



Figure 20. Pelton wheel at the Woodstock Battery, Karangahake; T13/289.

operated from 1882 to 1914, with a final effort in the late 1930s. Tramways (several recorded under T13) and aerial ropeways moved the ore from mines to the batteries. Major batteries included the Crown, Woodstock and Talisman (T13/186), but there were other smaller ones as well. The batteries were water-powered (Fig. 20) with water drawn from dams on both the Waitawheta and the Ohinemuri Rivers. Later, power was provided by a coal-fired power house, some of which was used to run dewatering pumps for the deeper levels of the mines. There is substantial archaeological evidence in the area. Many of the sites are recorded, but not mapped in detail. Hence, in the intensely used area near the junction of the rivers, there is a mass of evidence

that is not easily resolved into different structures or periods of use. Some metalwork, including a pelton wheel, remains *in situ*. The area is now a DOC reserve and some track development has taken place. However, most of the interpretation for visitors is on the north side of the Ohinemuri River, outside the Bay of Plenty Conservancy. The area is a substantial heritage resource and needs more archaeological mapping, resolution of the evidence to the particular historical structures, and further interpretation.

A smaller operation was the Treasure Island Reef mine at the north end of Waihi Beach (Downey 1935: 249; Moore 1997). This operated from 1898 to 1910. The drives from this mine are currently used as part of a sewage outfall.

### ***Sulphur***

Sulphur is a natural product of thermal areas and has been mined in a number of locations in the Bay of Plenty area. The White Island sulphur mining is the best known example, occurring from the 1870s to 1928 under a series of operations. The site of the last mining operation is recorded as W15/577. An early mine was associated with a fertiliser processing works at Tauranga, the first in New Zealand. This failed after a short period of operation from 1884 to 1886 (Bellamy 1991: 5). It then reopened for a period in the 1890s, but after that there was no further local production of fertiliser until 1958 (Bellamy 1991: 113). The name Sulphur Point in the Tauranga port area relates to the first fertiliser activity, of which there is no other recorded remnant. Sulphur was not the only product mined on White Island. Guano from the gannet colonies was also mined, and the combined sulphur and guano, which was sold as a fertiliser, probably owed its efficacy to the latter product.

Sulphur was mined at Onepu near Kawerau (V16/67) from 1887 to 1898 (Secombe 1959; Moore 1991: 16–17). It was initially shipped to Auckland, but later some went to the Sulphur Point works. Other sulphur mines include those of Moutohora (worked between 1876 and 1894 (Moore 1994; van der Wouden 1994: 6)) and several locations around Rotorua—Ohinemutu, Tikitere and Taheke (Stafford 1986: 319). Sulphur from the latter two sites

was transported by barge across the lakes to the railhead at Rotorua. This industry started once the railway made transport possible and continued only as long as the limited deposits lasted.

### ***Quarrying***

Railway ballast was mined at Moturiki Island for use in the eastward extension of the East Coast railway (Stokes 1980: 225). The site is clearly defined. The quarry area was later used for a marine mammal exhibit. A quarry in the Athenree Gorge was worked for railway ballast during the expansion of the railways system (Stott 1978: 9). There are other prominent quarries at Papamoa and Ngongotaha. The andesite quarries on Moutohora (W15/595) have been mentioned already (see section 11.4.4) (Moore 1987; van der Wouden & Moore 1994).

### ***Kauri gum***

Maori were trading in gum from Katikati at Te Papa in the 1860s (Robley picture in Melvin 1990: 30). Stokes (1980: 271) mapped kauri gum areas around Katikati, shoreward of the 19th-century bushline, and recorded these areas as having been dug for gum by local Maori from the 1880s.

The seaward part of Matakana Island was dug for kauri gum in the first decade of the 20th century (Stokes 1980: 272). This would have been along the sand ridges where kauri was more likely to have grown. No recorded sites relating to this have been reported, but they may have been damaged by recent exotic forestry activities.

### ***Flax***

Flax production by Maori had an early peak in the period leading up to the New Zealand Wars, with production of the basic fibre and resulting products. Van der Wouden (2001: 76) noted a rope works at Matata in the 1850s. From this period, there is also a record of a Maori road in the swamp near Awakaponga, which was built for flax haulage.

During New Zealand's long depression in the 1880s and '90s, the flax industry revived, with many mills established on the Kaituna and Rangitaiki lowlands. However, the industry was largely run on an extractive rather than a sustainable basis, and as land drainage advanced, the areas available for harvest declined, so that the industry had died by the 1930s (Stokes 1980: 269). Some early flour mills were converted to flax mills; for example, the water-powered mill at Wairere Stream in Whakatane milled flax from about 1890 (van der Wouden 2001: 80).

### ***Land Drainage***

Land drainage was central to the change in land use of the wetlands from flax farming to dairying. Small-scale land drainage works were undertaken by individuals or small local groups with some effect in creating pasture land, but the large-scale works that were needed required government support to succeed. As the scale of the work increased, the technology used advanced from hand labour to large barge-mounted draglines.

There was no effective flood protection and land drainage scheme on the Kaituna Waihi swamp until the 1950s (Stokes 1980: 400). Once completed, this allowed a substantial expansion in agricultural production in the area. The history of the Rangitaiki Plains drainage is a complex one of Drainage Boards successively collapsing in 1900 and 1910 (Gibbons 1990). The Lands Department took up the task in 1910 and completed a large part of the drainage work over the next two decades. Local elected control was resumed in 1957. Flooding from the three rivers crossing the plains was still a problem, but in the 1970s this was corrected through major river-flood training works, which were undertaken by a catchment commission using government funding.

### ***Dairy farming***

Small-scale dairy farming was a feature of early colonial settlement in the Bay of Plenty area. Its expansion required non-perishable products that could be exported. The earliest dairy industrialisation was cheese production (cheese being a relatively long-lasting and transportable product). Cheese factories commenced operation in Tauranga and Katikati in 1884 and in Te Puke the following year. Typically, these were cooperative efforts. The Katikati factory failed financially a few years later.

When refrigerated transportation became available, there was the opportunity for wider distribution of butter. Butter manufacture on a commercial scale began more than a decade later than cheese production. Dairy factories opened in Te Puke and Katikati in 1902 and in Tauranga in 1905. Many factories in the Whakatane area opened from 1900 onwards. These were eventually amalgamated into one (Anon. 1988: 40). A dairy factory that produced butter opened at Ngongotaha in 1910. The Bay of Plenty region was noted for dairying, not only because grass grew well there (though lime topdressing was needed), but also because supplementary fodder crops for feeding to dairy cattle could be readily grown (Stokes 1980: 245).

Today, the pioneer dairy factories have been replaced by large centralised plants, such as that at Edgecumbe. However, the old buildings often survive—for example, the Katikati factory building, which is now used as a restaurant.

### ***Meat processing***

With the problem of bush sickness (see section 5.6), it is not surprising that the Bay of Plenty area was not a leader in meat export. Local investors set up the Whakatane meat works, which opened in 1917. However, these works lacked a rail outlet and products had to be transferred to ships offshore by lighter, and even that required an upgrading of the Whakatane River outlet. Thus, the enterprise quickly failed, closing in 1924. This early failure resulted in stock being processed outside the district, although town supply needs led to the Tauranga Council establishing an abattoir in 1925. The Motuohora quarry, the port works and aspects of the plant—now the site of the Whakatane board mill—are archaeological remains of the meat works.

### ***Cropping and horticulture***

Early cash cropping in the Bay of Plenty focused on maize. Once it was shucked and dried, maize had a relatively high value in relation to its weight. The primitive transport facilities—by cart and small steamer—must have increased costs, but the widespread growing of maize means that it must have been profitable. Both Maori and Pakeha grew maize. Maize-drying cribs were once common in fields in the Bay of Plenty. Maize was later grown mainly for pig food rather than as a cash crop, though modern harvesting equipment has led to a recent increase in maize cropping.

Some wheat was grown in the area. There were early water-powered flour mills at Waihi Village—today part of the buried village site—and at the Wairoa and Waimapu Rivers near Tauranga (Bellamy 1982: 204–207). Umuhika (V15/16), near Whakatane, was a Maori-owned mill destroyed in the wars of the 1860s, which has been crudely investigated by Parham (2000). A Ngati Pukeko-owned mill at Poronui near Whakatane was attacked by Te Kooti in 1869.

The Wairere Stream flour mill in Whakatane was Maori-owned. It was built in 1880 by Ngati Awa. There was a further Maori-owned mill at Matata (van der Wouden 2001: 80). The NZAA Site Recording Scheme has flourmill site records from near Rotorua (U15/75 and 76) and inland from Matata (V15/16).

An experimental fruit-growing station was opened by the Government in 1906 at Tauranga, which led to the establishment of a citrus-growing industry around Tauranga. Lemons (*Citrus limon*) and grapefruit (*Citrus x paradisi*) were the main crops. Peaches (*Prunus persica*) and pears (*Pyrus communis*) were commercially canned at Tauranga for a short period after 1915.

Motiti yielded substantial crops of kumara up until the onset of a fungus disease in 1946. In the early 20th century, kumara were hauled on local craft to Tauranga and then by coastal ships, along with grapefruit, to southern ports (Matheson 1979: 102–107).

The substantial expansion in production of kiwifruit (*Actinidia* spp.) and avocados (*Persea americana*) is a much more recent development, dating from the 1970s. The kiwifruit revolution in the last 30 years has substantially changed the landscape in the lowland central Bay of Plenty. The requirement for level plots to allow kiwifruit support frames to be erected has meant that many older features of the landscape have been destroyed by earthwork re-contouring.

### ***Indigenous forestry***

The completion of the Rotorua railway opened up the Mamaku Range and the areas surrounding the Rotorua Lakes to logging, allowing haulage of logs and, particularly, sawn timber. Forests were also logged along the margins of the Rotorua Lakes. On Lake Rotoiti, barges were used to haul logs to a major sawmill at Mourea. A short tramway was then used to move sawn timber to a wharf, following which it was barged across Lake Rotorua to the railhead. The early exploitation of timber in the Kaimai Ranges was limited by the bush line being remote from the harbour edge. The demand for timber for the Waihi and Ohinemuri mines led to tramway operations in the Waitawheta valley and from the inland Katikati area to Waihi. These were

exclusively kauri operations, operating at the southern limit of kauri forests (Stokes 1980: 270). *Kauri dams* (which used the sudden release of water to drive logs floating in the dam and in the stream bed downstream) were used as part of the Katikati operation (Diamond & Hayward n.d.: 6). Some kauri dams are recorded in the archaeological site records (T13/761 and 762). A steam-powered mill associated with this operation was situated in the Tuapiro Valley. Later, there was a mill and wharf at Ongare Point. Logging in this area ended in the 1930s. Further south, the opening up of Crown Land inland of Tauranga to logging early in the 20th century led to mills being established at Oropi and Omanawa. Tramlines fed these mills and carried sawn timber away. Stokes (1980: 275) recorded the routes of tramlines and the locations of mills and wharves associated with this logging, which declined through to the 1930s. Tramway beds are recognisable in much of this area.

Mills for indigenous forest logging were established at many locations. There were substantial mill operations at Waimana, Manawahe, Waiohau, Te Haehaenga in the Tarawera valley, and Rotoma.

### ***Bush tramlines***

The most remarkable of the Tauranga tramlines was the Leyland O'Brien-owned system, which fed from the top of the Kaimai Range down to Omokoroa (Yonge 1985: Map 6). The track was not lifted until 1969 and much of the track bed is now a recreational walkway. Some Tauranga tramlines are recorded in the Archaeological Association Site Recording Scheme (e.g. U14/1341, 2188), but with minimal detail.

Mamaku township was the main forestry centre during the period of indigenous forest logging in the early to mid-20th century. Many tramlines radiated out from it (Mahoney 1998). At one time there were up to five interconnected tramlines, one of which was run by New Zealand Rail (NZR). Sawmills at Mamaku and others near Rotorua were fed by tramlines and rail. Gamman's Tram was the last one working; it stopped operating in 1955. Mamaku was the centre of a local industry that produced motorised rail tractors for hauling logs on tramlines. These were more practical than steam locomotives, especially when small old steam engines became rare at their New Zealand Rail source (many were former NZR locomotives). Rail tractors from Mamaku were used there and at Matahina. They made use of the weight of the logs on their driving wheels in a way that was impossible to achieve with steam power (Mahoney 1998).

The Mamaku Plateau was also logged from centres other than Mamaku. Bartholemew's Tram ran southeast from the Putaruru to Rotorua railway, and Selwyn's Tram ran northeast into the bush a little further west. Some of the tramline evidence here has been recorded: V15/93 (a tramline) and V15/94 (a tunnel on a tramline).

The Matahina tramline, which ended at a railhead at Edgecumbe, had multiple users and was incorporated as an enterprise on its own in 1928, coincident with the New Zealand Rail service reaching Edgecumbe. There were sawmills at Edgecumbe and Matahina, so the tramline hauled both logs and sawn timber. The Matahina tramline was initially built to service indigenous forest logging at Matahina bush, but the planting of the privately owned exotic

Matahina Forest meant it switched progressively to hauling exotic timber. From 1939 on, it also supplied the Whakatane Board Mills, a haul of up to 60 km. This tramline was upgraded in 1941 to use heavier ex-NZR class Fa locomotives. It continued hauling more exotic timber over time until 1966, when the completion of the Matahina Dam blocked its route. By that time, it was paralleled by New Zealand Rail's Murupara branch line to the east, which had been built to service the Tasman pulp and paper mill at Kawerau. One of the Matahina tramline locomotives, a 0-6-2 Fa tank engine, is now part of the Goldfields Railway Society's collection at Waihi. Parts of the Matahina Tramline formation survive in the forest (Stott 1978: 57).

In the central part of the region, the Bay of Plenty Timber Company had a tramline in the Pongakawa valley, which serviced the cutting of indigenous forest. Other shorter tramlines fed down to the eastern end of Lake Rotoiti (Yonge 1985: Map 7).

It is noticeable how closely the development of indigenous forestry followed the extension of the railways. The pattern of development followed by the kauri logging industry in the north of the North Island, where water transport was all important, was not followed in the Bay of Plenty. While some local use of timber (such as at the Waihi mines) was important, servicing remote markets accessible by rail seems to have been more dominant in the Bay of Plenty.

### ***Exotic forestry***

Exotic forestry development was perceived as a way to utilise land that was affected by bush sickness and not considered suitable for pastoral use. This was combined with the realisation that the indigenous forest resource was finite and would need to be substituted, if only for the domestic market. State afforestation began with a nursery at Whakarewarewa in 1897, and planting started in 1901 with the use of prison labour—a special prison was established for this purpose at Waiotapu, which operated until 1920 (Boyd n.d.: 12-21). A prison camp is recorded as U16/145. Paid labour had to be used to supplement prison labour and eventually this proved to be the only practical way of establishing large areas of forest. Private planting of exotics also took place at Matahina and around Tokoroa. These companies eventually became New Zealand Perpetual Forests, then New Zealand Forest Products (Healy 1982). The large expansion of the Kaingaroa forests occurred in the early 1930s, when relief scheme workers planted large areas in radiata pine (*Pinus radiata*). The maturation of these forests caused changes in the way sawmills operated. The Waipa Mill near Rotorua was opened in 1939 by the Government to experiment with how to mill exotic timber. This subsequently became the model for other large centralised mills that processed exotic timber. Substantial private plantings of pine were made on Matakana Island from the 1920s.

These vast pine forests in the central North Island contained more wood than could be used as sawn timber, so experimental work was carried out to investigate the suitability of *Pinus radiata* for pulp and paper. This resulted in the establishment of the Kinleith pulp and paper mill in 1953, and the Tasman Mill at Kawerau in 1955. The development of log exports also followed, with the Port of Tauranga becoming a specialist operator in transferring logs from land transport to ships.

The infrastructure of the camps used in the earliest pine planting programmes is an archaeological resource (Boyd n.d.: 72) on which more work could be done.

### ***Oil***

The geology of the Bay of Plenty is not favourable to oil. Although one oil seep is known at Kerosene Creek near Waiotapu, the generally held geological explanation is that this seep relates to a buried swamp or other vegetation. However, this did not prevent unsuccessful drilling investigations in the 1900s and 1960s (Annabell 1977: 65-6).

### ***Tourism***

Tourists have always been drawn to the Rotorua geothermal area. Before the Tarawera eruption, the tourist route was from Tauranga to Ohinemutu and on to Te Waihi Village, which was a centre for accommodation and for the Maori guides who led tourists onto the Pink and White Terraces (Stafford 1986: 232-245). There has been some archaeological investigation of this at Te Wairoa and public presentation of the excavations and the portable finds (Appendix 5; Simmons 1991). The destruction of the terraces and Te Wairoa during the Tarawera eruption of 1886 greatly reduced the attraction of the area and the tourist trade declined. Following this eruption, the setting-out of the modern town of Rotorua, the arrival there of the railway in 1894, the erection of hotels and the promotion of thermal attractions close to the town were the foundation of Rotorua's recovery. For a period around 1900, the town had no elected local government but was run by the Secretary of the Government's Department of Tourist and Health Resorts. The power station (see section 11.4.3), town lighting, sewage disposal and the Tudor-styled bath-house (now the museum) were built under this system. The bath-house opened in 1908 on the occasion of a visit by the officers of the Great White Fleet.

On the arrival of the railway in 1886, Te Aroha had a brief period of glory as a spa. However, the government promotion of Rotorua and the extension of the railway there soon left it as a site for local use only.

# 12. Conclusions

## 12.1 SUMMARY

There is no direct archaeological evidence that Maori occupied the Bay of Plenty region prior to the Kaharoa Ash eruption of about AD 1305. However, there is some evidence that the vegetation of the area started to be disturbed slightly before this date. Early Archaic occupation of the region was slight. Relatively few sites are known and these have been little studied. As is the case elsewhere in New Zealand, favoured sites were places close to the sea edge, near deep water, just within the shelter of the mouths of harbours and estuaries. The artefacts from these sites show a typical range of the forms expected from Archaic sites. Little is known about the economy of these early Polynesian residents. Some moa bone has been reported, but the extent of use of these birds for food is not known. From the very earliest times, Mayor Island (Tuhua) was a source of obsidian for all of New Zealand, so the Bay of Plenty, even if sparsely populated, was part of the wider pattern of settlement and occupation of New Zealand. Argillite in the form of adzes or stone came to the region from the northern South Island. Such extensive trade and movement of materials was typical of the early Polynesian settlement of New Zealand.

In contrast, later Maori occupation of the Bay of Plenty was extensive and has a substantial archaeological presence. Occupation flourished around the harbours, along the coast, on the favoured offshore islands and around the Rotorua Lakes. Sea resources and places for cropping were clearly important, with the volcanic ash soils being favoured. From about AD 1500 onwards, pa were being built—large fortifications in some places—implying the mobilisation of large social groups. The tension that pa reflect may have resulted from threats external to the Bay of Plenty region, but was likely to have been generated within the region.

There is little archaeological detail of the transition period from the Archaic to later Maori settlement periods. The transition is not represented in archaeological sites in the region and has to be inferred by analogy with the process as recorded elsewhere in New Zealand. There was some cultural change in the period after AD 1500, but a lot more work is needed to elucidate this. Given that this change probably relates in some way to population growth, it must be possible to investigate this in regions such as the Bay of Plenty, where populations were large. The wetland sites have, to date, been the richest source of evidence about past ways of life and can tell us a great deal about particular subtle and difficult issues, such as temporal change in arts such as wood carving. The carved combs from the Kauri Point Swamp are a case in point.



The contact period of the Bay of Plenty area was long because European influence was late in arriving compared with other parts of New Zealand. As yet, the archaeology of this period is very little explored here, despite there being considerable potential in gunfighter pa, flour mills and known historic settlements.

Historic non-Maori archaeology in the Bay of Plenty region is represented by some work done on gold mining and indigenous and exotic forestry. Economic development became widely established in the region only in the second half of the 20th century. Thus, there is still considerable unrealised potential in the archaeology of rural and urban settlements, and the industries and communications of the region.

Some of the distinctive features of the archaeology of the Bay of Plenty include:

- The low frequency of Archaic sites.
- The lack of evidence of occupation before the Kaharoa Ash eruption—a clear marker through the coastal part of the Bay.
- Sites rich in worked wood.
- Sites with rock carvings and painting.
- The high density of Maori sites along the coast and up the rivers.
- The considerable amount of largely unpublished information available from sites excavated for development mitigation.
- The general lack of evidence of cultural differentiation through time after the Archaic period, with the particular exception of the change in wooden comb style at the Kauri Point Swamp site.
- The scarcity of evidence for use of birds or mammals for food.
- The transition from pre-European pa to gunfighter pa dating from the 1820s.
- The presence of gunfighter pa dating from the 1820s to the 1970s, and their contrasts with European (Armed Constabulary) redoubts.
- The under-development of historical archaeology, which, despite the relatively recent development of the region, has considerable potential.
- ‘Literary’ sites of Elsdon Best, Adele Stewart, the missionaries in general and Edward Shortland.

The potential exists for more to be made of archaeological sites in cultural tourism in the Bay of Plenty region. Appendix 5 explores this in more detail. The existing sites available to the public are generally not presented well, with the particular exception of the country’s only commercial archaeological site, Te Wairoa, the Buried Village. Where there is on-site interpretation, little information is available about it elsewhere to alert visitors to the site as a potential place to visit.

## 12.2 RESEARCH ISSUES AND OPPORTUNITIES

### 12.2.1 Prehistoric archaeology

More direct evidence needs to be sought for the use of the horticultural soils on sand dunes and ridges. The alternative interpretation of these disturbed soils—that they were the result of fern root gathering—cannot be discounted on the evidence available at present. Application of phytolith and pollen identification techniques to investigate whether or not cultivated plants were once present at these sites is urgently needed.

To date, the museum collections of artefacts have been little explored. They must have far greater potential for elucidating types, artefact type distributions and source materials.

The potential of wetland archaeology is well demonstrated in the Bay of Plenty, particularly at the Kohika and Kauri Point Swamp sites. While exploration of such sites requires considerable resources, it can be highly rewarding. The number of known swamp sites is not high, however, and expanding the number known is not easily achieved by field survey. Talking to land owners and following up spot finds are the most useful approaches, but to be successful both approaches need archaeologists resident in the area. Archaeologists in museums are most likely to hear about chance discoveries.

The continued discovery of rock art makes it a field of some potential interest, along with the possibility that there are rock shelter floor deposits related to the art.

Site recording away from the coast is patchy. There are some areas, such as Reporoa, where pa sites can be seen from the road, but no sites have been recorded. Generally, around the Rotorua Lakes, pa seem to be over-represented in the records compared with undefended sites. Reports by Stafford (1994, 1996) on Maori associations with localities in the area suggested that this is a sampling problem.

Undefended sites with relatively long-term occupancy are under-represented in the excavations that have been undertaken. Such sites may yield a wide variety of evidence and are worthy of more attention than they have so far received.

As would be expected, mitigation archaeology is concentrating on areas where there is development pressure. Although considerable resources are available for this work, there is a case for carrying it out more discriminatingly than has generally been the case so far. Additional records of pit outlines, midden patches, oven pit scatters and simple counts of common shellfish add little to the overall sum of knowledge. Instead, a greater intensity of work on smaller areas using consistent methods would likely provide more valuable information.

Overall, future work on the prehistory of the Bay of Plenty area needs syntheses and approaches that can be tested using the evidence commonly found in the archaeological investigations that arise from the mitigation of modern development. These syntheses are likely to be local rather than regional in scale, and they would be best developed by the people doing the mitigation archaeology. Territorial and central government, universities and non-governmental organisations such as the New Zealand Archaeological Association could assist in this development.

### 12.2.2 Historical archaeology

The underwater archaeology of the Bay of Plenty is little developed. There are certainly unlocated wrecks and hulks. Improving knowledge of these could start with compiling records of known wrecks. Ship archaeology is often opportunistic and reliant on new discoveries, but pursuing some specific research questions based around known wrecks may be productive.

There has been some archaeological recording of goldfields, although this has mainly involved noting locations of sites that have resulted from fieldwork, rather than detailed mapping of the sites themselves. Many of these sites will no doubt prove to be very extensive and should illuminate interesting facts about 19th-century technology. Where sites had long use, such as on the Waitawheta River, there is good scope for resolving field remains into the different stages of the operations, but better maps are needed. Exploration of occupation sites in these fields may also cast light on the domestic lives of the miners and their families.

Railways and tramlines have a substantial archaeological presence in the Bay of Plenty, but the recording of these in the field has barely commenced. Because of the date of many of them, they are outside the scope of archaeological sites as defined in the Historic Places Act, but the evidence is, nevertheless, an important part of Bay of Plenty history. The transportation evidence is important in understanding the development history and landscape change. The economics of using tramways could be explored and the archaeological evidence compared with the known areas that were logged and their differing yields and terrain.

There has been very little archaeological study of historic settlements in the Bay of Plenty. The work at Te Wairoa buried village (Simmons 1991) is the principal exception. The older parts of Tauranga, Whakatane and Ohinemutu, and hotels along the coach routes must have greater potential than has been realised. Research questions could be framed around the Te Papa site to elucidate the layout of the missionary station and the lives of the residents (MacKay 1992). The grounds of other historic buildings, such as Athenree homestead, must hold potential for archaeology to link economic and social evidence with the historic record.

The first settler farmers in the Tauranga, Katikati and Te Puke areas must have left archaeological remains. Study of those in Tauranga may well elucidate the reason why many of the settlers were unable to keep farming their land.

Industrial archaeology also has potential in the Bay of Plenty area. Better connection needs to be made between historical industry and the present evidence for it. Some work has been done in the indigenous forestry remains, but this has rarely extended beyond specific site locations. The wider use of the countryside is a theme worth exploring further. The development of the drainage systems and the changing farm occupancy that went with that has archaeological potential. The brazen reshaping of the countryside in the kiwifruit areas has probably severely damaged evidence of past homesteads and agricultural use to the point where other areas are likely to be more rewarding of study. Elsewhere, though, the deposition of Tarawera ash over much of the coastal area after the initial colonial settlement will probably have left a marker horizon that would aid archaeological differentiation of pre- and post-Tarawera eruption settlements and land-use features.

### 12.3 CONSTRAINTS TO RESEARCH

Recent studies of the prehistoric archaeology of the Bay of Plenty has suffered from a lack of 'big questions' to guide research. Much of the recent archaeology carried out as a result of the requirements of the Historic Places Act seems to have lacked a clear focus on why it was being done, and the results have only rarely been related to research issues. A tiny amount of the results of this work is making its way into the conventional literature. There is no one repository of the many unpublished reports. Rather, they have to be sought from different Historic Places and Department of Conservation offices, from the Archaeological Association file, or from the authors. This is in contrast to some of the pioneering archaeological work in the Bay of Plenty, which centred on the chronology of settlement, the opportunity presented by wetland sites to expose a wider range of cultural information, and the exploration of the history of fortified sites and their place in the broader settlement pattern.

In the past, academic interest has been a stimulus to issues being explored and no doubt this will be the case again. Involvement in the region by a tertiary institution interested in an archaeological research programme would be a distinct advantage, but seems unlikely at present. The employment of soil scientists interested in archaeology and archaeologists in government conservation agencies has also been a stimulus to research. However, there are now fewer people active in these roles than at any time in the recent past. More could be achieved from the now-dominant mitigation archaeology if it was carried out within an overarching research design.

The principal constraint to historical archaeological research in the Bay of Plenty is simply that so little of the basic site recording has been done. Even where sites are recorded, the level of detail in the record is often minimal. It may be that field workers believe that because much of the development of the area is relatively recent, it may not yet have left an archaeological trace or, if present, may be of little value because of its recency. The substantial amount of archaeological work generated by development proposals concentrates mainly on the Maori sites, though there are exceptions. This concentration on Maori aspects reflects the pre-1900 definition of an archaeological site in the Historic Places Act. However, local authorities are increasingly recognising the heritage value of more recent sites in their plans. For instance, the Eastern Bay of Plenty Council plan includes several post-1900 sites. Placing lesser value on post-1900 sites constrains historical archaeology in the Bay of Plenty, because most development occurred after that time.

A lack of coherent accounts of the New Zealand Wars written from the perspective of the Bay of Plenty area may have inhibited work identifying the sites of the conflicts. Cowan (1923) provided good factual accounts of particular events, having the considerable benefit of working when these events were still within living memory of many people. However, he often failed to put the fighting in a strategic or political context. The better modern historical accounts, such as that of Belich (1988), give little space to events in the Bay of Plenty area other than those at Tauranga in 1864. A good start to the archaeology of the New Zealand Wars has certainly been made in recording sites and in the excavations reported by Spring-Rice (1983b, 1987)

and Mitchell (1984), but there is a great deal more that could be done in identifying particular historical sites, mapping them and putting known sites with little written record into their historical context.

The development of communications, land drainage, power generation and transmission, indigenous and exotic forestry, and the character of early industries and farmsteads all offer opportunities for archaeological research. For example, was there an Irish character to the farmsteads of the Ulster settlers?

As is noted in Appendix 1, there are areas of the Bay of Plenty region that appear to have been under-surveyed in terms of locating both prehistoric and historic sites. Since these areas tend to be remote from the coast, they will generally have lower concentrations of Maori sites than coastal areas, making fieldwork less rewarding in terms of sites found. There are considerable opportunities for research in historical archaeology. The basic fieldwork does not need an academic base, only application in the field.

## 13. Acknowledgements

This research was funded by the Department of Conservation (Science Investigation No. 3468). The author's thanks are extended to the NZAA site record file keepers, the researchers in the area who made unpublished records available, and the staff of the Research, Development & Improvement Division, Department of Conservation, who offered comment and advice.

## 14. References

- Ambrose, W. n.d.: Kauri Point. Unpublished manuscript presented at New Zealand Archaeological Association Conference, New Plymouth.
- Ambrose, W. 1961: Rock carvings at Ongari Point. *New Zealand Archaeological Association Newsletter 4(2)*: 49-50.
- Ambrose, W. 1962: Further Investigations at Kauri Point. *New Zealand Archaeological Association Newsletter 5(1)*: 56-67.
- Ambrose, W. 1967: Kauri Point. Unpublished manuscript presented at NZAA Conference, New Plymouth.
- Andersen, J.C.; Petersen, G.C. 1956: The Mair family. A.H. and A.W Reed, Wellington.
- Andrews, P. 1990: Report on a midden from the Ohinemutu Hotel Rotorua. Unpublished report. Copy held in Bay of Plenty Conservancy Office library, Department of Conservation, Rotorua.
- Andrews, P. 2001: No fear of rusting, a biography of the Rev. Thomas Chapman. Rotorua and District Historical Society, Rotorua.
- Angus & Associates Ltd 2007: Regional visitor monitor (results to September 2007). National benchmark report. Prepared for Ministry of Tourism, Wellington.

- Annabell, R. 1977: Hot water country. Reed, Wellington.
- Anon. n.d.a: Okataina scenic reserve cultural history. [www.doc.govt.nz/upload26537/Lake-Okataina-Scenic-Reserve-cultural-history.pdf](http://www.doc.govt.nz/upload26537/Lake-Okataina-Scenic-Reserve-cultural-history.pdf) (viewed June 2008).
- Anon. n.d.b: Tsunami Hazard for the Bay of Plenty and Eastern Coromandel Peninsula: Stage 1. Environment Waikato Report TR04/33, prepared by Geoenvironmental Consultants.
- Anon. 1981: Guide to the Wairongomai Valley. New Zealand Forest Service, Wellington.
- Anon. 1985: Notes and news. *New Zealand Archaeological Association Newsletter* 28(3): 134-143.
- Anon. 1988: Glimpses from Whakatane's past. *Monograph 18*. Whakatane and District Historical Society.
- Anon. 1992: Guide to the Wairongomai Valley, Kaimai-Mamaku Forest Park. Leaflet, Department of Conservation.
- Anon. 1993: Ditch and bank construction Uruturituri Pa Area III Matakana Island. University of Auckland Field School, Matakana Island, Bay of Plenty, 1993. Department of Anthropology, University of Auckland, Auckland (unpublished).
- Anon. 1999: Register of actively managed historic places, Bay of Plenty Conservancy. Department of Conservation (unpublished).
- Anon. 2003: Deed of settlement between the Crown and Ngati Awa. [www.beehive.govt.nz/ViewDocument.cfm?DocumentID=16344](http://www.beehive.govt.nz/ViewDocument.cfm?DocumentID=16344) (viewed June 2008).
- Ballara, A. 2003: Taua, 'musket wars', 'land wars' or tikanga? Warfare in Maori society in the early nineteenth century. Penguin Books, Auckland.
- Beard, J.G.; Ragheb, M.G. 1980: Measuring Leisure Satisfaction. *Journal of Leisure Research* 12(1): 20-33.
- Becken, S.; Lennox, J.; Fitt, H.; Butcher, G. 2007: Summary report of the Yield Research Programme November 2007. Christchurch: Tourism Research and Education Centre, Lincoln University.
- Belich, J. 1988: The New Zealand wars and the Victorian interpretation of racial conflict. Penguin Books, Auckland.
- Bell, R.G.; Goff, J.; Downes, G.; Berryman, K.; Walters, R.A.; Chagué-Goff, C.; Barnes, P.; Wright, I. 2004: Tsunami hazard for the Bay of Plenty and Eastern Coromandel Peninsula: Stage 2. Environment Waikato Report: TR04/32.
- Bellamy, A.C. 1982: Tauranga, 1882-1982. Tauranga City Council, Tauranga.
- Bellamy, A.C. 1991: First in fertiliser, a history of the Bay of Plenty Co-operative Fertiliser Company Limited. The Company, Tauranga.
- Best, E. 1922a: Some aspects of Maori myth and religion. *Dominion Museum Monograph No 1*. Government Printer, Wellington.
- Best, E. 1922b: Spiritual and mental concepts of the Maori. *Dominion Museum Monograph No 2*. Government Printer, Wellington.
- Best, E. 1924: The Maori as he was. Third impression, 1952. Government Printer, Wellington.
- Best, E. 1925: Tuhoe, the children of the mist. 2 Vols. Board of Maori Ethnological Research, New Plymouth.
- Best, E. 1928: Maori and maruiwi. The arrival of the first Polynesian settlers at Whakatane. Origin of the mixed Toi Tribes. *Journal of the Polynesian Society* 37: 175-225.
- Best, E. 1942: The forest lore of the Maori. *Bulletin Number 14*. Dominion Museum, Wellington.
- Binney, J. 1995: Redemption songs, a life of Te Kooti Arikirangi Te Turuki. Auckland University Press, Auckland.
- Blake-Palmer, G. 1947: New Zealand archaeology and air photography. *Journal of the Polynesian Society* 56(3): 233-241.

- Boileau, J. 1978: Wood from Kohika, a study of exploitation and wood-working technology. Unpublished M.A. Research Essay, University of Auckland.
- Bowers, L.C. 1992: Bay of Plenty shipwrecks 1840–1900. *Miscellaneous Report Series No. 14*. Bay of Plenty Conservancy, Department of Conservation.
- Bowers, L.C. 1995: Conservation plan: Te Irihanga Pa. Unpublished report prepared for Te Mahau 1 and Te Irihanga 2 Trust.
- Bowers, L.C. 1996: Archaeological investigation report, pursuant to an authority under Section 14 of the Historic Places Act 1993. No 1996/76: (U14/677) Wairoa, Western Bay of Plenty. Unpublished report prepared for George Evans.
- Bowers, L.C.; Jones, K. 1991: Tauwhare Pa archaeological investigation and site restoration. *Bay of Plenty Conservancy Technical Report Series No. 9*. Department of Conservation.
- Bowers, L.C.; Phillips, K. 1997a: Archaeological investigation report, pursuant to an authority under Section 14 of the Historic Places Act 1993 (No. 1995/30) Te Horo Drive, Ohope Beach, Bay of Plenty. Unpublished report, Historic Resource Management Services.
- Bowers, L.C.; Phillips, K. 1997b: Archaeological investigation report pursuant to authority under Section 14 of the Historic Places Act 1993, No. 1997/44, 26–28 Sixth Avenue Tauranga, Bay of Plenty, Part 1, U14/519 (Historic). Historic Resource Management Services.
- Bowers, L.C.; Phillips, K. 1997c: Archaeological investigation report pursuant to authority under Section 14 of the Historic Places Act, No. 1997/30 Omataroa Forest Eastern Bay of Plenty. Unpublished report, Historic Resource Management Services.
- Bowers, L.C.; Phillips, K. 1997d: Archaeological investigation report pursuant to an authority under Section 14 of the Historic Places Act, No. 1997/33, Omataroa Forest, Eastern Bay of Plenty. Unpublished report, Historic Resource Management Services.
- Bowers, L.C.; Phillips, K. 1997e: Archaeological investigation report pursuant to an authority under Section 14 of the Historic Places Act, No. 1997/50. 115 Fourth Ave, Tauranga, Bay of Plenty. Unpublished report, Historic Resource Management Services.
- Bowers, L.C.; Phillips, K. 1998: Archaeological investigation report pursuant to authority under Section 14 of the Historic Places Act, No. 1996/91, Reid Rd, Papamoa. Historic Resource Management Services.
- Boyd, J. n.d.: Pumice and pines, the story of Kaingaroa Forest. GP Publications.
- Boyd, S. 2002: Cultural and heritage tourism in Canada: opportunities, principles and challenges. *Tourism and Hospitality Research* 3: 211.
- Buck, C.E.; Hingham, T.F.G.; Lowe, D.J. 2003: Bayesian tools for tephrochronology. *The Holocene* 13(5): 639–647.
- Buck, P. 1921: Maori food supplies of Lake Rotorua. *Transactions of the New Zealand Institute* 53: 433–451.
- Campbell, M. 2004: Excavation of site U14/1945, Oropi Valley, Tauranga. *Archaeology in New Zealand* 47(1): 50–61.
- Campbell, M. 2005: The archaeology of kakahi (*Hyridella menziesi*). *Archaeology in New Zealand* 48(2): 101–112.
- Cave, J. 2002: Partners and relationships. Unpublished report prepared for the Tauranga District Council.
- Cave, J.; Ryan, C.; Panakera, C. 2003: Residents' perceptions, migrant groups and culture as an attraction—the case of a proposed Pacific Island cultural centre in New Zealand. *Journal of Tourism Management* 43(4): 371–385.
- Clarkson, B.D. 1991: Coastal plants inland. Pp. 93–96 in Clarkson, B.D.; Smale, M.C.; Enroyd, C.E. (Eds): Botany of Rotorua. Forest Research Institute, Rotorua.
- Clarkson, B.P.C.; Clarkson, B.R. 1991: A century of change on Mt Tarawera. Pp.13–84 in Clarkson, B.D.; Smale, M.C.; Enroyd, C.E. (Eds): Botany of Rotorua. Forest Research Institute, Rotorua.

- Collier, A.J. 1999: Principles of tourism: a New Zealand perspective. Addison Wesley Longman, Auckland.
- Coster, J. 1977: A rua in the Kaimais: excavation report. *New Zealand Archaeological Association Newsletter* 20(4): 244-250.
- Coster, J. 1989: Dates for the dunes: a sequence for the Aupouri Peninsula, Northland, New Zealand. *New Zealand Journal of Archaeology* 11: 51-75.
- Coster, J.; Johnston, G. 1980: Interim report investigation of archaeological sites N57/73-75, Michaels Block, Waihou Valley Scheme. New Zealand Forest Services AK file 6/201/21/1 (unpublished).
- Cotching, W.E. 1998: Soil survey of the Te Puke District, Bay of Plenty, New Zealand. Landcare Research Technical Record. Manaaki Whenua-Landcare Research New Zealand, Hamilton.
- Cowan, J. 1923: The New Zealand Wars. A history of the Maori campaigns and the pioneering period. 2 Vols. Government Printer, Wellington.
- Cowan, J. 1935: A trader in a cannibal land. The life and adventures of Captain Tapsell. A.H. and A.W. Reed, Wellington.
- Crosby, R. 2004: Gilbert Mair, Te Kooti's nemesis. Reed, Auckland.
- Cultural Tourism Working Party 2000: Cultural tourism. Evidence in preparation for Tourism Strategy 2010. Creative New Zealand, Wellington.
- Davis, F.W. 1958: Petroglyphs in Kaingaroa Block—the Murapara rock carvings. *Historical Review* 6(1): 2-6.
- Diamond, J.T.; Hayward, B.W. n.d.: Kauri timber dams. Lodestar Press.
- Diamond, P. 2007: Makereti: taking Maori to the world. Random House.
- Dieffenbach, E. 1843: Travels in New Zealand with contributions to the geography, geology, botany and natural history of that country. 2 vols. John Murray, London.
- Downey, J.F. 1935: Gold mines of the Hauraki District. Government Printer, Wellington.
- Dunn, M. 1985: John Kinder: paintings and photographs. Seto Publishing, Auckland.
- Edson, S.C. 1973: Human ecology and prehistoric settlement on some offshore islands (East Cape to Cape Reinga, New Zealand). Unpublished MA thesis, University of Auckland.
- Ellison, N.H. 1956: The Whirinaki Valley. Pauls Book Arcade, Hamilton.
- Firth, R.W. 1929: Primitive economics of the New Zealand Maori. Routledge, London.
- Fletcher, P.T. 2002: Ngati Tahu—Ngati Whaoa social and cultural report on Te Awa O Waikato. Unpublished report for Mighty River Power.
- Fredricksen, C.; Barber, I.; Best, S. 1995: Pre-European occupation on the Papamoa dune ridges. The archaeological investigating of site U14/2841, L.S Johnson Trust property. Archaeological Heritage Consultants, Auckland. Unpublished report for the New Zealand Historic Places Trust.
- Fredricksen, C.; Kahotea, D.T.; Felgate, M. 1996: An archaeological survey of the Papamoa Coastal Zone, Tauranga District. Unpublished report.
- Froggatt, P. 1994: Identification of tephara (volcanic ash) layers in archaeological survey sites on Matakana Island. Unpublished report for Uniservices, Victoria University Research Ltd., Wellington.
- Fulton, R. 1921: An account of a supposed Maori sharpening stone. *Transactions of the New Zealand Institute* 53: 471-472.
- Furey, L. 1981: Excavation of Site N77/606, Long Valley Kawerau: an interim report. Department of Anthropology, University of Auckland (unpublished).
- Furey, L. 1983: Maruka investigation, Kawerau, Bay of Plenty, final report for Stage III. Department of Anthropology, University of Auckland.



- Furey, L. 1996: Oruarangi, the archaeology and material culture of a Hauraki Pa. *Bulletin No. 17 of the Auckland Institute and Museum*.
- Gardner, E.F.P. 1993: A summary of the Tauranga County archaeological material located in the Auckland Institute and Museum. Unpublished research project, Department of Anthropology, University of Auckland.
- Gibbons, W.H. 1990: The Rangitaiki 1890–1990. Settlement and drainage on the Rangitaiki. *Whakatane and District Historical Society Monograph 20*.
- Goff, J.; Walters, R.; Callaghan, F. 2006: Tsunami Source Study. Environment Waikato Report TR 2006/49.
- Golson, J. 1959: The Excavations at Paengaroa, 20–21 May, 1959. *Historical Review 7(4)*:82–84.
- Golson, J. 1960: Excavations at Pakotore, Paengaroa, Bay of Plenty. *New Zealand Archaeological Association Newsletter 3(2)*: 11–14, 20.
- Golson, J. 1961a: Investigations at Kauri Point, Katikati, western Bay of Plenty: conclusions and hypotheses. *New Zealand Archaeological Association Newsletter 4(2)*: 38–41.
- Golson, J. 1961b: Investigations at Kauri Point, Katikati, western Bay of Plenty: introduction. *New Zealand Archaeological Association Newsletter 4(2)*: 13–15.
- Golson, J. 1961c: Investigations at Kauri Point, Katikati, western Bay of Plenty: the excavation. *New Zealand Archaeological Association Newsletter 4(2)*: 17–29.
- Golson, J.; Stafford, D.M. 1959: Rotorua—Bay of Plenty. *New Zealand Archaeological Association Newsletter 2(2)*: 29–30.
- Grace, D. 2004: A driven man. Missionary Thomas Samuel Grace 1815–1979: his life and letters. Ngaio Press, Wellington.
- Grace, J. Te H. 1959: Tuwharetoa, the history of the Maori people of the Taupo district. A.H and A.W. Reed, Wellington.
- Grace, R. 1982: A drowned pa in Lake Okataina. *New Zealand Archaeological Association Newsletter 25(4)*: 247–251.
- Grant, P.J. 1985: Major periods of erosion and alluvium sedimentation in New Zealand during the late Holocene. *Journal of the Royal Society of New Zealand 15(10)*: 57–121.
- Grant, P.J. 1996: Hawkes Bay forests of yesterday. Privately published, Havelock North. 273 p.
- Gray, A.J. 1950: An Ulster plantation. 2nd Edition. A.H. and A.W. Reed, Wellington.
- Green, R.C. 1963a: Review of the prehistoric sequence of the Auckland Province. *New Zealand Archaeological Association Monograph 2*.
- Green, R.C. 1963b: An undefended settlement at Kauri Point, Tauranga District. *Historical Review 11(3)*: 143–156.
- Green, R.C. 1964: An undefended settlement at Kauri Point, Tauranga District. *New Zealand Archaeological Association Newsletter 7(1)*: 11–17.
- Green, R.C. 1978: Dating the Kauri Point sequence. *Historic Review 26(1)*: 32–45.
- Gregg, D.R. 1956: Maori rock drawings at Lake Tarawera. *Journal of the Polynesian Society 65*: 364–366.
- Grey, G. 1855: Polynesian mythology. J. Murray, London.
- Groube, L.M. 1970: The origin and development of earthwork fortifications in the Pacific. Pp. 133–164 in Green, R.C.; Kelly, M. (Eds): Studies in oceanic culture history, Vol 1. *Pacific Anthropological Records No. 11. B.P. Bishop Museum*.
- Grouden, V.J. 1991: Te Kauri Village. A report on authority 1990/64 to modify an archaeological site. *Bay of Plenty Conservancy Technical Report Series No. 7*. Department of Conservation.
- Grouden, V.J. 1993a: Kaimai-Mamaku Forest Park. Historic Resources Inventory. *Bay of Plenty Conservancy Technical Report Series No. 19*. Department of Conservation.

- Grouden, V.J. 1993b: Matata and Ohope Scenic Reserves Historic Resources Inventory. Department of Conservation, Rotorua (unpublished).
- Grouden, V.J. 1995: Archaeological assessment report to determine the extent of damage to NZAA site W15/90 by home sites excavation. Unpublished report. Copy held by New Zealand Archaeological Association (Bay of Plenty site record file).
- Gumbley, W. 1997: Archaeology of pre-European garden soils at Papamoa, Bay Of Plenty. Unpublished report for Bay of Plenty Conservancy, Department of Conservation.
- Gumbley, W. 2004: Archaeological investigations of the defences of a pa at Papamoa. Unpublished report prepared for Fulton Logan Ltd.
- Gumbley, W.; McFadgen, B.G. 1995: LS Johnson Trust residential subdivision, Papamoa: report on the preliminary archaeological investigation 3 July to 7 July 1995. Unpublished report for New Zealand Historic Places Trust.
- Gumbley, W.; Phillips, K.J. 2000: Papamoa lowlands archaeological survey and heritage assessment urban growth study Papamoa. Unpublished report for Tauranga District Council.
- Gumbley, W.; Phillips, K.J. 2004: U14/3113 and U14/3116. Unpublished report on archaeological investigations, Papamoa, Bay of Plenty.
- Hall, N.V. 1981: 'I have planted' a biography of Alfred Nesbit Brown. Dunmore Press, Palmerston North.
- Hamilton, H. 1925: The Kaingaroa Carvings. *Journal of the Polynesian Society* 34(1): 358-362.
- Hansen, N.G. 1997: History of Tauranga Harbour and port. Privately published.
- Hargreaves, R.P. 1959: The Maori agriculture of Auckland Province in the mid-nineteenth century. *Journal of the Polynesian Society* 68: 61-79.
- Hargreaves, R.P. 1961: Maori flour mills of the Auckland Province 1846-60. *Journal of the Polynesian Society* 70: 227-232.
- Healy, B. 1982: A hundred million trees, the story of N.Z. Forest Products. Hodder and Stoughton, Auckland.
- Healy, J. 1978: Beach erosion at Waihi Beach. *New Zealand Journal of Marine and Freshwater Research* 12(2): 99-107.
- Heath, E.; McLean, G. 1994: Shipwrecks around New Zealand. Grantham House, Wellington.
- Henderson, G.M. 1948: The antecedents and early life of Valentine Savage, known as Taina. Wingfield Press, Wellington.
- Higham, T.F.G.; Hogg, A.G.; Lowe, D.J.; Palmer, J.; Reimer, P.; Nairn, I. 2000: Precise wiggle-match dating of the Kaharoa tephra. *Geological Society of New Zealand Miscellaneous Publications* 108: 74.
- Higham, T.F.G.; Hogg, A.G.; Lowe, D.J.; Palmer, J.; Reimer, P.; Nairn, I. 2001: Precise age for the c. 650 Kaharoa tephra using 'wiggle-match' dating. Australasian Archaeometry Conference 2001. Australasian Connections and New Directions, Auckland, February 5-9, 2001: 33.
- Hochstetter, F. von 1867: New Zealand: its physical geography, geology and natural history. Cotta.
- Hodgson, K.A.; Nairn, I.A. 2000: The catastrophic ~ 1350AD post-eruption flood from Lake Tarawera, New Zealand. Resource Planning Report 2000/01, Environment Bay of Plenty, Whakatane.
- Hodgson, K.A.; Nairn, I.A. 2005: The c. AD 1315 syn-eruption and AD 1904 post-eruption breakout floods from Lake Tarawera, Haroharo caldera, North Island New Zealand. *N.Z. Journal of Geology and Geophysics* 48: 491-506.
- Hogg, A.G.; Higham, T.G.F.; Lowe, D.J.; Palmer, J.G.; Reimer, P.J.; Newman, R.M. 2003: A wiggle-match date for Polynesian settlement of New Zealand. *Antiquity* 77: 116-125.
- Holdaway, S.J. 2004: The Kohika obsidian artefacts: technology and distribution. Pp. 177-197 in Irwin, G.J. 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.

- Holroyd, S. n.d.: Obsidian sources of the North Island, location and identifying characteristics. Unpublished M.A. research essay, University of Auckland, Auckland.
- Hooker, R.H. n.d.: Papamoa dunes: garden of Eden or ferae naturae? Unpublished research paper.
- Hooker, R.H. 1995: Initial report on mitigation investigation for Angus Developments, Papamoa. Unpublished report prepared by Arcsearch for New Zealand Historic Places Trust.
- Hooker, R.H. 1998a: Report of archaeological investigation of shell midden sites U14/2846 and 2847 at Evansfield subdivision, Evans Road, Papamoa. Unpublished report prepared for NZ Historic Places Trust, Wellington.
- Hooker, R.H. 1998b: Report on archaeological investigation at sites U14/1721, 2833–2887 Summerlands Estate subdivision, Papamoa. Unpublished report.
- Hooker, R.H. 1998c: Report on archaeological investigation of shell midden site U14/526, Pacific Cove subdivision, Domain Road, Papamoa, November 1998. Unpublished report prepared for NZ Historic Places Trust.
- Hooker, R.H. 1998d: Report on archaeological investigation of sites U14/1711, 1712, 1713, 2820, 2893 and 2894, Te Parewaitai Estates subdivision, Grenada Street, Papamoa. Unpublished report prepared for NZ Historic Places Trust.
- Hooker, R.H. 1998e: Report on investigation of sites U14/1712 and 2820, Te Parewaitai Estates subdivision, Grenada Street, Papamoa. Unpublished report.
- Hooker, R.H. 1998f: Report on Investigation Site U14/2246, D and A Cranna Property, 1132 Ohauiti Road, Welcome Bay. Under Historic Places Trust 1993, Authority 1998/94. Unpublished report.
- Hooker, R.H. 1999a: Report on archaeological investigation at Papamoa 7B Block, Te Hana, Mount View subdivision, Range Road, Papamoa. HPT Authority on behalf of Waimea Consulting. Unpublished report.
- Hooker, R.H. 1999b: Report on archaeological investigation at Te Kuia Parewaitai subdivision, Grenada Street, Papamoa. HPT Authority 1998/87. Unpublished report prepared for NZ Historic Places Trust on behalf of Parewaitai Estates, Ltd, Papamoa.
- Hooker, R.H. 1999c: Report on archaeological investigation at Watene Property, Waikite Road subdivision, Welcome Bay. Unpublished report (interim) prepared for NZ Historic Places Trust.
- Hooker, R.H. 2000a: Report on archaeological investigation at Grand View Estate subdivision, Waikite Road, Welcome Bay, Tauranga. Under Historic Places Act 1993 Authority 1998/70. Unpublished report.
- Hooker, R.H. 2000b: Report on archaeological investigation site U15/642, F Larsen Property, 1 Maungarangi Road, Paengaroa. Under Historic Places Act 1993, Authority 9900/35. Unpublished report.
- Hooker, R.H. 2000c: Report on investigation of terrace site U14/2027 estates terrace Welcome Bay. Unpublished report prepared for NZ Historic Places Trust under HPT Authority 9900/104 D. and Y. Couch Property.
- Hooker, R.H. 2001: Report on archaeological investigation at Papamoa 4A/1 Block, Seacrest Resort, Papamoa Beach Rd Papamoa, HPT Authority 9900/66. Unpublished report prepared for Seacrest Resort.
- Horrocks, M.; Campbell, M.; Gumbley, W. 2007: A short note on starch and xylem of *Ipomoea batatas* (sweet potato) in archaeological deposits for northern New Zealand. *Journal of Archaeological Science* 34: 1441–1448.
- Horrocks, M.; Irwin, G.G.; Jones, M.; Sutton, D. 2004: Starch grains and xylem cells of sweet potato (*Ipomoea batatas*) and bracken (*Pteridium esculentum*) in archaeological deposits from northern New Zealand. *Journal of Archaeological Science* 31: 251–258.
- Houghton, B.F.; Weaver, S.D.; Wilson, C.J.N.; Lanphere, M.A. 1992: Evolution of a Quaternary peralkaline volcano: Mayor Island, New Zealand. *Journal of Volcanology & Geothermal Research* 51: 217–236.

- Ingram, C.W.N. 1972: Shipwrecks, 1979-1975. A.H. and A.W. Reed, Wellington.
- Irwin, G.J. 1975: The Kohika Site; Bay of Plenty. *Historical Review* 23(2): 101-104.
- Irwin, G.J. (Ed.) 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Irwin, G.J.; Jones, M.D. 2004: Site chronology. Pp. 76-82 in Irwin, G.J. 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Irwin, G.J.; Nichol, R.K.; Taylor, M.A.; Worthy, T.H.; Smith, I.W.G. 2004: Faunal remains from Kohika. Pp. 198-216 in Irwin, G.J. 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Irwin, G.J.; Wallace, R.; Green, S. 2007: An archaeological collection of gourd artefacts from the Kohika lake village. Pp. 43-52 in Anderson, A.J.; Green, K.; Leach B.F. (Eds): 2007: Vastly ingenious; the archaeology of pacific material culture in honour of Janet M Davidson. Otago University Press, Dunedin.
- Johnson, N.; Calcott, J. 1967: Underwater pa, Lake Okataina. *Dive South Pacific Underwater Magazine* 6(5): 14-16.
- Jones, K.L. 1983a: Moerangi: a fortification of the Tauranga Bush Campaign 1867. Pp. 65-76 in Bulmer, S.; Law, G.; Sutton, D. (Eds): A lot of spade work to be done, essays in honour of Lady Aileen Fox. *New Zealand Archaeological Association Monograph No. 14*.
- Jones, K.L. 1983b: Pa in two western segments of the Waiotahi and Whakatane Valleys, Bay of Plenty. *New Zealand Archaeological Association Newsletter* 26(3): 165-173.
- Jones, K.L. 1984a: Archaeological investigations in Waiotahi Valley, Bay of Plenty, November 1981. *New Zealand Archaeological Association Newsletter* 27(2):109-118.
- Jones, K.L. 1984b: A wharepuni in the Whirinaki State Forest: report on excavations at N95/32. *New Zealand Archaeological Association Newsletter* 27(4): 247-255.
- Jones, K.L. 1986: Polynesian settlement and horticulture in two river catchments of the eastern North Island, New Zealand. *New Zealand Journal of Archaeology* 8: 5-31.
- Jones, K.L. 1991: Maori settlement and horticulture on Rangitaiki Plains, Bay of Plenty, New Zealand. *New Zealand Journal of Archaeology* 13: 143-175.
- Jones, M.D. 1994: Matakana and related obsidian hydration dates. Appendix 2 in Sutton, D.G. 1994: Maps of archaeological sites Matakana Island and 1993-94 Annual Report. Report to the Science and Research Division, Department of Conservation, Wellington.
- Kahotea, D.T. 1983: The interaction of Tauranga hapu with the landscape. Unpublished M.A. thesis, University of Auckland, Auckland.
- Kahotea, D.T. 1988: Tupakaria site U15/35, Rotorua. Unpublished interim report for the Science Directorate, Department of Conservation.
- Kahotea, D.T. 1992: Tauranga urban growth strategy. Cultural resource inventory. Features of significance to the Maori community (tangata whenua). Unpublished report prepared for the Trust Tauranga, Tauranga District Council.
- Kahotea, D.T. 1993: Papamoa main drain outlet. Archaeological investigation of Grant Place stormwater pipeline. Fore-dune route. Unpublished report.
- Kelly, J. 2003: An investigation into retail as a tourist activity using Mount Maunganui as a case example. Unpublished report submitted in partial fulfilment of the requirements of the Degree of Bachelor of Management Studies, University of Waikato, Hamilton.
- Keyes, I.W.; Matheson, I.R. 1970: A large worked nephrite slab from the northern Ahimanawa Range. *Journal of the Polynesian Society* 79(4): 433-436.
- King, J. 1995: New Zealand tragedies, aviation accidents and disasters. Grantham House, New Zealand.
- Kingsley-Smith, C. 1971: Te Paripari, a gunfighters pa, Ohope. *Historical Review* 19(2): 135-136.

- Ladefoged, T.N.; McLachlan, S.M.; Ross, S.C.L.; Sheppard, P.J.; Sutton, D.G. 1995: GIS-based image enhancement of conductivity and magnetic susceptibility data from Uruturituri Pa and Fort Resolution, New Zealand. *American Antiquity* 60(3): 471-481.
- Latter, J.H.; Lloyd, E.F.; Smith, I.E.M.; Nathan, S. 1992: Volcanic hazards in the Kermadec Islands, and at submarine volcanoes between southern Tonga and New Zealand. *New Zealand Ministry of Civil defence, Volcanic Hazards Information Series No. 4*.
- Law, R.G. 1969: Some petroglyph sites in the North Island, New Zealand. *New Zealand Archaeological Association Newsletter* 12(4): 191-198.
- Law, R.G. 1973: Tokoroa moa-hunter site. *New Zealand Archaeological Association Newsletter* 16(4): 150-164.
- Law, R.G. 1982: Coromandel Peninsula and Great Barrier Island. Pp. 49-61 in Prickett, N. (Ed.) 1982: The first thousand years, regional perspectives in New Zealand archaeology. Dunmore Press, Palmerston North.
- Law, R.G. 1984: Review of McFadgen and Sheppard, Ruahihi pa. *New Zealand Archaeological Association Newsletter* 27(3): 191-194.
- Law, R.G. 1999: Pits long, large and prestigious: recognition of varieties of Maori kumara storage pits in northern New Zealand. *New Zealand Journal of Archaeology* 21: 29-45.
- Law, R.G. 2002a: Bay of Plenty archaeological resource statement, first report—site survey review. Unpublished report filed with New Zealand Archaeological Association Central File, Research, Development & Improvement Division, Department of Conservation, Wellington.
- Law, R.G. 2002b: Bay of Plenty archaeological resource statement, second report—excavated sites. Unpublished report filed with New Zealand Archaeological Association Central File, Research, Development & Improvement Division, Department of Conservation, Wellington.
- Lawlor, I. 1975: The Kohika Site, Bay of Plenty. *Historical Review* 13(2):101-104.
- Lawlor, I. 1979: Paleoenvironment analysis: an appraisal of the prehistoric environment of the Kohika Swamp Pa (N68/140), Bay of Plenty. Unpublished M.A. thesis, University of Auckland, Auckland.
- Lawlor, I. 1981: Maruka excavations, Kawerau, 1981: an interim report. *New Zealand Archaeological Association Newsletter* 24(3): 184-191.
- Lawlor, I. 1983a: Drowned pa in Lake Okataina. *New Zealand Archaeological Association Newsletter* 26(1): 74-75.
- Lawlor, I. 1983b: Rua kumara o Kawerau. Pp. 212-248 in Bulmer, S.; Law, G.; Sutton, D. (Eds): A lot of spadework to be done, essays in honour of Lady Aileen Fox. *New Zealand Archaeological Association Monograph No. 14*.
- Leach, B.F.; Davidson, J.M.; Horwood, L.M. 1994: Identification of archaeological fish bones from Matakana Island. Museum of New Zealand Te Papa Tongarewa Technical Report (unpublished).
- Leach, B.F.; de Souza, P. 1979: The changing proportions of Mayor Island obsidian in New Zealand prehistory. *New Zealand Journal of Archaeology* 1: 29-51.
- Leach, H. 1983: An unusual and previously unrecorded stone reel from Whakatane. Pp. 173-183 in Bulmer, S.; Law, G.; Sutton, D. (Eds): A lot of spadework to be done, essays in honour of Lady Aileen Fox. *New Zealand Archaeological Association Monograph No. 14*.
- Leahy, A. 1976: Whakamoenga cave, Taupo, N94/7. *Records of the Auckland Institute and Museum* 13: 29-75.
- Leamy, M.L.; Fieldes, M. 1976: Soil, classification and use. Pp. 122-133 in Wards, I. (Ed.) 1976: New Zealand atlas. Government Printer, Wellington.
- Leathwick, J.R. 2000: Predictive models of archaeological site distributions in New Zealand. *Science & Research Internal Report 181*. Department of Conservation, Wellington.
- Lloyd, E.F.; Nathan, S.; Smith, I.E.M.; Stewart, R.B. 1996: Volcanic history of Macauley Island, Kermadec Ridge, New Zealand. *New Zealand Journal of Geology and Geophysics* 39: 295-308.

- Lockstone, B.; Harrison, P. 2000: DC3, southern skies pioneer. Random House, Auckland.
- Lousberg, M. 2005: Communities in conflict: the government and the eastern districts 1842-1845. Pp. 57-72 in Ballantyne, T.; Bennett, J.A. (Eds): *Landscape/community perspectives from New Zealand*. Otago University Press, Dunedin.
- Lowe, D.J.; Newham, R.M.; McCraw, J.D. 2002: Volcanism and early Maori society in New Zealand. Pp. 126-161 in Torrance, R.; Grattan, J. (Eds): *Natural disasters and cultural change*. Routledge, London.
- Lowe, D.J.; Newham, R.M.; McFadgen, B.G.; Higham, T.F.G. 2000: Tephra and archaeology in New Zealand. *Journal of Archaeological Science* 27: 859-870.
- Lyll, A.C. 1979: Whakatohea of Opotiki. Reed, Wellington.
- Mabon, A.D. 1961: Karearea Pa. *Historical Review* 9(2): 50-53.
- Mabon, A.D.; Pullar, W.A. 1963a: Tuanui Pa, Taneatua, Bay of Plenty. *Historical Review* 11(3): 157-161.
- Mabon, A.D.; Pullar, W.A. 1963b: Tauanui Pa, Whakatane. *New Zealand Archaeological Association Newsletter* 6(2): 103-106.
- MacKay, J. 1992: The Elms mission station conservation Area, Tauranga. New Zealand Historic Places Trust (unpublished).
- MacKay, J. 1993: Te Aroha hot springs domain conservation Area, Te Aroha, New Zealand. New Zealand Historic Places Trust (unpublished).
- Mahoney, P. 1998: The era of the bush tram in New Zealand. IPL Books.
- Mair, G. 1902: Chips from an ancient Maori workshop. *Transactions of the New Zealand Institute* 35: 240-242.
- Mandeno, W. 1975: Lloyd Mandeno OBE, 1888-1973. Privately published.
- Marshall, Y.M.; Paama, M.; Samuels, M.; Sutton, D.G.; Taikato, T. 1993a: Archaeological survey of Matakana Island, forest compartment 12 stands 1-5; compartment 14, stand 2: preliminary report. Unpublished Uniservices Report for ITT Rayonier.
- Marshall, Y.M.; Paama, M.; Samuels, M.; Sutton, D.G.; Taikato, T. 1993b: Archaeological survey of Matakana Island, forest compartment 20 stands 2, 3, 4 & 5: preliminary report. Unpublished Uniservices Report for ITT Rayonier.
- Marshall, Y.M.; Paama, M.; Samuels, M.; Sutton, D.G.; Taikato, T. 1994a: Archaeological survey of Matakana Island, forest compartment 3, stands 2-4; compartment 12, stands 1-5, compartment 14, stand 2; and compartment 20 stands 1-5 final report. Unpublished Uniservices Report for ITT Rayonier.
- Marshall, Y.M.; Paama, M.; Samuels, M.; Sutton, D.G.; Taikato, T. 1994b: Archaeological survey of Matakana Island, forest compartment 3, stands 2-4: final report. Unpublished Uniservices Report for ITT Rayonier.
- Matheson, A.H. 1979: Motiti Island, Bay of Plenty. *Whakatane and District Historical Society, Monograph No. 2*. Tauranga.
- Matheson, A.H. 1999: Bay of Plenty shipwrecks, corrections and additions. *Historical Review* 47(2): 77-81.
- McElvey, P.J. 1958: Forest history and New Zealand prehistory. *New Zealand Science Review* 16(3-4): 28-32.
- McFadgen, B.G. 1977: Location of Maori defences at Te Ranga battle site near Tauranga, determined by geophysical prospecting methods. *New Zealand Archaeological Association Newsletter* 20(4): 251-255.
- McFadgen, B.G. 1981: Report on the threat to archaeological sites in Tauranga County. New Zealand Historic Places Trust (unpublished).
- McFadgen, B.G. 1982: A summary of archaeological investigations at Athenree, Western Bay of Plenty. New Zealand Historic Places Trust (unpublished).

- McFadgen, B.G. 1985a: Late Holocene stratigraphy of coastal deposits between Auckland and Dunedin, New Zealand. *Journal of the Royal Society of New Zealand* 15(1): 27–65.
- McFadgen, B.G. 1985b: Report on the archaeological investigation of Site U14/2240 Tauranga City. New Zealand Historic Places Trust (unpublished).
- McFadgen, B.G. 2007: Hostile shores: catastrophic events in prehistoric New Zealand and their impact on Maori coastal communities. Auckland University Press, Auckland.
- McFadgen, B.G.; Sheppard, R.A. 1984: Ruahihi Pa—A prehistoric defended settlement in the south-western Bay of Plenty. *National Museum of New Zealand Bulletin* 22; *New Zealand Historic Places Trust Publication* 19.
- McFadgen, B.G.; Walton, A.J. 1981: Report of archaeological survey of Matakana and Rangiwaia Islands, Bay of Plenty. Unpublished report to New Zealand Historic Places Trust.
- McFadgen, B.G.; Walton, A.J. 1996: Report of investigation for the New Zealand Historic Places Trust into garden soils at the Johnston Trust Estate. Unpublished report by the Department of Conservation for New Zealand Historic Places Trust.
- McGlone, M.S.; Jones, K.L. 2004: The impact of Polynesian settlement on the vegetation of the coastal Bay of Plenty. Pp. 20–44 in Irwin, G.J. (Ed.) 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- McGlone, M.S.; Pullar W.A. 1976: More about the Kohika Site, Bay of Plenty. *Historical Review* 24: 110–113.
- McGovern-Wilson, R. 1995a: Archaeological investigations and monitoring for stage 4 of the development at Royal Palm Beach Estate, Papamoa. SouthernArc (unpublished).
- McGovern-Wilson, R. 1995b: Archaeological investigations at Tupatika Pa Site (W15/9), Whakatane, for New Zealand Historic Places Trust (Authority 1994/73). SouthernArc (unpublished).
- McIntosh, A. 2004: Tourist appreciation of Maori culture in New Zealand. *Tourism Management* 24(4): 1–15.
- McKercher, B.; du Cros, H. 2002: Cultural tourism. The partnership between tourism and cultural heritage management. The Haworth Hospitality Press, New York.
- McKercher, M. 2001: Attitudes to a non-viable community-owned heritage tourist attraction. *Journal of Sustainable Tourism* 9(1): 29–43.
- McKinnon, M. (Ed.) 1997: New Zealand historical atlas. David Bateman, Auckland.
- Meade, H. 1870: A ride through the disturbed districts of New Zealand. J. Murray, London.
- Melvin, L.W. 1957: Robley—soldier with a pencil. Tauranga Historical Society, Tauranga.
- Melvin, L.W. 1990: Horatio Gordon Robley soldier artist in the Bay of Plenty. Tauranga Historical Society, Tauranga.
- Ministry of Tourism 2005: The international backpacker market. Ministry of Tourism, Wellington.
- Ministry of Tourism 2007a: Domestic travel survey—commentary. Year end September 2007. Ministry of Tourism, Wellington.
- Ministry of Tourism 2007b: New Zealand tourism forecasts 2007–2013. Ministry of Tourism, Wellington. [www.tourismresearch.govt.nz/](http://www.tourismresearch.govt.nz/) (viewed 28 February 2008).
- Ministry of Tourism 2008: Tourism leading indicators monitor series 2008/1. [www.tourismresearch.govt.nz/](http://www.tourismresearch.govt.nz/) (viewed 28 February 2008).
- Mitcalfe, B. 1968: Puraku, gunfighters' pa. *New Zealand Archaeological Association Newsletter* 11(3): 126–127.
- Mitchell, J. 1984: The history and archaeology of the armed constabulary sites along the Napier-Taupo Road, 1869–1885. Unpublished M.A. research essay, University of Auckland, Auckland.
- Mitchell, S.R. 1939: Obsidian scrapers Bay of Plenty, New Zealand. *Journal of the Polynesian Society* 48(1): 56–59.

- Monin, P. 2001: This is my place, Hauraki contested 1769–1875. Bridget Williams Books, Wellington.
- Moore, K.W. 1963: The sunken Island in Lake Rotoma. *Historical Review* 11(4): 203–204.
- Moore, K.W. 1965: Maori double canoe off Whale Island 1769. *Historical Review* 13(2): 103–104.
- Moore, K.W. 1972: Salvage excavation at Port Ohope N69/87. *Historical Review* 20(1): 46–49.
- Moore, K.W. 1973: Archaeology at Whakatane, New Zealand, part 1. *Historical Review* 21: 113–122.
- Moore, K.W. 1974: Archaeology at Whakatane, New Zealand, part 2. *Historical Review* 22: 50–63.
- Moore, K.W. 1975: The Kohika site N68/104 Bay of Plenty: a preliminary report. *Historical Review* 23(1): 60–61.
- Moore, K.W. 1976: Kohika site, N68/104, Bay of Plenty. *Historical Review* 24(2): 114.
- Moore, K.W. 1991: Kawerau—its history and background. Kawerau District Council.
- Moore, P.R. 1971: Preliminary investigation of the Tahanga Basalt, Coromandel Peninsula. *New Zealand Archaeological Association Newsletter* 18(1): 32–36.
- Moore, P.R. 1977: A study of the Whakatane adze collection. *Historical Review* 25: 1–11.
- Moore, P.R. 1981: An early stone source at Maketu, Bay of Plenty. *Historical Review* 29: 19–23.
- Moore, P.R. 1987: Historic archaeological sites on Whale Island. *Historical Review* 35(1): 30–37.
- Moore, P.R. 1994: Whale Island sulphur. *Historical Review* 42(1): 32–35.
- Moore, P.R. 1997: Sinking of the treasure island reef, gold mining at Waihi Beach 1998–1910. *Historical Review* 24(2): 75–79
- Moore, P.R. 2000: Peninsula Report 00/02 Report on exercise of Authority 1998/107, U13/1110. Unpublished report.
- Moore, P.R. 2001a: Archaeological report on railway bridge piers near commodore corner, Athenree Gorge, Western Bay of Plenty. Peninsula Research report 2001-01.
- Moore, P.R. 2001b: Prehistoric exploitation of andesite at Orokawa Bay, Western Bay of Plenty. *Archaeology in New Zealand* 44(2): 102–108.
- Moore, P.R. 2004: Sources of the Kohika obsidian artefacts. Pp. 168–176 in Irwin, G.J. (Ed.) 2004: Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Moore, P.R. 2005: Cultural distribution of the Waihi obsidian. *Archaeology in New Zealand* 48(1): 70–76.
- Moore, P.R.; Coster, J. 1989: Waihi obsidian. *Archaeology in New Zealand* 32(1): 26–30.
- Moore, P.R.; Ritchie, N. 1996: Coromandel gold, a guide to the historic goldfields of the Coromandel Peninsula. Dunmore Press, Palmerton North.
- Nairn, I.A.; Self, S.; Cole, J.W.; Leonard, G.S.; Scutter, C. 2001: Distribution, stratigraphy, and history of proximal deposits from the c.AD 1305 Kaharoa eruptive episode at Tarawera volcano, New Zealand. *New Zealand Journal of Geology and Geophysics* 44: 467–484.
- Neich, R. 2001: Carved histories. Auckland University Press, Auckland.
- Neich, R. 2002: The carved gateways of Maketu: the treasures of Ngati Pikiiao carving style. *Historical Review* 50(1): 1–33.
- Nevin, D.; Nevin, G. 1978: Archaeological site survey Rotoehu S.F. 88. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1979a: Archaeological site survey Kaimai Mamaku State Forest Park N.Z. Forest Service. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1979b: Archaeological site survey Mangtu SF 108 Mata SF 124 Rotorua Conservancy. New Zealand Forest Service (unpublished).



- Nevin, D.; Nevin, G. 1979c: Archaeological site survey Patunamu SF 102 Rotorua Conservancy. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1979d: Archaeological site survey Whirinaki SF58. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1980a: Archaeological site survey Kaimai-Mamaku State Forest Park, Rotorua Conservancy. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1980b: Archaeological site survey Whirinaki SF58. New Zealand Forest Service (unpublished).
- Nevin, D.; Nevin, G. 1980c: Archaeological sites of the engagement at Te Tapiri, 1865. *New Zealand Archaeological Association Newsletter* 23(1): 7-10.
- Newman, M. 1988: Archaeological investigations in the vicinity of Lake Rotoaira and the lower Tongariro River 1966-71. *New Zealand Historical Places Trust Publication* 21.
- Newnham, R.M.; Lowe, D.J.; Wigley, G.N.A. 1998: Late Holocene palynology and palaeovegetation of tephra-bearing mires at Papamoia and Waihi Beach, Western Bay of Plenty, North Island, New Zealand. *Journal of the Royal Society of New Zealand* 25(2): 283-300.
- Nicholls, J.L. 1991: History of the vegetation. Pp. 11-14 in Clarkson, B.D.; Smale, M.C.; Ecroyd, C.E. (Comps): Botany of Rotorua. Forest Research Institute, Rotorua.
- O'Keeffe, M.P. 1991: Prehistoric settlement in the Western Bay of Plenty. Unpublished M.Litt. thesis, University of Auckland, Auckland.
- Palmer, R.L. 1994: A comparative analysis between Kauri Point Pa and Swamp Site obsidian collections. Unpublished M.A. research essay, University of Auckland, Auckland.
- Papakura, M. 1938: The old-time Maori. Victor Gollancz, London.
- Parham, W.T. 2000: Digging up a flour mill. *Historical Review* 48(1): 5-7.
- Pepa, K. 1993: Mata 1 shell analysis. Unpublished report for 03.340 field methods in archaeology field school 1993, Department of Anthropology, University of Auckland.
- Petchey, F.J. 1993a: Betwixt and between, the lithics of Matakana Island: research into their origins. Unpublished MA research assignment, University of Auckland, Auckland.
- Petchey, F.J. 1993b: Preliminary excavation report, Ureturituri, Area 1. University of Auckland Field school Matakana Island, Bay of Plenty, 1993. Department of Anthropology, University of Auckland (unpublished).
- Peters, K. 1980: Excavation report on the archaeological investigation around the niu at Kuranui. Excavation permit 1980/12 (unpublished).
- Peters, K. 1990: Conservation of a niu pole at Kuranui. In: Timber and tin. Proceedings 1st ICOMOS conference on vernacular structures. ICOMOS.
- Phillips, C.A. 1999a: Assessment of damage to Tamapahore Pa, Papamoia, Tauranga. Unpublished report for New Zealand Historic Places Trust.
- Phillips, C.A. 1999b: Stabilisation and mitigation of Tamapahore Pa, Papamoia, Tauranga. Unpublished report for New Zealand Historic Places Trust.
- Phillips, C.A. 2000: Waihou journeys, the archaeology of 400 years of Maori settlement. Auckland University Press.
- Phillips, C.A.; Allen, H. 1996a: Anitere Pa, Athenree, Bay of Plenty. *Archaeology in New Zealand* 39(4): 264-277.
- Phillips, C.A.; Allen, H. 1996b: Excavation at Anitere Pa, U13/46(N53/79) Athenree, Bay of Plenty. Unpublished report to NZ Historic Places Trust.
- Phillips, C.A.; Johns, D.; Allen, H. 2002: Why did Maori bury artefacts in the wetlands of pre-contact Aotearoa/New Zealand. *Journal of Wetland Archaeology* 2: 39-60.
- Phillips, F.L. 1989: Nga tohu a Tainui, landmarks of Tainui. Vol 1. Tohu Publishers, Otorohanga.
- Phillips, F.L. 1995: Nga tohu a Tainui, landmarks of Tainui. Vol 2. Tohu Publishers, Otorohanga.

- Phillips, K.J. 1996: The archaeology of the eastern Bay of Plenty. Unpublished MA thesis, University of Auckland, Auckland.
- Phillips, K.J. 1999a: Archaeological investigation HPT Authority 1997/101 Renouf Property proposed subdivision Burke Road Ohiwa. Unpublished report for HPT.
- Phillips, K.J. 1999b: Archaeological investigation HPT Authority 1998/114 Winch property U14/166 house site formation. Reid Road, Papamoa. Unpublished report.
- Phillips, K.J. 1999c: Preliminary report: investigation of archaeological sites carried out under conditions of HPT Authority 1998/46 and 1999/01. Unpublished report for Opus International Consultants Ltd.
- Phillips, K.J. 2000a: Archaeological survey and assessment of effects, Waihi Beach sewerage reticulation scheme. Unpublished report prepared for Opus International Consultants.
- Phillips, K.J. 2000b: Archaeological survey and heritage assessment. Rohe of Ngati Hangarau, North Bethlehem. Unpublished report.
- Phillips, W.J. 1947: The Rua Hoata shelter, Waikato River. *Journal of the Polynesian Society* 56: 336-339.
- Porteous, D. 1997: Themes in heritage tourism. Pp. 258-259 in Stokes, E.; Begg, M. (Eds): Te Hononga Ki Te Whenua, belonging to the land: people and places in the Waikato Region. New Zealand Geographical Society, Hamilton.
- Prickett, N. 2002: The archaeology of New Zealand shore whaling. Department of Conservation, Wellington.
- Pullar, W.A. 1961a: Kapu Te Rangi (Toi's Pa) (b) soil and volcanic ash investigation. *Historical Review* 9(3): 120-128.
- Pullar, W.A. 1961b: The possibilities of early Polynesian occupation at Thornton. *Historical Review* 9: 129-130.
- Pullar, W.A. 1962: Soils and agriculture of the Gisborne Plains. *Soil Bureau Bulletin* 20. DSIR, Wellington.
- Pullar, W.A. 1963: River courses and shorelines at Whakatane. *Historical Review* 11(4): 199-202.
- Pullar, W.A. 1975: Fish weir discovery, Rotorua. *Historical Review* 23(2): 98.
- Pullar, W.A. 1985: Soils and land use of Rangitaiki Plains, North Island, New Zealand. *New Zealand Soil Survey Report* 86.
- Pullar, W.A.; Hewitt, S.R.; Heine, J.C. 1978: Soils and land use of Whakatane Borough and environs, Bay of Plenty, New Zealand. *Soil Bureau Bulletin* 38. DSIR, Wellington.
- Pullar, W.A.; Kohn, B.P.; Cox, J.E. 1977: Fallout Kaharoa ash and Taupo pumice, and sea rafted Loiseles pumice, Taupo pumice, and Leigh pumice in northern and eastern parts of the North Island, New Zealand. *New Zealand Journal of Geology and Geophysics* 20: 697-717.
- Pullar, W.A.; Moore, K.W.; Scott, A.S. 1967: Field archaeology in the Bay of Plenty. *Historical Review* 15(1): 105-114.
- Pullar, W.A.; Pain, C.F.; Johns, J.P. 1967: Chronology of terraces, flood plains, fans and dunes in the lower Whakatane Valley. Pp. 175-180 in: Proceedings 5th New Zealand Geography Conference, Auckland 1967.
- Rawle, H. 1981: The green hill and the gold. Privately published, Waihi.
- Reed, A.H. 1958: Legends of Rotorua and the hot lakes. Reed, Wellington.
- Richmond, B.M.; Nelson, C.S.; Healy, T.R. 1984: Sedimentology and evolution of Ohiwa Harbour, a barrier-impounded estuarine lagoon in Bay of Plenty. *New Zealand Journal of Marine and Freshwater Research* 18: 461-478.
- Rijkse, W.C.; Cotching, W.E. 1995: Soils and land use of part Tauranga County, North Island, New Zealand. Landcare Research Technical Record. Manaaki Whenua - Landcare Research, Hamilton.

- Ritchie, N.A. 1991: Changing landscapes and human settlement: the Tarawera eruption area before and after the eruption, June 1886. *Archaeology in New Zealand* 34(1): 33-46.
- Robinson, C.H. 1961: The discovery of gold in the Kaharoa District. *Rotorua Legend* 1(2): 52-53.
- Robley, H.G. 1896: Moko or Maori tattooing. Chapman and Hall, London.
- Rout, E. 1926: Maori symbolism: being an account of the origin, migration, and culture of the New Zealand Maori as recorded in certain sacred legends. Harcourt, Brace & Co., New York, London.
- Rowe, S.; McKay, B. 1997: The Horahora power station. Privately printed, Matamata.
- Ryan, C. 2002: Equity, management, power sharing and sustainability—issues of the 'new tourism'. *Tourism Management* 23(1): 17-26.
- Ryan, C.; Cave, J. 2005: Structuring destination image: a qualitative approach. *Journal of Travel Research* 44: 143-150.
- Ryan, C.; Huyton, J. 2000: Who is interested in Aboriginal tourism in the Northern Territory, Australia? A cluster analysis. *Journal of Sustainable Tourism* 8(1): 53-88.
- Ryan, C.; Huyton, J. 2002: Tourists and aboriginal people. *Annals of Tourism Research* 29(3): 631-647.
- Schmidt, M. 1996: The commencement of pa construction in New Zealand prehistory. *Journal of the Polynesian Society* 105(4): 441-460.
- Schofield, J.C. 1962: A preliminary report on the age of rock carvings and 'cave dwellings', Ongari Point, Katikati. *Archaeological Association Newsletter* 5(1): 67-69.
- Schofield, J.C. 1964: A coastal section below the pa site at Ongare Point. *New Zealand Archaeological Association Newsletter* 7(2): 98-99.
- Schofield, J.C. 1968: Dating of recent low sea level and Maori rock carvings Ongari Point. *Earth Science Journal* 2(2): 167-174.
- Secombe, T.T. 1959: Tarawera sulphur mine. *Historical Review* 7(1): 20.
- Seelenfreund-Hirsch, A.C. 1985: The exploitation of Mayor Island obsidian in prehistoric New Zealand. Unpublished PhD thesis, University of Otago, Dunedin.
- Semadeni, C.A. 1912: Concerning certain ancient Maori stone implements found at Tauranga. *Transactions of the New Zealand Institute* 45: 385-386.
- Shawcross, F.W. 1964: Archaeological investigations at Ongari Point, Katikati, Bay of Plenty. *New Zealand Archaeological Association Newsletter* 7(2): 79-98.
- Shawcross, F.W. 1965: Report on archaeological investigations at Thornton, Whakatane, Bay of Plenty. *Historical Review* 13(3&4): 186-192.
- Shawcross, F.W. 1966: Ongari Point—second season. *New Zealand Archaeological Association Newsletter* 9(2): 53-71.
- Shawcross, F.W. 1977: Kauri Point swamp: the ethnographic interpretation of a prehistoric site. Pp. 277-305 in Sieveking, G. de G. (Ed.): Problems in economic and social archaeology. Duckworth.
- Shepherd, M.J.; McFadgen, B.G.; Betts, H.D.; Sutton, D.G. 1997: Formation, landforms, and palaeoenvironment of Matakana Island. *Science & Research Series* 102. Department of Conservation, Wellington.
- Shortland, E. 1856: Traditions and superstitions of the New Zealanders. Longman, Brown, Green, Longmans and Roberts, London.
- Shortland, E. 1882: Maori religion and mythology. Longman Green, London.
- Simmons, A. 1991: Te Wairoa, the buried village: a summary of recent research and excavations. *Australian Journal of Historical Archaeology* 9: 56-62.
- Simmons, D.R. 1971a: Anthropomorphic and zoomorphic Maori bowls from Hauraki and the Bay of Plenty. *Records of the Auckland Institute and Museum* 10: 59-64.

- Simmons, D.R. 1971b: 'Godstick' head from Katikati. *Records of the Auckland Institute and Museum* 10: 65-67.
- Simmons, D.R. 1986: Iconography of New Zealand Maori religion. Institute of Religious Iconography, State University Groningen. E.J. Brill, Leiden.
- Sissons, J. 1991: Te waimana, the spring of mana. Tuhoe history and the colonial encounter. University of Otago Press, Dunedin.
- Smith, S.P. 1953: An 1858 journey to the interior. Taranaki Herald, New Plymouth.
- Spiers, J.J.K. 1971: The Murapara rock carvings, Kaingaroa forest. *Historical Review* 19(2): 147.
- Spring-Rice, W. 1982: A dated collection of matchboxes from Fort Galatea historic reserve, Bay of Plenty. *New Zealand Archaeological Association Newsletter* 25(2): 103-112.
- Spring-Rice, W. 1983a: Excavation at Waimangeo Springs Agricultural Flat. Unpublished report.
- Spring-Rice, W. 1983b: The history and archaeology of Fort Galatea, Bay of Plenty, New Zealand, 1869-1969. Unpublished MA thesis, University of Auckland, Auckland.
- Spring-Rice, W. 1987: Interim report on excavations at Fort Clarke (N77/666), Matahina Forest, Bay of Plenty.
- Stack, J.W. 1935: Early maoriland adventures. Edited A.H. Reed, A.H. Reed, Dunedin.
- Stafford, D.M. 1961: Pre-settlement Maori and Pakeha relationships. *Rotorua Legend* 1(2): 22-27.
- Stafford, D.M. 1962: Don Stafford replies. *Rotorua Legend* 2(1): 4-20.
- Stafford, D.M. 1967: Te Arawa. Reed, Wellington.
- Stafford, D.M. 1983: Flying the thermal skies, a history of aviation in the Rotorua district. Thermalart Productions, Rotorua.
- Stafford, D.M. 1986: The founding years in Rotorua. Ray Richards and Rotorua District Council.
- Stafford, D.M. 1988: The new century in Rotorua. Ray Richards and Rotorua District Council.
- Stafford, D.M. 1994: Landmarks of Te Arawa, Volume 1: Rotorua. Reed, Auckland.
- Stafford, D.M. 1996: Landmarks of Te Arawa, Volume 2: Rotoiti, Rotoehu, Rotoma. Reed, Auckland.
- Stafford, D.M. 1999: Pakiwaitara, Te Arawa Stories of Rotorua. Reed, Auckland.
- Stafford, D.M. 2007: A wild wind from the north. Hongi Hika's 1923 invasion of Rotorua. Reed, Auckland.
- Statistics New Zealand 2007a: Quarterly review, September 2007. Statistics New Zealand, Wellington.
- Statistics New Zealand 2007b: Tourism satellite account 2003-2006. Statistics New Zealand, Wellington.
- Steedman, J.A.W. n.d.: He toto, te ahu matu a nga tupuna. Privately published.
- Stewart, A.B. 1908: My simple life in New Zealand. Robert Banks and Son, London.
- Stokes, E. 1980: A history of Tauranga County. Dunmore Press, Palmerston North.
- Stokes, E. 1997: Pai Marire and raupatu at Tauranga 1864-1867. *New Zealand Journal of History* 31: 58-84.
- Stokes, E. 2002: Wiremu Tamihana, Rangatira. Huia Press, Wellington.
- Stott, R. 1978: Kaimai, the story of the Kaimai tunnel and the east coast main trunk railway. Southern Press, Wellington.
- Tapsell, E. 1940: Historic Maketu. Rotorua Morning Post, Rotorua.
- Tapsell, E. 1972: A history of Rotorua, Privately published, Rotorua.
- Tapsell, P. 2000: Pukaki, a comet returns. Reed, Auckland.
- Tapsell, P. 2002: Papamoa pa. Pp. 272-286 in Kawharu, M. (Ed.): Whenua, managing our resources. Reed, Auckland.

- Tapsell, P. 2006: Ko taura, Maori treasures of New Zealand. David Bateman, Auckland.
- Taylor, S.G. 1969: The story of Te Puke. Privately published.
- Twohill, N. 1988: The Piako County tramway. *New Zealand Archaeological Association Newsletter 31(2)*: 122-129.
- Urlich-Cloher, D. 2003: Hongi Hika, warrior chief. Viking, Auckland.
- Vaile, E.E. 1939: Pioneering the pumice. Whitcombe and Tombs, Christchurch.
- van der Wouden, A. 1994: Whale Island, Motuohora. *Whakatane & District Historical Society Monograph No. 25*.
- van der Wouden, A. 2001: Flax industry in the Whakatane district. *Historical Review 49(2)*: 76-87.
- van der Wouden, A.; Moore, P.R. 1994: The rock quarries on Whale Island. *Historical Review 42(1)*: 36-39.
- Vennell, C.W. 1984: Brown and The Elms. The Elms Trust, Tauranga.
- Vennell, C.W.; Gordon, M.; FitzGerald, M.E.W.; McMillan, T.E.; Griffiths, G.G. 1951: Centennial history of the Matamata Plains. Matamata County Council.
- Walker, R. 2007: Opotiki-Mai-Tawhiti, capital of Whakatohea. Penguin Books, North Shore.
- Wallace, R.T. 1999: Charcoal from Matakana Island and Papamoa Dunes, Bay of Plenty, North Island, New Zealand. Unpublished research paper.
- Wallace, R.T.; Irwin, G. 1999: A Kohika wharepuni: house, construction methods of the late pre-contact Maori. *New Zealand Journal of Archaeology 21*: 67-86.
- Wallace, R.T.; Irwin, G.J. 2004: The wooden artefacts from Kohika. Pp. 83-121 in Irwin, G.J. (Ed.): Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Wallace, R.T.; Irwin, G.J.; Neich, R. 2004: Houses, pataka and woodcarving at Kohika. Pp. 122-148 in Irwin, G.J. (Ed.): Kohika. The archaeology of a late Maori lake village in the Ngati Awa rohe, Bay of Plenty, New Zealand. Auckland University Press, Auckland.
- Walls, G.; Scheele, S.; Paul, B. 1990: National flax collection. Pp.186-192 in Harris, W.; Kapoor, P. (Eds): Nga mahi Maori o te wao nui a tane, contributions to an international workshop on ethnobotany, Botany Division DSIR, Christchurch.
- Walters, M. 1979: An investigation of archaeology in New Zealand as a means of establishing views about the past. Unpublished MA thesis, University of Otago, Dunedin.
- Walters, R.A.; Goff, J. 2003: Assessing tsunami hazard along the New Zealand coast. *Science of Tsunami Hazards 21(3)*: 137-153.
- Walton, A. 1981: A storepit site (N44/574) at Kawerau. *Historical Review 29(2)*: 71-81.
- Walton, A. 1985: Megatrowels and motorscrapers: aims and methods in fast rescue excavation. *New Zealand Archaeological Association Newsletter 28(4)*: 235-242.
- Walton, A. 1998: Three Tauranga Pa, Maungatapu, Otumoetai and Motuhoa. *Fort and Works 5*: 6-7.
- Walton, A. 2006: How big are pa? *Archaeology in New Zealand 49(3)*: 174-187.
- Walton, A.; McFadgen, B.G. 1990: An archaeological survey of Motiti Island, Bay of Plenty. Department of Conservation.
- Warbrick, A. 1934: Adventures in geyserland. A.H. Reed, A.H. Reed, Dunedin.
- Wasko, J.; Phillips, M.; Meehan E.R. 2001: Dazzled by Disney? The global Disney audiences project. Leicester University Press.
- Wellman, H.W. 1962: Holocene of the North Island of New Zealand: a coastal reconnaissance. *Transactions of the Royal Society of New Zealand, Geology 1(5)*: 29-99.
- Williams, L. 1980: Kohika coprolites. Unpublished MA research essay, University of Auckland, Auckland.

- Wilson, C.J.N.; Ambraseys, N.N.; Bradley, J.; Walker, G.P.L. 1980: A new date for the Taupo eruption, New Zealand. *Nature* 288: 252-253.
- Wilson, J.A. 1906: The story of Te Waharoa, together with sketches of ancient Maori life and history. Whitcombe and Tombs, Christchurch.
- Wilson, M.G. 1962: In search of the great fleet. *Whakatane and District Historical Society Memoir No. 2*.
- Worthy, T.H. 2001: The youngest giant: discovery and significance of the remains of a giant moa (*Dinornis giganteus*) near Turangi in the central North Island. *Journal of the Royal Society of New Zealand* 32(1): 183-187.
- Worthy, T.H.; Holdaway, R.N. 2002: The lost world of the moa. Prehistoric life of New Zealand. Indiana University Press, Bloomington and Indianapolis.
- Wright, I.; Gamble, J.; Shane, P. 2003: Submarine silicic volcanism of the Healy caldera, southern Kermadec arc (SW Pacific): I—volcanology and eruption mechanisms. *Bulletin of Volcanology* 65(1): 15-29.
- Wright, I.; Garlick, R.; Mitchell, J. 2002: Seabed survey finds new volcanoes. *New Zealand Geographic* 60: 8-11.
- Yonge, J.R. 1985: New Zealand railway atlas. Quall Map Co, Exeter.

## 15. Glossary

**Admixture soils** Soils with added sand/gravel. Sometimes called plaggen soils or made soils.

**Archaic** The period of the earliest cultural manifestation of Polynesians in New Zealand. The earliest part of the prehistoric period in New Zealand.

**Battery** A place where ore was processed by hammer crushing and further grinding to enable precious metal to be extracted.

**Contact period** The period after the first European contact up until the time of colonial settlement. Generally a period from which there are some historic records and when there was some cultural change in Maori society resulting from the contact.

**Find spot** A place where an artefact has been found.

**Hangi** Maori earth oven.

**Kauri dams** Dams built in areas of kauri logging that were tripped to create a flood to drive logs downstream for processing or transport.

**Kingite** Maori supporters of the Maori King and the King movement.

**Kokowai** Red ochre used by Maori for decoration.

**Kupapa** Maori forces sympathetic to the Government.

**Manaia** A stylised figure used in Maori carving.

**Midden** Remains of discarded material dominated by food waste. For Maori sites, typically shellfish with rarer bone material; may include artefacts. For European sites, the range can be much wider.

**Pa** Maori fortification—usually an occupied site. Archaeologically, a site with earthwork and/or palisade defences.

**Pataka** Maori storehouse raised on posts.

**Pit** Excavated feature in Maori sites believed to have been used primarily for kumara storage; depression in the ground in a site that is believed to be evidence of such a pit.

**Platform** A levelled area with the ground sloping away on all sides—a term applied in field descriptions of archaeological sites. Maori and European sites.

**Prehistoric** Time before the existence of written records. The term does not exclude traditional history from being relevant to the events of this time.

**Queenite** Maori sympathetic to Queen Victoria's Government—as opposed to Kingites, who were not.

**Rua** An artificial cave dug from a vertical face, or a bell-shaped pit dug from the ground surface, both believed to have been used primarily for kumara storage. Archaeologically, a round depression in the ground that is believed to be the surface indication of such a bell-shaped pit, infilled or collapsed.

**Snigging track** A track along which trimmed logs were hauled out of the bush by horses, oxen or steam haulers.

**Tailings site** A disposal place of the waste products of mining.

**Tapu** A Maori concept—set apart, forbidden, sacred.

**Taua** Maori war party.

**Terrace** A levelled area. Maori and European sites.

**Tramway** Wood or iron light rail for man-powered, gravity, rope-hauled or locomotive-hauled trucks hauling flax, timber, ore, etc.



# Appendix 1

## SITE SURVEYS

A working paper 'Bay of Plenty archaeological resource statement, first report—site survey review' (Law 2002a) was produced as part of the preparation for this report. This working paper reviews the site records in the New Zealand Archaeological Association site recording scheme, and the published and much of the unpublished literature on the archaeology of the Bay of Plenty Conservancy of the Department of Conservation, to obtain information on the extent and quality of archaeological site recording.

The recording of historical archaeological sites has been weak in all parts of the Bay of Plenty area. Greater efforts are needed to record the archaeological features associated with the forestry, mining and transport sectors (many of which can still be readily seen on the ground), particularly in historical archaeology. Maori archaeological sites are better known, but the coverage is very uneven and variable in quality. The number of sites per map sheet varies from thousands down to none. More survey effort is particularly needed in the middle Rangitaiki valley, the Rotorua area, and south and southeast of Rotorua.

Islands in the Bay of Plenty area have generally been adequately surveyed, and although some areas still need to be completed, few surprises are likely to arise from this work. The general form of the occupation of these islands is now very clear.

The New Zealand Archaeological Association upgrade project should deal with some of the quality issues that presently exist in the record.

TABLE A1.1. SITE RECORDS BY NZMS 260 1:50 000 MAP SHEET (BAY OF PLENTY AREA ONLY; SHEETS T-W 12-19).  
Blank squares are outside the area reviewed.

	T	U	V	W
12		20		
13	516	895		
14	187	2908	181	
15	31	635	1264	723
16	54	139	287	255
17		4	77	
18		0	92	
19			5	

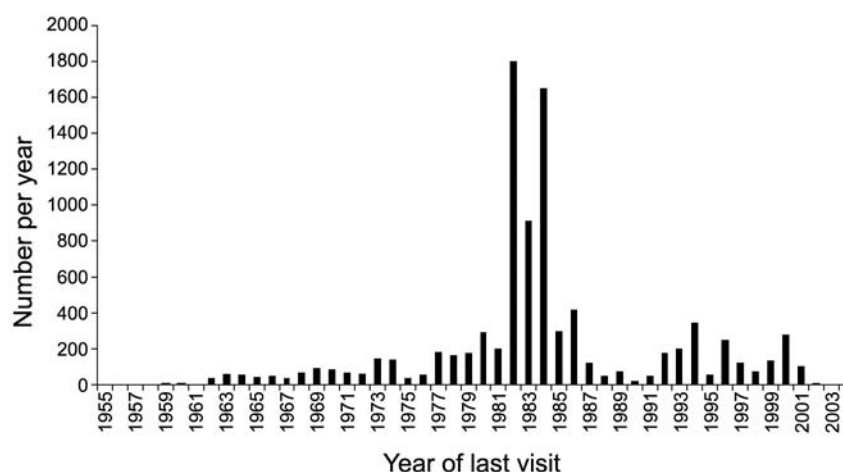
Table A1.1 gives the numbers of sites recorded as at March 2002 by NZMS 260 1:50 000 map sheet.

It was not possible to provide a detailed representation of the areas surveyed, as few of the more formal surveys had recorded adequate information on the total land area covered by the survey.

Figure A1.1 shows the year of the last recorded visit to a site in the Bay of Plenty area, as entered in the New Zealand Archaeological Association site recording scheme at the beginning of 2002. From

this, it is clear that the recording of sites in the Bay of Plenty area was dominated by a period of intense activity in the early 1980s, when the New Zealand Historic Places Trust funded surveys in the Tauranga, Te Puke and Whakatane areas. Some of the recording effort, including the initial records on the files, arose from purely research interest. However, the upsurge

Figure A1.1. Dates of the year of last visit of the sites in the New Zealand Archaeological Association Site Recording Scheme—equivalent in most cases to the date of recording.



in records that followed was motivated by Bruce McFadgen's observation that horticultural development in the western Bay of Plenty was starting to overwhelm a landscape that had many unrecorded sites (McFadgen 1981). A similar threat was recognised in areas of hill country that were undergoing private afforestation, not controlled by the New Zealand Forest Service. These threats led to a programme that involved Historic Places Trust archaeologists and many temporary workers in a survey of Tauranga County. Motiti Island, the Whakatane and Waimana River valleys, and the Ohiwa hinterland were also surveyed, but this work was motivated (in part) by research interest, as the threats here were less (Jones 1984a, 1986; Walton & McFadgen 1990). The bulk of the file records arrived during this period.

Broadly in parallel with the Historic Places Trust initiatives, the New Zealand Forest Service became aware of the number of archaeological sites in state forests and used their own and contracted archaeologists to survey areas that were about to be prepared for planting or harvested in the case of existing forests (e.g. Nevin & Nevin 1978; 1979a-d; 1980a, b). In the early 1980s, the Maruka project contributed a concentrated cluster of sites in the Kawerau area (see Lawlor 1981, 1983b; Furey 1983)). Since that time, major archaeological survey projects that have blended protection or recovery aims with research have been carried out at Matakana (Marshall et al. 1993a, b; 1994a, b) and Papamoa (Fredricksen et al. 1996). Both projects contributed a large number of new sites to the records. In addition, parts of the public estate have been reviewed for their archaeological content, and reports have been produced that give overviews of these and a more detailed area by area outline (e.g. Anon 1999; Grouden 1993a, b).

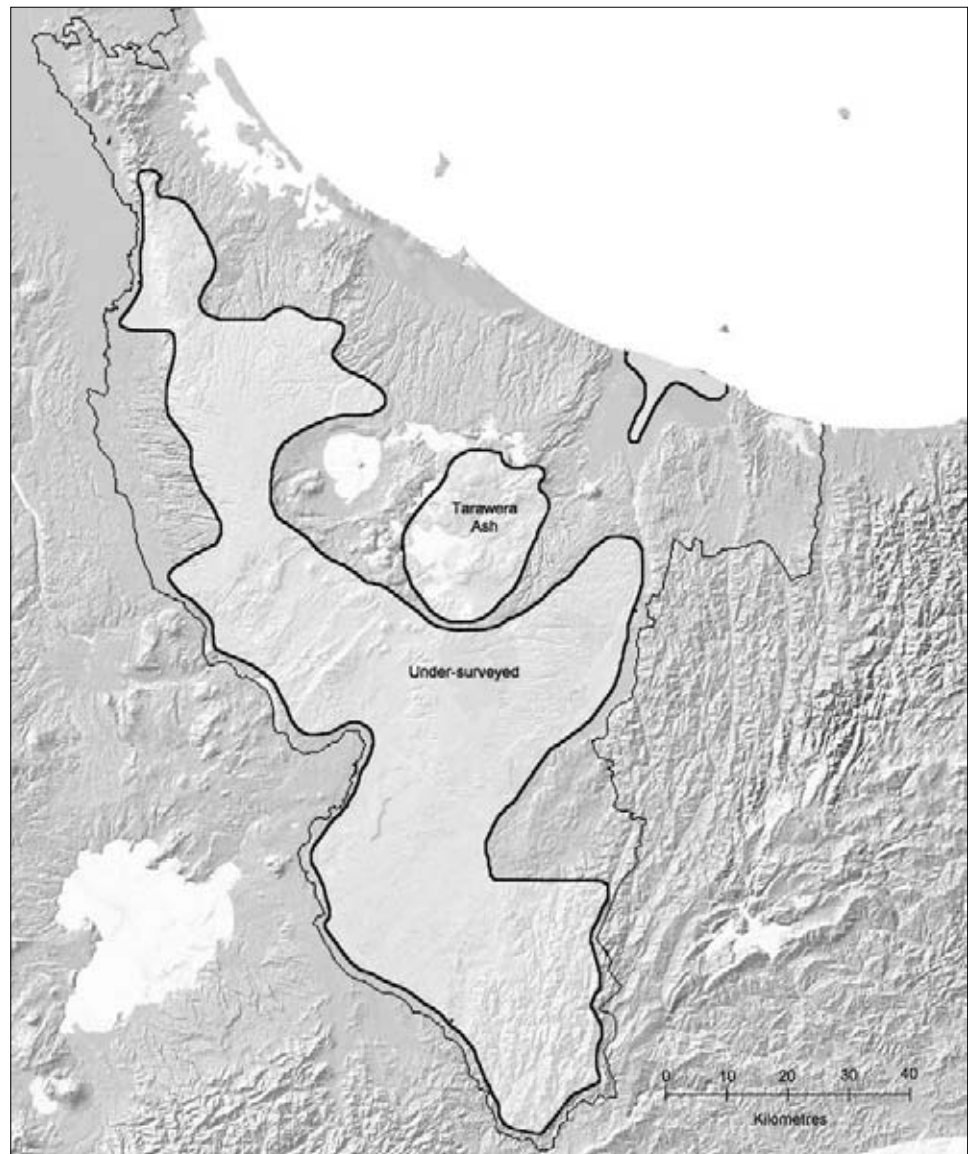
In the 1990s, there have been a lot of relatively small-scale archaeological survey projects carried out by consulting archaeologists dealing with development threats from urban development, energy projects, roading improvements and forestry. A steady flow of updated and new records has resulted from this work.

The project bibliography includes many reports generated from survey work. The working paper contains a map sheet by map sheet review of surveys. In general, the offshore island areas are well covered compared with some of the land areas.

The priority areas for new surveys should be the southern part of the Bay of Plenty area, excluding only Whirinaki. Historical archaeological evidence is poorly represented and is generally a priority, irrespective of location. The Mamaku area should have much from the native timber logging period, though little of this will yet be over 100 years old. Areas with deeper covers of Tarawera ash will not yield sites to conventional surveys. The offshore islands have received a disproportionate amount of attention and thus have low priority compared with other areas. Coverage of Matakana Island is very patchy, with high numbers of sites being recorded in forestry blocks that have been surveyed. Adjacent unsurveyed blocks have very few records but are likely to have just as many sites as the surveyed blocks. The Rangitaiki Plain must have more sites than have been recorded, particularly along the coastal strip where localised investigations have demonstrated that sites are common.

Figure A1.2 shows the areas of the Bay of Plenty area that are under-surveyed. These areas are not small. At a total area of approximately 4670 km<sup>2</sup>, they constitute an area greater than the Chatham Islands and Stewart Island combined.

Figure A1.2. Distribution of all recorded sites in the Bay of Plenty region. The Tarawera ash patch inhibits site discovery, and the low frequency of sites along the Rangitaiki Plain coast appears to reflect low survey intensity. Inland areas lack many recorded sites. Although it is likely that this area was used less by Maori, more sites (both Maori and non-Maori) should be discovered with more surveying.



# Appendix 2

## RECORDED ARCHAEOLOGICAL EXCAVATIONS

In addition to the working paper mentioned in Appendix 1, a second working paper ‘Bay of Plenty archaeological resource statement, second report—excavated sites’ (Law 2002b) was produced for this review. The information in Table A2.1 has been drawn from this report. Sites where the New Zealand Historic Places Trust had issued authorities under its legislation for research excavations, or placed a condition on an authority for the destruction of a site stating that an investigation was required, but no report had been received at the time of the review for this study (mid-2002) have been excluded from this table. Details of those can be found in Law (2002b), as can authority numbers in many cases. The old-style NZMS1 map numbers are given where relevant, as the older excavated sites have information recorded only under those numbers.

There is a total of 131 sites listed in Table A2.1. They vary enormously in extent from major multi-season research efforts on a single site that resulted in many hours of processing of samples collected, to mitigation excavations carried out prior to or during destructive earthworks with as little as 1 day’s fieldwork by one person and no subsequent analysis. The distribution of the excavated sites is predominantly coastal, as is the distribution of recorded sites. The Rotorua area has fewer excavated sites than would be expected based on known sites. The excavated sites are shown in Fig. A2.1.

TABLE A2.1. EXCAVATED SITES TO 2002.

MAP	NZAA NUMBER		NAME/LOCATION (AUTHORITY NO.)	TYPE	EXCAVATION	REFERENCES
	METRIC	IMPERIAL				
T14/	56	N57/73	West Kaimai	Pits		Coster & Johnston 1980
T14/	58	N57/75	West Kaimai	Pits		Coster & Johnston 1980
T15/	193		Kuranui			Peters 1980, 1990
U13/	4	N53-54/5	Kauri Point	Pa	1960, 1961, 1962, 1963, 1967	Ambrose n.d., 1962; Golson 1961c
U13/	4	N53-54/5	Kauri Point Swamp	Depository		Shawcross 1977
U13/	8	N53-54/10	Ongare	Pa	1963, 1964, 1965	Shawcross 1964, 1966
U13/	10		Ongare Rock Carvings			Schofield 1962
U13/	45	N53-54/6	Kauri Point undefended site	Pits	1963	Green 1963b, 1964
U13/	46	N53/79	Anatere	Pa	1980, 1995, 1996	Phillips & Allen 1996a, b
U13/	47	N53/80	Athenree	Pa	1980s	Unpublished excavation of a pa by McFadgen and Walton (DOC).
U13/	50	N53/83	Roretana Block, Athenree	Pa, middens, garden soil	1978	O’Keefe 1991
U13/	974		Te Kauri Village	Midden		Grouden 1991
U13/	977		Te Kauri Village	Midden		Grouden 1991
U13/	978		Te Kauri Village	Pits		Grouden 1991
U13/	1110		169 Athenree Road, Athenree	Midden; Maori occupation area		Moore 2000

*Continued on next page*

Table A2.1—continued

MAP	NZAA NUMBER		NAME/LOCATION (AUTHORITY NO.)	TYPE	EXCAVATION	REFERENCES
	METRIC	IMPERIAL				
U14/	-		115 Fourth Ave, Tauranga	Midden		Bowers & Phillips 1997e
U14/	18		Kaimai	Rua		Coster 1977
U14/	38	N67/72	Ruahihi	Pa	1978	McFadgen & Sheppard 1984
U14/	44	N53/77	Koutunui	Pa	1980	McFadgen 1982; O'Keefe 1991
U14/	166		Reid Road, Papamoa	Pa		K.J. Phillips 1999b
U14/	187		Ureturituri Pa, Matakana Island	Pa	1993	Petchey 1993b
U14/	209		Tamapahore Pa, Papamoa	Pa	1999	C.A. Phillips 1999a, b
U14/	243		Papamoa	Pa	1985	Anon. 1985; O'Keefe 1991
U14/	519		26/28 Sixth Avenue, Tauranga	Historic: midden; house		Bowers & Phillips 1997b
U14/	526		Pacific Cove, Domain Road, Papamoa	Midden		Hooker 1998c
U14/	534		Papamoa, Trench B	Soil		Gumbley 1997
U14/	539		Grant Place storm water pipeline, Papamoa	Midden		Kahotea 1993
U14/	677		Wairoa Valley, western Bay of Plenty	Occupation area; midden		Bowers 1996
U14/	1675		Papamoa, Reid Rd.	Pit and terrace		Bowers & Phillips 1998
U14/	1710		Te Hana, Mt View subdivision, Papamoa (1998-71)	Midden		Hooker 1999a
U14/	1711		Parewaitai Estates Ltd, Papamoa	Midden		Hooker 1998d, 1999b
U14/	1712		Parewaitai Estates Ltd, Papamoa	Midden		Hooker 1998d, e
U14/	1713		Parewaitai Estates Ltd, Papamoa	Midden		Hooker 1998d, 1999b
U14/	1717		Papamoa, Royal Palm Beach	Midden		McGovern-Wilson 1995a
U14/	1720		Papamoa, Royal Palm Beach	Midden		McGovern-Wilson 1995a
U14/	1721		Summerlands Estate, Papamoa	Midden		Hooker 1998b
U14/	1722		Papamoa, Trench D	Soil		Gumbley 1997
U14/	2027		Waterview Estates, Waikite Rd, Welcome Bay, Tauranga	Terrace		
U14/	2031		Welcome Bay Subdivision, Tauranga			Hooker 1999c
U14/	2032		Welcome Bay Subdivision, Tauranga	Terrace; midden		Hooker 2000a
U14/	2035		Welcome Bay Subdivision, Tauranga			Hooker 1999c, 2000a
U14/	2037		Welcome Bay Subdivision, Tauranga	Pits		Hooker 1999c, 2000a
U14/	2240		Judea, Tauranga	Pa	1985, 1992	McFadgen 1985b; Kahotea 1992
U14/	2246		1132 Ohauti Rd, Welcome Bay, Tauranga	Terrace		Hooker 1998f
U14/	2482		Tauranga	Settlement		Walton 1985
U14/	2788		Angus developments, Papamoa	Midden		Kahotea 1993
U14/	2789, 2790, 2791, 2792, 2793		Angus developments, Papamoa	Midden		Hooker 1995
U14/	2796, 2813, 2814		Papamoa, Royal Palm Beach			McGovern-Wilson 1995a
U14/	2833		Summerlands Estate, Papamoa	Midden		Hooker 1998b

Continued on next page

Table A2.1—continued

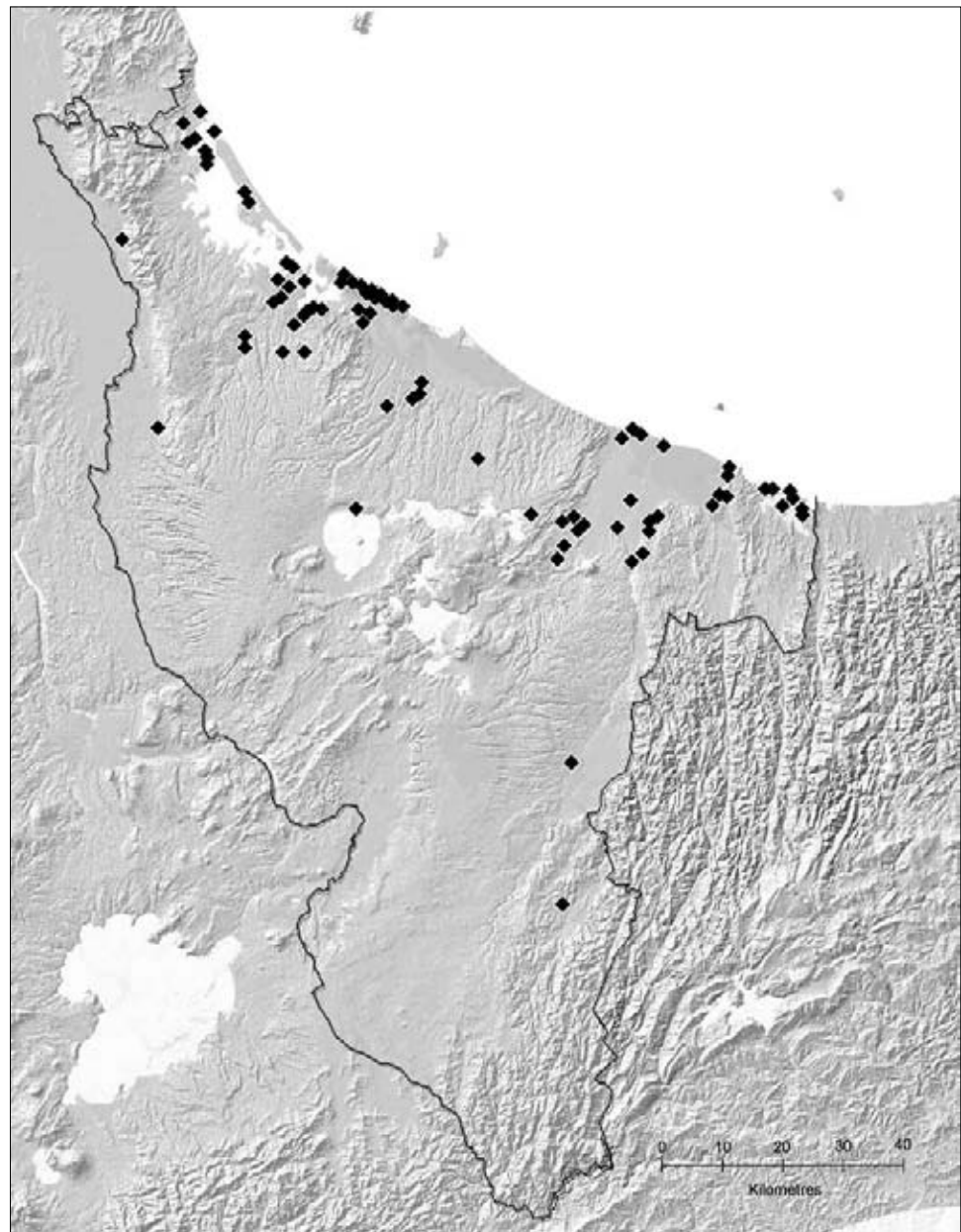
MAP	NZAA NUMBER		NAME/LOCATION (AUTHORITY NO.)	TYPE	EXCAVATION	REFERENCES
	METRIC	IMPERIAL				
U14/	2841		Papamoa, Johnson Trust	Midden		Fredricksen et al. 1995
U14/	2844		Papamoa Longview		1995	McFadgen & Walton 1996
U14/	2846		Papamoa	Midden		Hooker 1998a
U14/	2847		Papamoa	Midden		Hooker 1998a
U14/	2860		Papamoa, trench C	Soil		Gumbley 1997
U14/	2884, 2885, 2886		Papamoa	Midden	1997-78	
U14/	2887		Summerlands Estate, Papamoa	Midden		Hooker 1998b
U14/	2893		Parewaitai Estates Ltd, Papamoa	Midden		Hooker 1998d, 1999b
U14/	2894		Parewaitai Estates Ltd, Papamoa	Midden		Hooker 1999b
U14/	2895, 2896		Te Hana, Mt View subdivision, Papamoa (1998-71)	Midden		Hooker 1999a
U14/	2897, 2898		Papamoa (9900-066)	Midden		Hooker 2001
U14/	3060		North Bethlehem, Tauranga	Midden		Phillips 2000b
U14/	528, 529, 530, 531, 532, 1043, 1069		Kopurererua Valley, Tauranga	European settlement area		K.J. Phillips 1999c
U14/	2719, 2720, 2729, 2730		State Highway 2 project from Waihi Road to Cameron Road			K.J. Phillips 1999c
U15/	35		Tupakaria site, Rotorua.	Pa		Kahotea 1988
U15/	145		Pakotore (Matapara)	Pa	1959	Golson 1959, 1960; Golson & Stafford 1959
U15/	642		Maungarangi Rd, Paengaroa	Pit		Hooker 2000b
U16/			Te Wairoa		1990	Simmons 1991
V15/	80	N68/104	Kohika	Pa	1975	Irwin 1975, 2004; Moore 1975, 1976; McGlone & Pullar 1976; Boileau 1978; Lawlor 1975
V15/	560	N77/666	Fort Clarke, Matahina Forest	Redoubt		Spring-Rice 1987
V15/	495, 498, 491-494		Omataroa	Pa; pit; terrace		Bowers & Phillips 1997c, d
V15/	1209		Robbie's Midden, Tarawera River	Midden		C14 Database
V15/	418, 488, 489, 496, 497		Omataroa Forest	Midden, ovens		Bowers & Phillips 1997c, d
V16/			Waimangeo Springs, Agricultural Flat			Spring-Rice 1983a
V16/	32, 76		Omataroa Forest	Pa, terrace; midden		Bowers & Phillips 1997d
V16/	199	N77/574	Kawerau store pit site	Pit	1980	Walton 1981
V16/	211, 219, 220		Maruka	Undefended		Furey 1983; Lawlor 1983b
V16/	238	N77/606	Long Valley, Kawerau	Undefended		Furey 1981
V16/	243		Maruka	Undefended		Furey 1983; Lawlor 1983b
V17/	7	N86/5	Karamuramu	Redoubt	1980-81	Spring-Rice 1983b
V17/	8	N86/7	Fort Galatea	Redoubt	1971	Spring-Rice 1983b
V18/	16	N95/32	Whirinaki	Pit		Jones 1984b
V19/	34	N104/8	Runanga	Stockade, historic	1983	Mitchell 1984
W15/			Ohope, Te Horo Drive			Bowers & Phillips 1997a
W15/			Irirangi	Pa	1966	Pullar, Moore et al. 1967

Continued on next page

Table A2.1—continued

MAP	NZAA NUMBER		NAME/LOCATION (AUTHORITY NO.)	TYPE	EXCAVATION	REFERENCES
	METRIC	IMPERIAL				
W15/	1	N69/1	Karearea	Pa	1961	Mabon 1961
W15/	9		Tupatika Pa site, Whakatane	Pa		McGovern-Wilson 1995b
W15/	33, 35		Tauwhare	Pa	1990	Bowers & Jones 1991
W15/	82	N69/87	Port Ohope	Midden		Moore 1972
W15/	121		Thornton			Shawcross 1965
W15/	123	N78/1	Tauanui	Pa	1963	Mabon & Pullar 1963a, b
W15/	580, 581		Ohiwa	Occupation		Phillips 1996
W15/	582		Tokitoki Ohiwa	Occupation		Phillips 1996
W15/	341, 342, 467, 473, 474, 475		Ohiwa Harbour	Pa, midden		K.J. Phillips 1999

Figure A2.1. Distribution of excavated sites in the Bay of Plenty region.



# Appendix 3

## RADIOCARBON DATES

A considerable number of radiocarbon dates have been obtained from samples from the Bay of Plenty region. Table A3.1 presents C14 dates that are available in the literature but not listed in the New Zealand Radiocarbon Database. Table A3.2 provides dates listed in the New Zealand Radiocarbon Database. Most samples are from archaeological contexts, but some are from other relevant contexts within the human occupation period. Figure A3.1 shows a map of the dated sites.

The site names are those presented in the sources, which are not a reliable source for traditional Maori names. The frequent identification of the surf clam *Paphies subtriangulata* in the list is suspect, as surf clams are not easily identified to species (of which there are more than one)—although this concern has no known consequence in using the dates. Older dated samples may be of charcoal that has not been identified to species. These are of limited use because of the unknown age of the wood at the time it was burned. More recent charcoal dates that have been identified to species have usually been screened for old wood.

TABLE A3.1. CARBON 14 AGES GIVEN IN THE LITERATURE THAT ARE NOT INCLUDED IN THE NEW ZEALAND RADIOCARBON DATABASE.

LAB NO.	REPORTED AGE ± ERROR (YEARS)	MATERIAL	SITE NUMBER	SITE NAME	CONTEXT
Wk4375*	890 ± 50	Shell pipi ( <i>Paphies</i> sp.)	W15/188	Gateway Midden	Bottom of layer 2.
Wk5480	†	Tuatua ( <i>Paphies</i> sp.)	W15/584	Te Horo Drive, Ohope	South baulk of east-west trench.
Wk5481	‡	Tuatua ( <i>Paphies</i> sp.)	W15/584	Te Horo Drive, Ohope	Eastern baulk of north-south trench.
Wk6571*	720 ± 50	Tuatua ( <i>Paphies</i> sp.)	U14/526	Pacific Grove Subdivision	
Wk6828*	580 ± 40	Shell	U14/1712	Papamoa	Area B/1.
Wk6829	640 ± 40	Shell	U14/1710	Papamoa	Strip 1.
Wk6830*	700 ± 40	Shell	U14/2894	Papamoa	Area 6.
Wk6831	610 ± 40	Shell	U14/2985	Papamoa	Area A1.
Wk7312(1)	570 ± 45	Shell: oyster ( <i>Ostrea</i> sp.)	U14/209	Tamapahore	From a pit in the lower layer on terrace B. Midden in pit fill, 0.5–0.8 m depth.
Wk7312(2)	550 ± 40	Shell: oyster ( <i>Ostrea</i> sp.)	U14.209	Tamapahore	This is a further date on a part of the same sample as above.
Wk7312(3)	590 ± 40	Shell: oyster ( <i>Ostrea</i> sp.)	U14.209	Tamapahore	This is a further date on a part of the same sample as above.
Wk9031*	620 ± 50	Cockleshell ( <i>Austrovenus stutchburyi</i> )	U14/2032	Grandview Estate Welcome Bay	-

\* It is not clear whether these dates have had a marine reservoir correction applied to them.

† This has not been conventionally reported but is given by Phillips (1997) as being AD 1439–1566 (95 percentile data range).

‡ This has not been conventionally reported but is given by Phillips (1997) as being AD 1402–1501 (95 percentile data range).