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ARCHAEOLOGICAL INVESTIGATIONS AT WAIRAU BAR

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Introduction

In April 2009 the remains of 41 individuals were repatriated to Wairau Bar. These remains had been removed from the site during a series of excavations by Canterbury Museum between 1942 and 1959. Te Runanga a Rangitane o Wairau (Rangitane) have kaitiakitanga status at Wairau Bar and have for decades maintained a strong interest in the site and their relationship with it as a descendant community. The repatriation project followed several years of negotiation between Rangitane and the Canterbury Museum, which had held the majority of the remains since their excavation. The University of Otago was invited by Rangitane to assist with the identification of appropriate reburial sites and to carry out new archaeological research. This research programme was a requirement of the New Zealand Historic Places Trust (NZHPT) because of the significance of the site and the potential of the reburial process to disturb intact archaeological deposits.

The Wairau Bar site (P28/21) is located at the northern end of the long boulder bank that encloses the Vernon Lagoons in Marlborough on the southern side of the Opawa River (Figure 1).

History of Archaeological Work

The site first came to the attention of the scientific community in 1939 when school boy Jim Eyles, who lived on the Bar, reported some collections of archaeological material that he had recovered from the site to staff of the Dominion Museum in Wellington (Eyles 2007). In 1942 the Canterbury Museum

became involved under the direction of Roger Duff. Recognising the potential significance of the early finds Duff worked with Eyles over a number of field seasons to expand the excavation programme and bring it under a professional umbrella. Canterbury Museum teams working on the site between the 1940s and the early 1960s recovered large collections of stone and bone artefacts, and also excavated a series of human burials, some of which contained elaborate grave goods including ornate personal ornaments and whole moa egg shells. Eyles also undertook his own excavations between the Museum projects. The Canterbury Museum excavations at Wairau Bar resulted in the 1950 publication of Roger Duff's book – *The Moa Hunter Period of Maori Culture* – which is a seminal text in New Zealand science and which set the foundation for the modern interpretation of New Zealand archaeology.

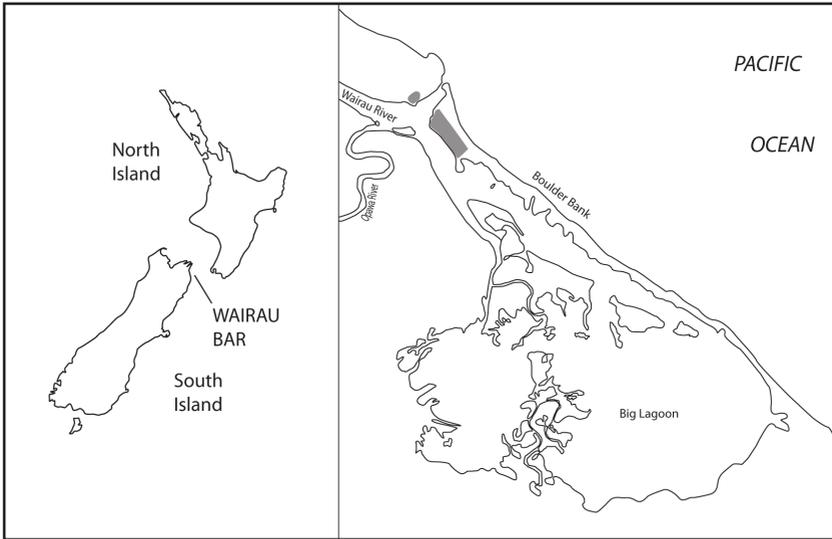


Figure 1. Location of Wairau Bar. Shaded area marks the possible extent of the archaeological site.

The late 1950s saw a shift in focus away from burials and artefacts to a search for structures and patterning in the distribution of features, primarily at the instigation of Dr Robert Bell, a visiting Fulbright Scholar from the University of Oklahoma. Under his guidance a more rigorous field methodology was adopted but the excavation was not able to provide conclusive evidence for structures. At this time Dr Harold Wellman from Victoria University in Wellington also excavated two trenches from the lagoon to establish a deposi-

tion sequence for the site. In 1964 Owen Wilkes led a team from the Canterbury Museum Archaeological Society whose primary goal was to understand the stratigraphy of the site. To this end he excavated a 30 m trench from the lagoon edge and a series of eight 2.4 m squares adjacent to Burials 1-7. These excavations did not reveal the exact relationship between the burials and the occupation evidence identified by Wilkes as intended. Unfortunately the results of the Wilkes's excavation have never been published but he made excellent records that identified post holes, ovens, midden deposits and artefact caches (Wilkes n.d.).

Aims

The primary aim of our work was to select and investigate areas for reburial. At the same time the research design agreed with Rangitane and NZHPT provided for not simply putting material back in the ground but to ensure that the work was done in both an economical and research-focused manner. The research aims of the project included trying to understand the stratigraphic variation across the site and to determine to what extent the site had been damaged or destroyed by ploughing, to obtain a well-provenanced midden sample and to identify possible structures such as houses. The research framework also provided for the contextualisation of previous excavations at Wairau Bar in order to obtain a better understanding of the history of work at the site than is currently available.

Methods

The archaeological work was carried out in two phases. The first phase took place in November 2008 and involved a survey of the Wairau Bar site and the creation of a site plan with an electronic total station (Leica 1200 series). A geophysical survey was carried out by Hans-Dieter Bader using a fluxgate gradiometer. A moving string line was set up in alignment with the site grid which allowed the Ferex 4.032 Fluxgate Gradiometer to be run over the site in parallel strips at 1 metre intervals. The machine was set to take a point reading every 0.5 m following its calibration to a local magnetic zero based on the general strength of the earth's magnetic field at Wairau Bar. The resulting data was normalised to eliminate any error from carrying the recording instrument over uneven ground during the survey and the final data was presented in the form of a greyscale map (± 25 nT). Four 1 x 1 m test pits were then excavated to test various anomalies indicated by the fluxgate gradiometer results.

All test pit excavations showed evidence of the ploughing activities that have taken place on the site several times since the 1920s. In general, there is a plough zone of approximately 200 mm within which the midden shell is

highly fragmented and cultural material is well mixed. In much of the site, however, there is intact cultural deposit below the plough zone. The test pits also demonstrated that there is some variability across the site in the natural soil horizons. In some places the cultural material lies on gritty sand, in other places on pea gravel. Most importantly for the purposes of the repatriation project the test pitting provided us the confidence that the geophysical survey method would allow us to identify areas close to the location of the original burials that would not disturb further burials.

The initial investigation was followed by a three week archaeological excavation in January 2009. During this excavation the areas identified for reburial were excavated and three areas were investigated for research purposes. All excavation was carried out by hand and a record was made of all archaeological features using digital photography and drawings and plans were made of all excavation units. A GIS (*ESRI ArcMap*) was developed to store all spatial information including the location of all artefacts identified *in situ*.

Further geophysical survey was also carried out in January in an attempt to define the extent of the site. Eleven hectares have now been surveyed with the fluxgate gradiometer. The site topography consists of several low beach ridges with various humps and hollows. In order to better understand this topography a digital elevation model of the site was created by attaching the total station prism to a quad-bike which was driven back and forwards across the site at 2 m intervals. Height measurements were taken at 10 cm intervals.

Excavation

A plan showing the location of the excavation units is shown in Figure 2.

Area 1

This area was selected for excavation because it was located close to the place where Burials 1 – 7 had been found. It appeared in the magnetometer survey as an area that was likely to contain features associated with cooking and other activities, but one that was unlikely to contain further burials. Burials 1 – 7 probably came from approximately 10 m northeast of the excavation.

Area 1 measured 5 x 5 m and proved to be the site of a range of manufacturing activities and perhaps of a small structure. A plan of features is shown in Figure 3. Particularly interesting in this area is a dense concentration of several thousand pieces of argillite debitage as well as several adze roughouts and adze fragments. Also present were over a dozen obsidian and chert flake tools and a small adze (basalt possibly from Mt Tahanga on the Coromandel Peninsula) at the base of a post hole. The manufacturing residue was closely associated

with a tightly packed layer of cobbles. Small fire features were located in this area and over 200 drilled porpoise teeth and a single moa bone necklace reel were recovered from the edge of one of these.

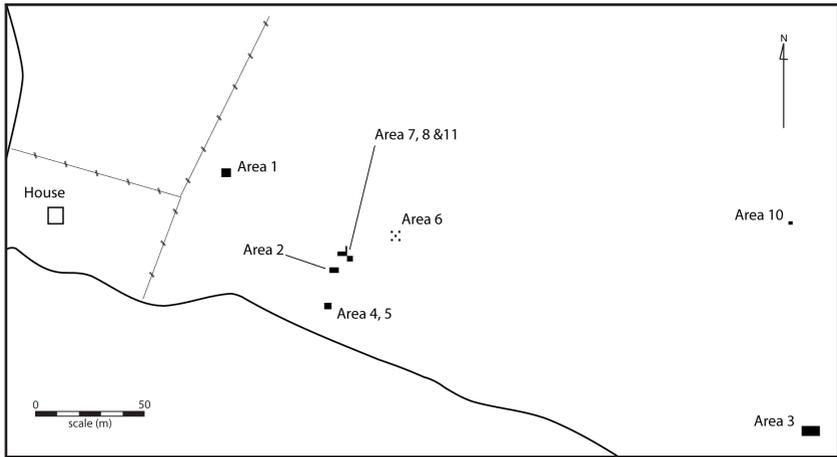


Figure 2. Location of excavation units.

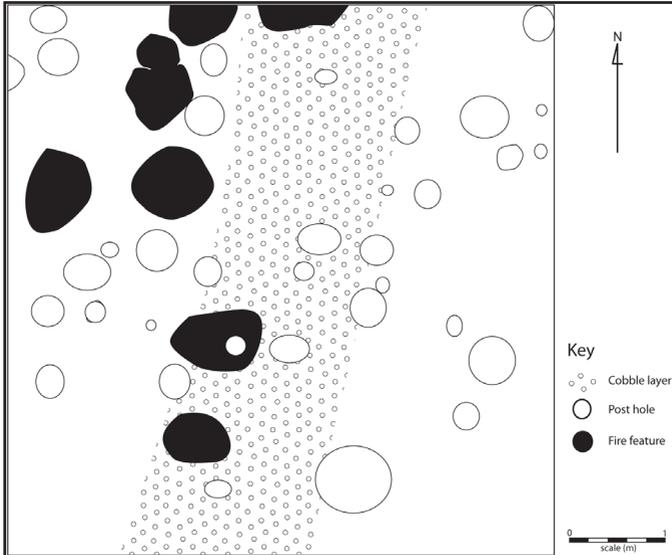


Figure 3. Features identified in Area 1.

Following the excavation Area 1 was backfilled by hand except for an area measuring 2 x 1 m which was boxed out in the centre of the excavation unit for the reinterment of Burials 1 – 7.

Area 2

The Area 2 excavation was located on the western end of a low ridge that ran through the site. As far as we were able to ascertain from the Canterbury Museum publications and records, a second group of burials (8-11) was removed from somewhere within about 10 m of the area identified for excavation. A 2 x 5 m excavation unit was opened in this area. This excavation unit contained a number of post holes that might represent a wall line of a small structure. A small, dense patch of argillite flakes and a roughout adze were also found here resting directly on an area of dense cobbling. The pattern here was similar to that of Area 1 where evidence of a dwelling and stone working area was found in close proximity. Following the excavation Area 2 was backfilled by hand except for an area measuring 2 x 1 m which was boxed out in the centre of the excavation unit for the reinterment of the second group of burials.

Area 3

Area 3 was selected for the reinterment of the third group of burials close to the location of their original site. The geophysical survey suggested that this was an archaeologically sterile area and no archaeological material of any sort was encountered during extensive test pitting. An area measuring 2 x 3 m was boxed out in the centre of this area for the reinterment of the third group of burials.

Areas 4 & 5

Areas 4 and 5 were selected for excavation solely because the magnetometer survey showed a large, circular feature here that we believed would provide insight into site function. Test pit excavations associated with the initial test pitting had identified this area as containing a high density of midden and oven stones. This anomaly was one of a cluster of 5-6 large anomalies that were identified from the geophysical survey.

This excavation unit contained a large stone-lined oven pit (Figure 4). About a third of the pit was excavated. It is clearly intended for cooking, as a concentration of large oven stones was found near its base and fire-cracked rock was scattered through the predominantly midden-based matrix of the fill. This is a much larger structure than would be used by a family unit and attests to some form of communal cooking activity. The pit fill contained a very high

concentration of shell and bone and this material will form one of the most important collections for the faunal analysis. The midden includes moa, sea lion (*Phocarctos hookeri*), fur seal (*Arctocephalus forsteri*), elephant seal (*Mirounga leonine*), dog (*Canis familiaris*) and several species of bird including extinct birds such as Haast's eagle (*Harpagornis moorei*). Several artefacts were also recovered from the pit including broken blades, drill points, dentalium necklace units and perforated shell.



Figure 4. Large stone-lined oven feature in Areas 4 and 5 (vertical scale = 50 cm).

Area 6

Area 6 was targeted for excavation in order to follow up the results of the test pit excavations. In this area the test pit had revealed a dense matrix of dark soils, crushed shell and oven stones. In order to further explore this deposit five 1 x 1 m test pits were excavated within a 5 x 5 m grid. The test pits revealed this to be an area of concentrated ovens and probable post holes that had been dug into a sandy soil matrix. The crushed shell and low density of bone suggests that this was a cooking area. The actual cooking features are

small (Figure 5) and are probably domestic cooking features in contrast to the large, communal feature in Area 4-5. The post holes are relatively large, however, which suggest the presence of substantial structures in this position at some stage in the occupation.



Figure 5. Small oven feature from Area 6 (scale = 50 cm).

Areas 7, 8, and 11

This grouped area was selected for excavation because it lay on a flattened area of ground very close to Area 2 and because the fluxgate gradiometer survey results indicated two or three small hearth-sized anomalies. The flattened area appeared to be a low terrace that we considered likely to contain remains of a house floor. Initially four small areas were excavated but these were eventually enlarged into a single area of 22 m². This area contained a number of large postholes and, in localised areas, a compacted gravel that may indicate a house floor. The presence of an ashy fire feature (Figure 6) may also support our current interpretation that this could be a house structure. Several artefacts were recovered from this area including bird bone reels, fish hook fragments, an adze and several dentalium necklace reel units.



Figure 6. Ashy fire feature in Area 7 (vertical scale = 50 cm).

Area 10

This area was selected to ground test the results of the geophysical survey beyond the boundaries of the ploughed paddocks approximately 500 m east of the main excavation. A 2 x 2 m unit was excavated over a feature that appeared to be an oven in the geophysics. This proved to be a large, oven as expected, with several moa neck vertebrae in position of articulation near the surface.

Summary of fieldwork

A total of just less than 80 m² was excavated in the 2009 field season and approximately 2 m³ of bulk material (mainly unsieved bulk midden) was recovered from the site. This material is currently in the Otago Archaeology laboratories at the University of Otago undergoing further analysis. This material will contribute hitherto unknown information about early diet and hunting strategies.

These excavations at Wairau Bar have confirmed that the site is considerably more complex than simply a burial site. There was clearly a range of activities taking place across a wide area that suggests a large village where

people were manufacturing tools and carrying out other day to day activities including exploiting the resource-rich local environment.

Several particularly significant findings have been made through the geophysical survey and excavations. Firstly, the site appears to be considerably larger than previously thought. Our data suggests that the site covers an area of at least 11 ha although further survey work is required to define its southern boundary. The presence of artefacts in private collections from the north bank of the Wairau River which are identical to those from the site suggest that it may have once extended further to the north as well. Secondly, the site is more intact than previously assumed. Certainly ploughing has affected the top zone of part of the site but it remains intact below the plough-zone, which is approximately 200 mm thick. Additionally, there are parts of the site that have never been ploughed. We estimate that at least 50% of the site may remain intact. The stratigraphy is not vertically complex but demonstrates enormous variability horizontally which is to be expected with a large village-type site. Thirdly, the fine-grained spatial excavations have allowed the collecting of previously unavailable data, namely working floors, house structures and artefacts in contexts other than burials. Finally, we have obtained well-provenanced column samples of midden to enable the first detailed analysis of fauna from the site.

Acknowledgements

We would like to thank Rangitane for the invitation to become partners in the repatriation and for their assistance with the logistics of running the excavation. The excavation would not have taken place without their commitment to an approach which saw the research objectives of the archaeological team positioned alongside the cultural objectives of Rangitane. We would also like to thank our University of Otago field crew for their hard work and Louise Furey and Steve Bagley for their assistance and expertise. The Department of Conservation provided staff and equipment throughout the excavation and the New Zealand Historic Places Trust and Canterbury Museum provided staff to assist with fieldwork.

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