted and natural vegetation on the dunes. These animals have been controlled by regular shootings and their numbers did fall when the RCD virus was transferred around the country in 1997.

Other pest animals

No other pest animals have been targeted for control in the park. Rat numbers are likely to be lowered in the MacKays bush remnant through the toxin used for possums.

Pest plants

Pest plants have high impacts on the ecosystems in Queen Elizabeth Park In 2001, 39 pest plant species were identified in a pest plant mapping exercise conducted in the native ecosystems within the park. Control of these infestations was then prioritised using criteria related to the urgency and practicality of control, as detailed in the Pest Plant Control Plan for the park (Greater Wellington 2004). Old man's beard (*Clematis vitalba*) and evergreen buckthorn (*Rhamnus alaternus*) were the only pest plants present required to be controlled under the Regional Pest Management Strategy. Old man's beard is listed as a suppression pest in the strategy, while evergreen buckthorn is a containment pest and must be controlled in the Kapiti area by the occupier.

Nineteen high priority pest plants were selected for control on the dunes in Queen Elizabeth Park, including boneseed, pampas (*Cortaderia* spp.), boxthorn, brush wattle (*Paraserianthes lophantha*), German ivy (*Senecio mikanioides*) and karo (*Pittosporum crassifolium*). In the wetlands, eight species were targeted, while the old man's beard in vegetation at the MacKays Crossing park entrance was also controlled. This pest plant programme has been in place since 2002 and has been very successful in removing boneseed, evergreen buckthorn and boxthorn from the dunes. Large areas of more entrenched weed species such as blackberry and pampas have required replanting of selected sites with native species after control has been completed. Ongoing control of pest plant infestations in Queen Elizabeth Park has been programmed.

8.4 Ecosystem monitoring and rehabilitation

Ecosystem monitoring and trials

Restoration of dune vegetation creates a number of challenges because of the climatic extremes that can occur in these sites. Some investigations were initiated to aid restoration work underway in the park. Three re-vegetation trials were set up in 2002 in association with the Coastal Dunes Vegetation Network, which was running similar trials nationally. The trials were run for four years and were sited on a fore-dune, mid-dune and back-dune. In the fore-dune trial, the effect of fencing and the addition of fertiliser at planting were investigated using pingao and spinifex. It was found that unfenced pingao was eaten by rabbits and hares and that the addition of fertiliser did assist spinifex growth. On the mid-dune and back-dune sites, plant size at the time of planting and releasing method were trialled using taupata, flax, manuka and cabbage trees. Larger plants at planting time had higher survival rates, but no differences were found between releasing methods (weedmat versus hand-releasing twice a year).

Other monitoring included the installation of exclosure plots in the dune bush remnants to determine if rats or rabbits were having an impact on seedling growth. The results were inconclusive, as the rat or rabbit-proof fencing proved difficult to maintain. Monthly flowering and fruiting recording has been completed by the ranging staff since 2002. This data was collected to determine flowering and fruiting cycles of key plant species within the park. It was also a useful way to keep an eye on the rare species and to determine the best time to collect seeds for propagation purposes. High levels of flowering in sand coprosma, wharangi and ngaio were noted in 2003 (Handford & Associates, 2004).

Rodent tracking tunnels were installed in the dunes in 2005. Rat numbers were low (5%), but mice recorded at high levels (60%). Hedgehog prints were also recorded in 15% of the tracking tunnels.

Restoration projects

There are a large number of restoration projects underway in Queen Elizabeth Park. Four major biodiversity projects in the park have been funded by Greater Wellington. These projects are:

- Rehabilitation of the native forest remnant near MacKays
- Coastal dunes restoration
- MacKays wetland rehabilitation, and
- Whareroa Stream riparian project.

Revegetation projects at the MacKays forest remnant and wetland margins

The native forest remnant near MacKays has been a focus for revegetation and protection since 1990 when members of KEA (Kapiti Environmental Action) began restoration work on the remnant. In 2001, a rehabilitation plan was prepared (Boffa Miskell, 2001) and each year plantings and other activities are completed in the area. A discussion document on the management of the dunes was also prepared in 2001 (Boffa Miskell, 2001) and a number of plantings and other restoration activities have been undertaken on the dunes since that time. Funding has been spent on installing marked access points and access ways, as well as on spinifex plantings at selected sites. At the Raumati end of the park, a dune blow-out was re-shaped and has been planted with spinifex in 2003. Further dune areas have since been planted in spinifex.

The MacKays wetlands project has involved recontouring of the area and plantings are undertaken at the site each year. The Friends of Queen Elizabeth Park obtained the funding for the Whareroa Stream riparian project, which will ultimately result in the stream being completely fenced off from stock and plantings of riparian plants to stabilise the stream banks. The park now has its own nursery which supplies eco-sourced plants for the various restoration projects. Ranging staff have also initiated a number of restoration plantings around the park, some of which are now well-established. Other restoration projects associated with the pest plant programme are underway in the Poplar Avenue wetland and near the northern bush remnants. These projects are detailed in a Re-vegetation Sites summary report for the park (Greater Wellington, 2006b).

9. Landscape Character

Kapiti Island viewed from the Queen Elizabeth Park dunes

Northern Queen Elizabeth Park Landscape

Queen Elizabeth Park is important as an extensive remnant of natural landscape on the increasingly urbanised Kapiti coastal plain.

The narrow sandy beach extending along the coast is a key feature of the park. Immediately behind the beach is the sand dune complex within which most of the recreation facilities have been developed. The sand dunes are an important ecological area and protective buffer between the land and the sea. The sand dune landscape is best seen as two distinct landscape areas – the coastal dunes and the older dunes to the east referred to as the consolidated dunes. The coastal dunes are defined quite clearly in topographic terms and are separated from the consolidated dunes by a pronounced valley system extending from Raumati South to Paekakariki. To the east of the consolidated dunes lies the flat peatland area. The Whareroa Stream is the main drainage outlet from the peatland areas.

Whilst not part of the park as such, the ocean and Kapiti Island to the west, and the steep coastal escarpment to the east, form important backdrops to the park's landscape features.

9.1 The beach and coastal dunes

From a landscape perspective, the beach and coastal dunes provide a harmonious matching although there are several distinct landscape character areas. The narrow sandy beach, often covered with abundant driftwood, and extending from

Paekakariki to Raumati South, is one such major landscape area. Here, the landform has been unmodified.

In the coastal dunes located in the Wainui Development Area, there has been intensive development of recreational facilities and therefore the original landscape of dune formations has been greatly modified with extensive grassed picnic areas and the planted covering of trees and shrubs. Also at the Whareroa Development Area, the dunes have been modified to provide parking for beach access as well as further picnic areas.

A stretch of coastal dunes lies between the Wainui and Whareroa Development Areas. In this part of the park, the dune character has been modified by extensive mown grass areas and planted vegetation cover. North of the Whareroa Development Area, all the way through to Raumati South, is a stretch of coastal dunes. Those located adjacent to the beach have been eroded extensively. Behind these dunes, however, the vegetation has a good cover of secondary growth.

9.2 The consolidated dunes and peatland

The consolidated dunes interspersed with flat peatland areas, form a consistent landscape feature although there are variations between the areas to the north and south of the Whareroa stream.

To the south there are several distinct landscape areas. To the east of the coastal dune area at the southern end of the park, are located steep and dramatic grass-covered dunes. Adjacent to this area lie wetlands and gentle depressions in the peatland that signify the location of a remnant kahikatea swamp. This conservation area opens to the north to another complex of consolidated dunes on either side of Whaeroa Road. The spaces here are more expansive. The adjacent MacKays development area has modified landforms and exotic plantings to complement the recreational facilities located there. To the north lies a flat swampy peatland area.

To the north of the Whareroa Stream are located consolidated dunes and peatlands over which the dairy unit spreads. The peatlands are of a flat swampy nature whilst the dunes are steep and grass covered.

Coastal dunes

Older, inland dunes and the native forest remnant

Beach access point

US Marines memorial and interpretation site at MacKays Crossing. Photo: Lindsay Keats

Cycling and horse riding are popular in the inland dunes

9.3 Landscape sensitivity

Taking into consideration the sensitivity of the physical and biological systems as well as the existing landscape character, the distinct areas identified above have various degrees of landscape sensitivity.

The coastal dunes are the most sensitive landforms, as their structure and vegetation is vulnerable to disturbance. The flat peatlands and some of the modified consolidated dunes are less sensitive to recreational use, but in general the park is more suited to passive recreational pursuits.

10. Recreation

10.1 General zones of recreation activities

Recreation is focused on different activities within zones of the park.

Zone 1: Coastal dunes

The focus of the coastal dunes zone is on conservation and restoration of the dune system. Permitted activities within the beach area are suited to the conservation objectives of the park and include walking, picnicking and swimming. Access onto the beach is restricted to designated areas only.

Zone 2: Wainui, Whareroa, MacKays Crossing

The two beach areas, Wainui and Whareroa, have been developed to provide amenities for picnicking, walking, swimming and cycling. These areas are also popular for events such as orienteering, and organized functions such as weddings.

MacKays Crossing is popular for horse riding and visits to the Wellington Tramways Museum

Zone 3: Inland dunes

The MacKays Crossing entrance gives direct access for walking, cycling and horse riding within the inland dune system. Recent restoration planting within the remnant forest and the Whareroa stream have opened up additional recreational opportunities. Much of this section of the park remains as open pasture and is still farmed.

Zone 4: Peatland, waterways and wetlands

Development work has been carried out in the last four to five years to restore and maintain much of the wetlands, streams and the remnant forest. Extensive tracks, protection fencing and boardwalks have been used to help improve recreation opportunities within these sensitive conservation areas of the park.

A future objective for the park is to increase recreation areas and reduce the extent of farming within the peatland and inland dune areas.

Map 6 Recreation access and facilities

QUEEN ELIZABETH PARK

(See Map.6, ***Recreation Access and facilities***)

10.2 Numbers and preferences of visitors

Queen Elizabeth Park is the most popular of all the regional parks. Today the numbers are around 240,000 visits per year.

A GWRC survey undertaken in 2005, showed that walking, especially dog walking and picnicking were by far the most popular activities in the park. Other activities enjoyed include running, cycling and horse riding. From the same survey response, Queen Elizabeth was still the most easily recalled and most visited of all the Greater Wellington regional parks.

Other activities available in the park include the Wellington Tramways Museum and tram ride from MacKays Crossing to Whareroa Beach. Horse treks run from MacKays Crossing and a model aircraft group meet regularly near Whareroa Beach.

GWRC has an ongoing relationship with Tangata Whenua and the 'Friends of Queen Elizabeth Park' in order to promote cultural heritage and ecological restoration within the park.

11. Farming

Today around 400 of the 600 hectares are grazed by beef cattle. The farming units are also used recreationally for equestrian and orienteering events. The blocks are farmed using best management techniques including environmentally sustainable methods of land use, such as fencing off streams, removing pest plant species and retiring blocks of lands where necessary.

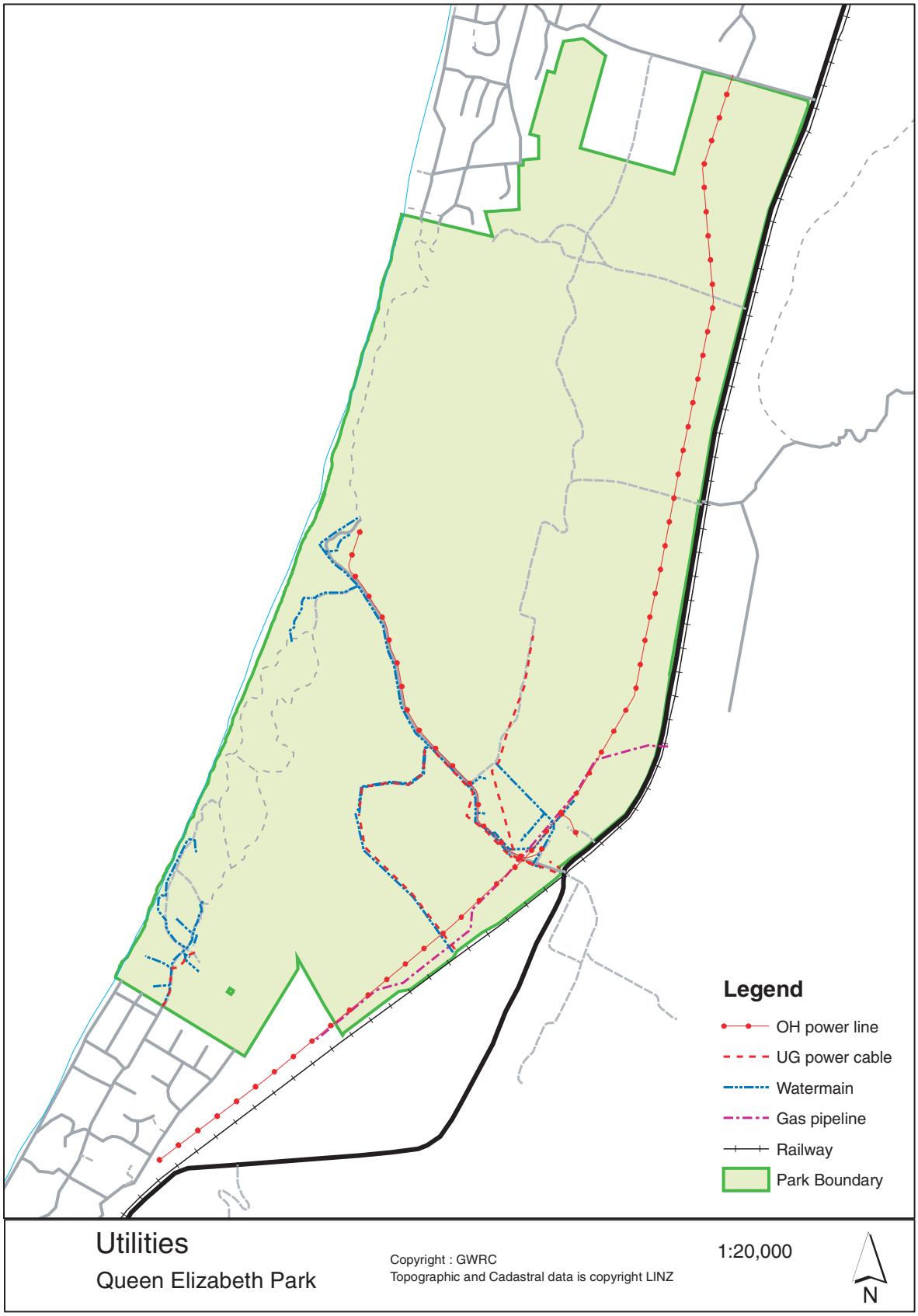
12. Network Utilities

Network utilities associated with Queen Elizabeth Park include overhead electric cables, gas pipeline and easements, local roading, urban storm water drainage. The most significant in terms of impact on the park is State Highway 1. (See Map 7)

Tram from the Museum, running between MacKays Crossing and Whareroa Beach

Model aircraft near Whareroa Beach

Map 7 Network utilities



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Appendix One

Queen Elizabeth Park plant species list

(Ogle, 1981; Mitcalfe *et al*., 2002)
Nomenclature follows "Ngaa Tipu o Aotearoa – New Zealand Plants, Manaaki Whenua – Landcare Research database (http://nzflora.landcareresearch.co.nz)

Species name	Common name	Maori name
Gymnosperm Trees		
Dacrycarpus dacrydiodes	white pine	kahikitea
Podocarpus totara	totara	totara
Prumnopitys taxifolia	matai	matai
Monocot Trees		
Cordyline australis	cabbage tree	ti kouka
Rhopalostylis sapida	nikau palm	nikau
Dicot Trees and Shrubs		
Alectryon excelsus	titoki	Titoki
Alectryon excelsus	titoki	titoki
Brachyglottis repanda	rangiora	rangiora
Beilschmiedia tawa	tawa	tawa
Carmichaelia australis	NI broom	mataka, tarangahape
Coprosma acerosa	sand coprosma	tarakupenga, tatarahake, tataraheke
Coprosma propinqua	mingimingi	mingimingi
Coprosma repens	taupata	taupata
Coprosma rhamnoides		
Coprosma robusta	karamu	karamu
Corokia cotoneaster		korokio
Corynocarpus laevigatus	karaka	karaka
Discaria toumatou	wild irishman, matagouri	tumatakuri, tumatakuru, tuturi
Dodonaea viscosa	akeake, sticky hop bush	akeake
Dysoxylum spectabile	kohehohe	kohehohe
Elaeocarpus dentatus	hinau	hinau
Geniostoma rupestre var. *ligustrifolium*	hangehange	hangehange
Griselinia littoralis	broadleaf	kapuka, papauma, maihihi, paraparauma
Griselinia lucida	puka	puka
Hebe stricta var. *atkinsonii*	koromiko	koromiko
Knightia excelsa	rewarewa	rewarewa
Kunzea ericoides	kanuka	kanuka
Laurelia novae-zelandiae	pukatea	pukatea
Leptosperum scoparium	tea tree	manuka
Lophomyrtus bullata	ramarama	ramarama
Macropiper excelsum	pepper tree	kawakawa
Melicope ternata	wharangi	wharangi
Melicytus ramiflorus	whiteywood	mahoe
Metrosideros robusta	northern rata	rata
Myoporum laetum	ngaio	ngaio
Myrsine australis	red matipo	mapou
Nestegis cunninghamii	black maire	maire
Nestegis lanceolata	white maire	maire
Nestegis montana	narrow-leaved maire	maire roro, maire rauriki
Olearia paniculata	golden akeake	akiraho
Olearia solandri	coastal tree daisy	

Species name	Common name	Maori name
Dicot Trees and Shrubs (continued)		
Olearia virgata	twiggy tree daisy	
Pennantia corymbosa	kaikomako	kaikomako
Pimelea aff. arenaria	sand daphne	autetaranga, toroheke
Pittosporum tenuifolium	black matipo	kohuhu
Plagianthus divaricatus	salt marsh ribbonwood	makaka, houi, runa
Pseudopanax arboreus	five-finger	whauwhaupaku
Pseudopanax crassifolius	lancewood	horoeka
Solanum aviculare	poroporo	poroporo
Sophora microphylla	kowhai	kowhai
Streblus banksii	large-leaved milk tree	ewekuri, pukariao, turepo
Streblus heterophyllus	small-leaved milk tree	tawari, towai, turepo
Syzygium maire	swamp maire	maire tawake
Monocot Lianes		
Ripogonum scandens	supplejack	kareao
Dicot Lianes		
Calystegia sepium	pink or greater bindweed	pohue, pohuehue, akapohue, nahinahi
Calystegia soldanella	shore bindweed	panahi, paraha, pohue, poue
Calystegia tuguriorum	climbing convolvulus	powhiwhi, pouwhiwhi
Clematis forsteri	small white clematis	
Clematis paniculata	white clematis	puawananga
Metrosiderous diffusa	white climbing rata	rata
Metrosiderous perforata	clinging rata	aka, akatea, akatorotoro
Muehlenbeckia australis	pohuehue	pohuehue
Muehlenbeckia complexa	wire vine	pohuehue
Parsonsia heterophylla	kaihua, NZ jasmine	kaihua
Passiflora tetrandra	NZ passion vine, kohia	kohia
Rubus cissoides	bush lawyer	tataramoa
Tetragonia implexicoma	NZ spinach	
Tetragonia tetragonioides	NZ spinach	kokihi, rengamutu, tutae-ika-moana
Ferns		
Azolla filiculoides	Pacific azolla (aquatic fern)	retoreto
Blechnum minus	swamp kiokio	kiokio
Blechnum novae-zelandiae	kiokio	kiokio
Cyathea dealbata	silver tree fern	ponga
Cyathea medullaris	black tree fern, mamaku	mamaku
Dicksonia squarrosa	rough tree fern	wheki
Gleichenia dicarpa	swamp umbrella fern	waewaekotuku
Histiopteris incisa	water fern	matata
Hypolepis ambigua		rarauhi, nehenehe
Hypolepis rufobarbata	sticky pig fern	
Microsorum pustulatum	hound's tongue	kowaowao
Paesia scaberula	ring fern	matata
Pteris tremula	shaking brake	turawera
Pyrrosia eleagnifolia		

Species name	Common name	Maori name
Grasses		
Amphibromus fluitans		
Austrofestuca littoralis	sand tussock	hinarepe, matiatia
Cortaderia toetoe	toetoe	toetoe
Lachnagrostis filiformis	NZ windgrass	
Poa anceps	broad leaved poa	
Spinifex sericeus	spinifex	kauwhangatara, raumoa, turikakoa
Sedges		
Baumea articulata	jointed twig sedge	
Baumea rubiginosa		
Baumea tenax		
Baumea teretifolia	pakihi rush	
Bolboschoenus caldwellii		
Carex flagellifera	Glen Murray tussock	manaia, mauria
Carex geminata	cutty grass	rautahi, toetoe-rautahi
Carex lessoniana		rautahi
Carex litorosa	sea sedge	
Carex pumila	sand sedge	
Carex secta	purei	purei, purekireki, pukio, mata, matata
Carex testacea	speckled sedge	
Carex virgata	swamp sedge	
Cyperus ustulatus	giant umbrella sedge	toetoe upokotangata, whatu manu
Desmoschoenus spiralis	golden sand sedge	pingao
Eleocharis acuta	sharp spike sedge	
Eleocharis sphacelata	bamboo/tall spike sedge	ngawha, kutakuta, paopao
Ficinia nodosa	knotted/leafless sedge	wiwi
Isolepis prolifera	three square	
Schoenoplectus tabernaemontani		
Schoenus maschalinus	dwarf bog-rush	
Rushes		
Apodasmia similis		
Juncus australis	leafless rush	wi, kopupungawha
Juncus gregiflorus	leafless rush	wi, kopupungawha
Juncus pallidus	giant rush	wi, kopupungawha
Juncus pauciflorus	leafless rush	wi, kopupungawha
Juncus planifolius		
Juncus sarophorus	leafless rush	wi, kopupungawha
Other Monocot Herbs		
Lemna minor	duckweed	karearea
Phormium cookianum	mountain flax	whararikí
Phormium tenax	swamp flax	harakeke
Potamogeton cheesemanii	red pondweed	manihi, rerewai
Triglochin striata	arrow grass	tauringa
Typha orientalis	bullrush	raupo
Wolffia australiana	watermeal	

Species name	Common name	Maori name
Dicot Herbs		
Acaena pallida	sand bidibid	piripiri
Centella uniflora	centella	
Centipeda minima	sneeze weed	
Disphyma australis	NZ iceplant	horokaka, ngarangara, ruerueke
Epilobium pallidiflorum	marsh willowherb	tarawera
Euphorbia glauca	NZ sea spurge	waiuatua, waiu-o-kahukura
Galium propinquim		mawe
Gnaphalium involucratum	cudweed	
Gonocarpus micranthus		
Gratiola sexdentata		
Hydrocotyle pterocarpa	waxweed	
Hydrocotyle novae-zelandiae		
Lobelia anceps	NZ lobelia	
Myriophyllum propinquum	milfoil	
Ranunculus amphitrichus		
Rorippa palustris	marsh cress	poniu

Some Adventive Plants		
Species name	Common name	Maori name
Trees and Shrubs		
Chamaecytisus palmensis	tree lucerne	
Cupressus macrocarpa	macrocarpa	
Cytisus scoparius	Scotch broom	
Hypericum sp.	St John's wort	
Prunus campanulata	Taiwan cherry	
Salix cinerea	grey willow	
Salix fragilis	crack willow	
Sambucus nigra	elderberry	
Ulex europeus	gorse	
Dicot Lianes		
Lonicera japonica	Japanese honeysuckle	
Rubus fruticosus agg.	blackberry	
Rumex sagittatus	climbing dock	
Grasses		
Agrostis capillaris	browntop	
Agrostis stolonifera	creeping bent	
Alopecurus geniculata	kneed foxtail	
Anthoxanthum odoratum	sweet vernal	
Arrhenatherum elatius	tall oat grass	
Cortaderia selloana	pampas grass	
Cynosurus cristatus	crested dog's tail	
Dactylis glomerata	cocksfoot	
Ehrharta erecta	veldt grass	
Glyceria declinata	floating sweet grass	
Schenodorus phoenix	tall fescue	
Glyceria fluitans	floating sweet grass	
Holcus lanatus	Yorkshire fog	
Paspalum dilatatum	paspalum	

Species name	Common name	Maori name
Rushes		
Juncus articulatus	jointed rush	
Juncus bufonius	toad rush	
Juncus effusus		
Other Monocot Herbs		
Crocosmia x *crocosmiiflora*	montbretia	
Canna indica	canna lily	
Spirodela punctata	purple-backed duckweed	
Zantedeschia aethiopica	arum lily	
Dicot Herbs		
Achillea millefolium	common yarrow	
Bidens frondosa	beggar's ticks	
Callitriche stagnalis	starwort	
Capsella bursa-pastoris	shepherd's purse	
Carduus tenuiflorus	winged thistle	
Cerastium glomeratum	annual mouse-eared chickweed	
Chenopodium album	fat hen	
Cirsium arvense	Californian thistle	
Cirsium vulgare	Scotch thistle	
Conyza canadensis	Canadian fleabane	
Cotula coronopifolia	bachelor's button	
Crepis capillaris	smooth hawksbeard	
Digitalis purpurea	foxglove	
Fumaria muralis	scrambling fumitory	
Galium aparine	cleavers	
Galium palustre	marsh bedstraw	
Geranium molle	soft doves foot	
Geranium robertianum	herb Robert	
Hypochoeris radicata	cat's ear	
Lotus pedunculatus	birdsfoot trefoil	
Ludwigia palustris	water purslane	
Lythrum hyssopifolia	loosestrife	
Mentha pulegium	pennyroyal	
Myosotis laxa subsp. *caespitosa*	forget-me-not	
Myosotis sp.	forget-me-not	
Phytolacca octandra	inkweed	
Plantago lanceolata	narrow-leaved plaintain	
Plantago major	broad-leaved plaintain	
Polycarbon tetraphyllum	allseed	
Polygonum hydropiper	water pepper	
Polygonum persicaria	willow weed	
Ranunculus repens	creeping buttercup	
Ranunculus sceleratus	celery-leaved buttercup	
Rumex conglomeratus	clustered dock	
Rumex crispus	curled dock	
Rumex obtusifolius	broad-leaved dock	
Sagina procumbens	pearlwort	
Senecio jacobaea	ragwort	
Senecio bipinnatisectus		
Senecio sp.		

Some Adventive Plants (continued)		
Species name	Common name	Maori name
Dicot Herbs (continued)		
Solanum chenopodioides	velvety nightshade	
Solanum nigram	black nightshade	
Solanum pseudo-capsicum	Jerusalem cherry	
Stellaria media	chickweed	
Trifolium dubium	suckling clover	
Trifolium repens	white clover	

Ogle, C.C. 1981: Species list for wetlands in Queen Elizabeth Park.

Wellington Botanical Society, 2002: List 1 some indigenous vascular plants of "Poplar Avenue Wetland" part of Queen Elizabeth Park, Raumati South. 24/3/02

Appendix Two

Queen Elizabeth Park fish species list

Species name	Common name	Maori name
Anguilla australis	shortfin eel	tuna
Anguilla dieffenbachii	longfin eel	tuna
Cheimarrichthys fosteri	torrent fish	
Galaxias argenteus	giant kokopu	kokopu
Galaxias brevipinnis	koaro	koaro
Galaxias fasciatus	banded kokopu	kokopu
Galaxias maculatus	inanga	inanga
Geotria australis	lamprey	piharau, kanakana
Gobiomorphus cotidianus	common bully	
Gobiomorphus huttoni	redfin bully	
Paranephrops planifrons	freshwater crayfish	koura
Paratya curvirostris	shrimp	

Appendix Three

Queen Elizabeth Park bird species list

This bird list has been compiled from bird count surveys using the slow walk transect method described by Handford (2000).

Species name	Common name	Maori name
Alauda arvensis	skylark	
Anas gracilis	grey teal	tete
Anas platyrhynchos	mallard	
Anas rhynchotis variegata	New Zealand shoveler	kuruwhengi
Anas superciliosa superciliosa	grey duck	parera
Anser anser	feral goose	
Anthus novaeseelandiae novaeseelandiae	New Zealand pipt	pihoihoi
Ardea novaehollandiae	whitefaced heron	
Branta canadensis maxima	Canada goose	
Callipela californica brumnescens	California quail	
Carduelis carduelis	goldfinch	
Carduelis chloris	greenfinch	
Carduelis flammea	redpoll	
Chrysococcyx lucidus lucidus	shining cuckoo	pipiwharauroa
Circus approximans	Australasian harrier	kahu
Columba livia	rock, feral pigeon	
Corvus frugilegus	rook	
Emberiza citrinella	yellowhammer	
Fringilla coelebs	chaffinch	
Gerygone igata	grey warbler	riroriro
Gymnorhina tibicen	Australian magpie	
Haematopus unicolor	variable oystercatcher	torea
Halcyon sancta vagans	kingfisher	kotare
Hemiphaga novaeseelandiae	New Zealand pigeon	kereru
Himantopus himantopus leucocephalus	Australasian pied stilt	poaka
Hirundo tahitica neoxena	welcome swallow	
Larus dominicanus	black-backed gull	karoro
Larus novaehollandiae scopulinus	red billed gull	tarapunga
Passer domesticus	housesparrow	
Phalacrocorax carbo novaehollandiae	black shag	kawau
Phalacrocorax melanoleucos brevirostris	little shag	kawaupaka
Phasianus colchicus	ring necked pheasant	
Platycerus eximius	eastern rosella	
Poliocephalus rufopectus	New Zealand dabchick	weweia
Porphyrio porphyrio melanotus	pukeko	pukeko
Prosthemadera novaeseelandiae	tui	tui
Prunella modularis	dunnock	
Rhipidura fuliginosa placabilis	fantail	piwakawaka
Sterna caspia	Caspian tern	taranui
Sterna striata	white fronted tern	tara
Sturnus vulgaris	starling	
Tadorna variegata	paradise shelduck	putangitangi
Turdus merula	blackbird	
Turdus philomelos	song thrush	
Vanellus miles novaehollandiae	spur-winged plover	
Zosterops lateralis	silvereye	tauhou

Species name	Common name	Maori name
Rhipidura fuliginosa placabilis	fantail	piwakawaka
Sterna striata	white fronted tern	tara
Sturnus vulgaris	starling	
Tadorna variegata	paradise shelduck	putangitangi
Turdus merula	blackbird	
Turdus philomelos	song thrush	
Vanellus miles novaehollandiae	spur-winged plover	
Zosterops lateralis	silvereye	tauhou

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