



NEW ZEALAND
ARCHAEOLOGICAL
ASSOCIATION

ARCHAEOLOGY IN NEW ZEALAND



This document is made available by The New Zealand Archaeological Association under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

To view a copy of this license, visit
<http://creativecommons.org/licenses/by-nc-sa/4.0/>.



HMS TORTOISE, SAILORS GRAVE AND THE 'CAMP IN THE FOREST', TE KARO STREAM, TAIRUA AREA (T11/2792)

DAVID WILTON AND NEVILLE RITCHIE

Introduction

Around June 2014, the first author met David Colquhoun, at The Treasury archive in Thames. Colquhoun is an adjunct researcher at Alexander Turnbull Library (ATL) and had been visiting the eastern Coromandel area in conjunction with his research into the spar ships HMS *Buffalo* and *Tortoise*. He pointed out the existence of Thomas Laslett's journals to the author (see <http://davcolq.co.nz/media/1019/laslett.pdf>). This eventually resulted in funding by the Department of Conservation (under the stewardship of Dr Neville Ritchie) to transcribe Laslett's fourth journal (Laslett 1881), which mainly details the voyage of HMS *Tortoise* to New Zealand in 1841-43. The transcript was submitted to the ATL and is now included in the collection (see <https://natlib.govt.nz/records/35322993>).

Laslett's fourth journal provided information which assisted in the pin-pointing of geo-locations in the Tairua area that are associated with *Tortoise's* time there. These include the likely location of the "camp in the forest" (CITF), which was shown on a map hand-drawn by Laslett, and the likely location of the observer who drew a sketch of the *Tortoise* anchored in the lee of Wakahou (Slipper Island).

Previously, two sites had been recorded in ArchSite, in connection with HMS *Tortoise's* time in the area (1842-43). The HMS *Tortoise* main camp at Te Karo was recorded as T11/1024 by Louise Furey in 2011. Little detail was provided, apart from a reference to Laslett's journals. The site is recorded as being on the true left bank of Te Karo Stream, upstream of the Sailors Grave; the burial place of a seaman who was drowned when a ship's boat capsized in the surf while coming ashore. Site T11/312, recorded in 1963, is a "pā site" on the true right bank of Te Karo Stream. It is probably the site of the encampment of Māori labourers contracted to HMS *Tortoise*, although earlier occupation may have been possible.

Over the period October 2014 - May 2015, the authors, with Department of Conservation staff and several volunteers, conducted eight trips to the

probable site of CITF. A non-intrusive metal detector search of CITF and the main encampment on the slope above the Sailors Grave was carried out on 13 March 2015 and a geomagnetic survey of CITF was conducted on 9 May 2015. A new Site Record Form has been submitted to ArchSite for CITF (T11/2792), and a report of the investigation has been submitted to Heritage New Zealand's Archaeological Digital Library.

Brief History of HMS *Tortoise* and her Spar-Trading Activities

Captain James Cook was the first European to note the rich timber resources of the Coromandel area. In November 1767, Cook, accompanied by biologist Joseph Banks and several crew members, sailed up the Waihou River in a small boat, to the area of the settlement now called Netherton. Cook recorded: "... we found a tree that girted 19 feet 8 inches, six feet above the ground, and having a quadrant with me, I found its length from the root to the first branch to be 89 feet; it was as straight as an arrow and tapered very little in proportion to its length ... We saw many others of the same sort." (Reed and Reed 1951: 70). The trees observed by Cook were almost certainly kaihikatea, which were a little soft, and prone to rot. Kauri later proved to be much more durable.

The loss of the American colony by Britain in the eighteenth century meant that a valuable source of timber was also lost. Timber stocks observed by Cook seemed to offer good prospects of a suitable replacement, and Governor Phillip of New South Wales was instructed to follow this up; having ships transporting cargoes to the Australian colonies call via New Zealand on the return journey to take on cargoes of timber and flax (King 2003:115). This resulted in an initially small, but growing, export market in these commodities.

During the period between Cook's visit in 1769 and the signing of the Treaty of Waitangi in 1840, increasing numbers of ships visited the Coromandel area, seeking timber to transport back to England. One of the ships which visited Mercury Bay was HMS *Buffalo* in 1840. In June 1840, the *Buffalo* was driven ashore off Mercury Bay and sank, after being caught in a severe storm. Two of the ship's company, seamen named Moore and Cornes, were drowned (Riddle 1996: 108-112).

The remainder of the crew, and the small amount of stores that could be saved, were transported in another ship back to the Bay of Islands, from where they returned to England. The *Buffalo* episode relates to HMS *Tortoise*, and the Sailors Grave reserve, because Commander James Wood, captain of the *Buffalo*, later returned as captain of the *Tortoise*. Also, the *Tortoise* was tasked with inspecting, and recovering where possible, timber which had been cut for the *Buffalo*, but abandoned when the latter sank.

In a letter to his superiors in London just after the *Buffalo* sank, Wood reported:

"While here [Mercury Bay] a native chief told me of a forest of kauri belonging to him twelve miles to the southward ... I determined on leaving Mercury Bay, directed by the chief, and found my hopes of a good cargo realised above my expectations." (Bennett 1986: 19)

Wood called the place he found the forest Wakahongiri. According to Bennett (1986: 17-21), no such place of that name exists, but the navigational data recorded in the ship's log puts it somewhere around the Neaves Bay - Te Karo Bay area. Wood hired Māori labourers and bought stores at Mayor Island, but returned to Mercury Bay because of an approaching storm, as there was no sheltered anchorage in the vicinity of Tairua.

After the *Buffalo* was wrecked, Wood returned to England with the rest of the crew. He was exonerated of all blame for the loss of the *Buffalo*, and, in due course, was appointed to command the *Tortoise*, which arrived at the Bay of Islands in March 1842 and then proceeded south. According to the ship's log, she was offshore near the "timber station" (presumably the one set up on the *Buffalo's* last voyage) on 16 April 1842. A timber station was set up on shore, at Te Karo Bay, and work commenced to obtain the required cargo of kauri spars. This took a year to accomplish, and the *Tortoise* departed the Coromandel for the Bay of Islands on 29 April 1843; from there, sailing back to England.

Able Bodied Seaman (AB) William Samson was drowned when the ship's jolly boat was coming in through the surf at Te Karo on 6 May 1842. This was early in the *Tortoise's* stay in the area, and it appears the camp ashore was still being established at that stage. Samson's grave is still marked, and is situated in a public reserve at Te Karo Bay.

Thomas Laslett made four voyages to New Zealand to obtain kauri spars - three with HMS *Buffalo*, and one with HMS *Tortoise*. On the first voyage with the *Buffalo*, he was a carpenter's mate, and on the three latter voyages he was appointed as Admiralty timber purveyor and surveyor (i.e. he was primarily in charge of finding and obtaining the requisite timber cargo). Laslett kept detailed diaries of all his voyages, which he wrote up into four journals, in later life. The fourth journal covers the voyage of HMS *Tortoise* in 1841-43 (Laslett 1881) and is an outstanding source of historical information. Another good historical source is the journal of the ship's first officer, William Jeffrey; a copy of a transcription of which was provided to the authors by Te Karo Bay resident Ben Grubb.

Laslett's fourth journal records the loss of AB Samson, the finding of his body, and the burial two days later:

"May 6th The weather was very fine, and the surf upon the beach appeared less rough than it had been for some days past. It was now thought that the provisions and stores that had been left near the rocky landing place, might be transhipped and brought to our encampment station by using the Jolly boat...Two trips of the boat were done successfully, but in the third attempt she was upset in the surf, the crew thrown into the water, and the stores scattered far and wide into the sea. One poor fellow named Sampson was drowned, but Mr Bowen and the rest of the crew were providentially saved, by the aid of the men on shore who were watching for their arrival. About this time the ship's launch arrived off the station, they could however do nothing in the matter, and seeing the risk of attempting to land there, went northward to the rocks and landed the forest stores.

...

Sun May 8th....Search being made along the coast, the body of Sampson the seaman who was drowned by the upsetting of the boat was found among the rocks, brought in to the encampment, and soon after buried near by, in the presence of the working party on shore, Mr Jeffrey reading the burial service.

This suggests that the grave of William Samson was close to the main ship's encampment ashore at Te Karo Bay - sketches from Laslett's journal support this.

Sailors Grave Site

The grave site at Te Karo Bay has been refurbished at least twice since it was built, and currently consists of a picket fence, with a headstone and some additional historical interpretation about the ship (Figure 1).

The original 1842 kauri headstone (Figure 2) was found to be beyond repair and was replaced by a replica brass plaque in 1987, by the Royal New Zealand Navy. The inscription reads:

In Memory of
WILLIAM SIMPSON
Seaman of H.M.S. Tortoise
Drowned in the surf opposite this spot
6th May 1842



Figure 1: General view of grave and signage



Figure 2: Original headstone on AB Samson's grave, c.1950. There is a wooden replica of this displayed in the Mercury Bay Museum at Whitianga. (Source: Tairua Library; Creative Commons licence <http://ketehaurakicoromandel.peoplesnetworknz.info/tairua/images/show/472-sailors-grave>)

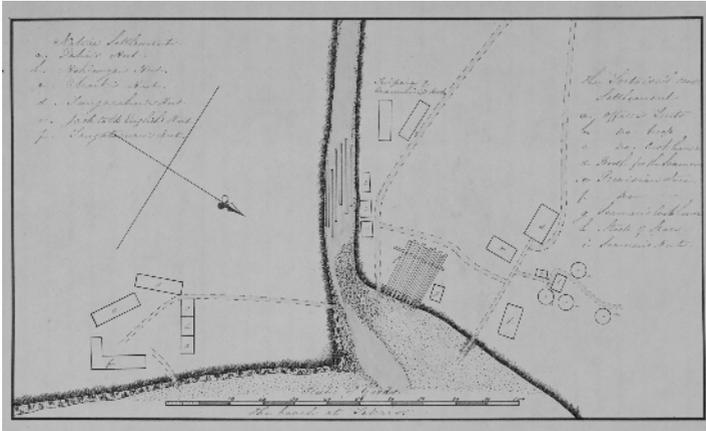


Figure 3: Laslett's plan of the encampment at the mouth of Te Karo stream. The Tortoise crew's quarters are on the true left bank of Te Karo Stream, and the Māori contractors' quarters on the true right. (Laslett, Thomas, 1811-1887 : Journals. Ref: MS-Papers-8349-3-059. Alexander Turnbull Library, Wellington, New Zealand. <http://natlib.govt.nz/records/22662353>)

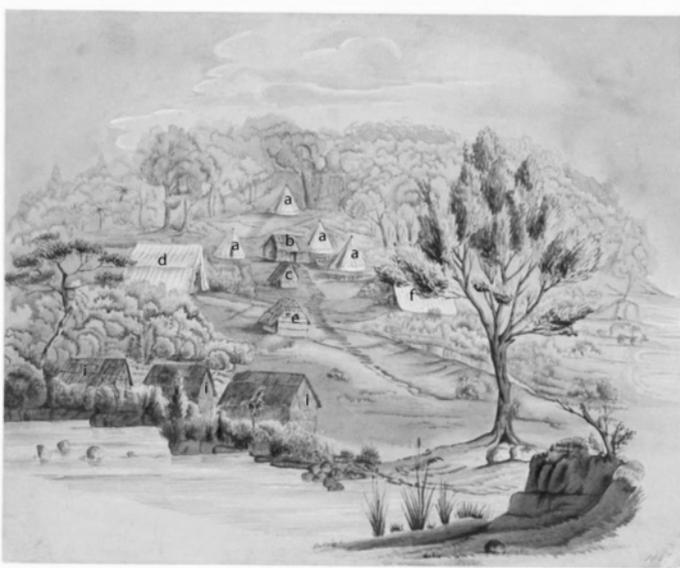


Figure 4: Laslett's sketch of the camp at Te Karo stream mouth. Annotations correspond with the key of Figure 3. (Laslett, Thomas, 1842, Establishment of crew of H.M.S. Tortoise in forest, New Zealand, 1842, Rex Nankivell Collection NK1112, National Library of Australia <http://nla.gov.au/nla.pic-an2930024>)

Two above-ground searches were conducted of the area around the camp site at Sailors Grave, including one using a metal detector in March 2015. It is possible to relate Laslett's plan of the camp (Figure 3) to another side-view sketch he made (Figure 4) and features located on the ground, including terraces which appear to be building or tent sites.

The metal detector search produced about 12 responses, but many of these were able to be identified as modern rubbish. The deeper ones were not investigated, but one or two were visible in the light, sandy soil prevalent at the site. One interesting find was a metal box-like object that has still not been identified. Early thoughts are that it is some sort of end piece or cap into which something else was fitted. There appears to be a screw fastener on one side.

A few pieces of crockery were found protruding from a sandy track about 30m inland from the grave, on the true left bank of the stream. These included a cup handle (Figure 5 below). To date, these have not been identified nor dated; nor is it apparent whether they relate to HMS *Tortoise* or not.

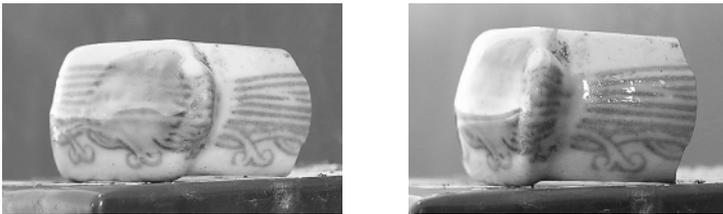


Figure 5: Cup handle found protruding from sandy track near grave (re-buried)

Neighbours living in Sailors Grave Road also pointed out the remains of some sort of timber structure (now consisting of two posts nearly completely buried by sand) and a narrow tunnel through the rock near the stream mouth, on the true right bank. One of these posts is directly underneath the wooden steps leading down to the stream from the car park above. Apparently the two posts were linked by a lateral timber plank, but this was scavenged after the structure was exposed by a storm some years ago.

The neighbours had also found broken crockery and a tobacco pipe stem (inscribed 'Davidson Glasgow') in the eroded strata of the true right bank above the stream. None of these appear to relate to the *Tortoise* - the Davidson Company of Glasgow dates to the period 1861 - c. 1910.

The "Camp in the Forest" (CITF)

The main HMS *Tortoise* encampment ashore, in the Tairua area, was at the mouth of the Te Karo stream; on the slope above AB Samson's grave (true left bank of the stream), with the Māori contractors' encampment on the opposite bank. The area on the true right bank has been extensively modified - it is now a reserve, with a car park, toilet, and picnic tables; and there is little of the original archaeological fabric remaining. However, the slope above the grave is relatively unmodified, and the grave is still in situ. A sketch in Laslett's fourth journal (1881) (Figure 6) shows the location of another camp known as 'Camp in the Forest' on the true right bank of the Te Karo stream, about 100m upstream from the Te Karo - Te Porawa streams junction.

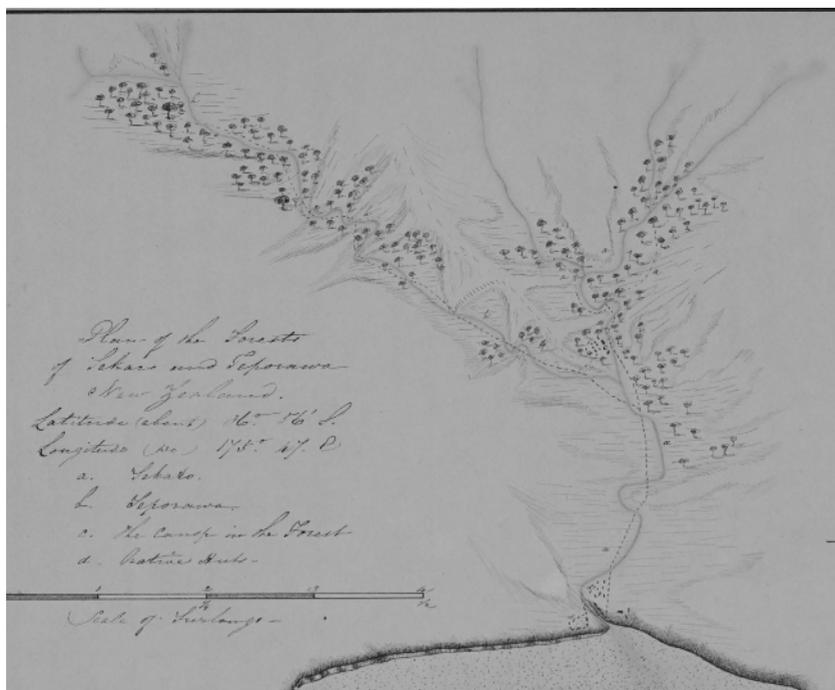


Figure 6: Laslett's 'Plan of the Forests of Te Karo and Te Porawa, New Zealand' (Plan of the forests of Tekaro and Teporawa. Laslett, Thomas, 1811-1887 : Journals. Ref: MS-Papers-8349-3-075. Alexander Turnbull Library, Wellington, New Zealand. <http://natlib.govt.nz/records/22677692>)

While it is unlikely that Laslett's sketch maps were surveyed, the detail provided in them is outstanding, and provision of a scale (in this case, in furlongs: 1 furlong = 220 yards) made it quite easy to extrapolate data to a modern digital topographic map (TUMONZ). Laslett's fourth journal (1881) also contains a plan of the layout of CITF (Figure 7) but this is hard to geo-locate, as there are no topographical features shown. However, the scale indicates the camp was approximately 70m long (parallel to the stream, which runs roughly east-west) and about 25-30m wide.

A likely site of the CITF was identified by the first author in a solo search on 26 October 2014, on the true right bank of the Te Karo stream, about 100m upstream of the Te Porawa junction. It was noted that a trap-line has been laid along the axis of Te Karo stream (signposted "TK"). There is a rudimentary track along parts of the stream, with normal coloured trap-line and bait station markers (pink and blue). At one trap, workers had obviously found a winding handle artefact and wedged it into a stump, next to a trap marker (see Figure 8). It is considered that this artefact may date from the *Buffalo/Tortoise* era, as more recent industrial activity along the Te Karo stream is unlikely to have used such simple manual winding technology.

Information provided by the Department of Conservation Hauraki Area office indicated the TK trap-line is operated by Whenuakite Kiwi Care (WKC). Email and face-to-face contact was made with WKC chairperson Arthur Hinds who provided historical information about the Te Karo catchment in the 20th century. Unfortunately, enquiries did not reveal any of the circumstances of the winding handle find.

Over the period October 2014 - May 2015, the authors, assisted by numerous volunteers, re-visited the area of CITF at least six times and a detailed above-ground search was carried out. Useful information was supplied by Anne Stewart-Ball, Don Armitage, Ben Grubb, Alan Tate and others. The CITF site is situated on private property, which was up for sale at the time the survey was carried out. Permission was obtained to conduct searches at the site. Other volunteers who assisted with searches included Doron Whyte, Chris Ball, Mike Derrick, Les Vulelich (metal detectorist) and Dr Hans-Dieter Bader (geophysicist).

The metal detector survey did not provide any responses at CITF. A test was carried out, to detect a steel-bladed pocket knife buried at differing depths on the site - this was able to be detected to depths up to about 8-10 cm. According to the literature (e.g. Zeidler 1995), the typical rate of humus deposition in tropical and sub-tropical rainforest is 1cm per decade, and therefore, we could expect any metal artefacts to be about 17cm below ground surface.

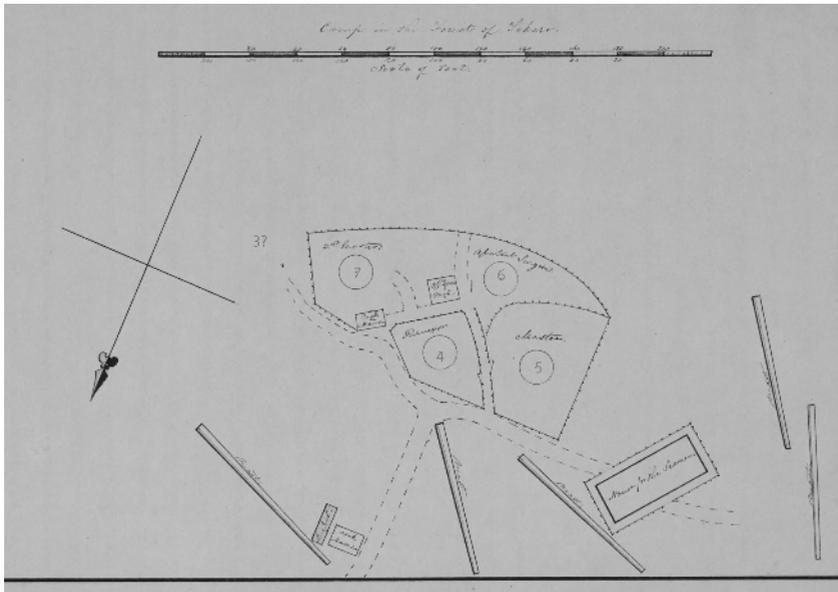


Figure 7: Laslett's sketch map of the layout of the Camp in the Forest. The numerical annotations represent features that were tentatively able to be identified on the ground. (Camp at Tekaro. Laslett, Thomas, 1811-1887 : Journals. Ref: MS-Papers-8349-3-063. Alexander Turnbull Library, Wellington, New Zealand. <http://natlib.govt.nz/records/22681038>)



Figure 8: Winding handle found at Waypoint 39

The geomagnetic survey of 9 May 2015 was conducted as a "free search", rather than using a grid pattern (Smekalova *et al.* 2008). This was due to vegetation remaining on the site, despite considerable clearing having been done. However, it is estimated that at least 30% of the ground area was covered. The geomagnetic search revealed what were thought to be soil discontinuities, such as edges of pits and terraces. One cluster of rocks in and around a shallow pit gave a strong reading, which was initially thought to be due to the rocks being of volcanic origin. Three pits, which were considered to be man-made, of size approximately 5m x 2.5m by 0.5m deep were found (the cluster of rocks being in and around one of them). The origin of these pits was not apparent initially, but in hindsight, may be dug-in whare sites. GPS waypoints of these features are given in Table 1 below.

The layout of these pit-like features, and the man-made terraces, fits Laslett's plan of the camp at Figure 7 (features found are marked in red numerals). The 'pit' with the rocks (marked '2') corresponds with the officers' cookhouse, and it is therefore suspected that the rocks were part of a fireplace (Smekalova *et al.* 2008:10). However, no background readings of other rocks were taken from the site, so this remains a possibility only.

A series of smaller pits, approximately 30cm x 30 cm by about 15cm deep, were found scattered over about 20% of the site, particularly on the level terraces. According to one of the searchers, who had seen such patterns before, they are likely to be cannabis-growing pits, which are common in the Coromandel. The edges of these, like other features with discontinuous soils, gave strong geomagnetic readings.

The annotation '3' on Figure 7 represents a 5m x 2.5m (approximately) whare/pit as described above, which does not fit the Laslett plan. It is thought this may have been a latrine structure, which are conspicuously absent from Laslett's Victorian-era drawings, or possibly another whare (e.g. a store) not marked on the plan. A very strong geomagnetic signal was detected from a hump of soil approximately 1m to the north of this pit, but this was not able to be investigated.

The features at CITF described above were all on a series of prominent terraces approximately 8m above the water level of the creek (as measured by GPS). A brief search was carried out at lower levels, where the seaman's quarters, cookhouse, and a sawpit are marked on Laslett's plan (Figure 7) but no features were found. This is possibly due to inundation, of which there are numerous anecdotal accounts. There are also unconfirmed anecdotes of logs being driven down Te Karo stream.

The amount of investigation that was able to be carried out without an authority under Section 56 of the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) was very limited. However, it is considered that there is very

strong historical evidence, and some archaeological evidence (requiring confirmation), that the HMS *Tortoise* CITF site is located at Waypoint 40.

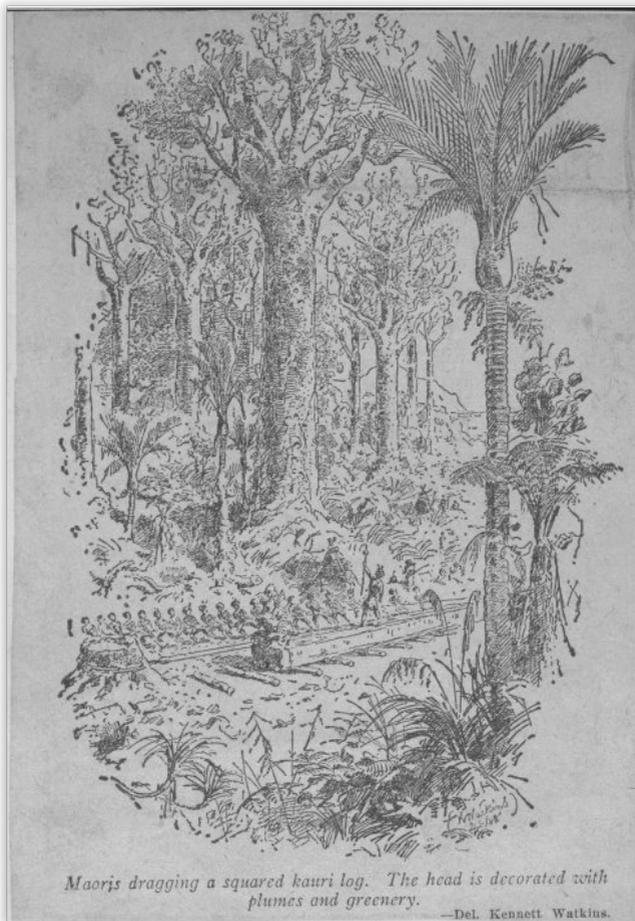


Figure 9: Sketch of Māori contractors hauling a kauri log from the bush at Waiheke Island. Note the 'skidded road' on which the log is hauled. (Webster, Kenneth Athol, 1906-1967. [Clarke, Cuthbert Charles] 18-18 :Maoris (sic) dragging a squared kauri log. The head is decorated with plumes and greenery. Del. Kennett Watkins. [ca 1920?]. Ref: A-111-100. Alexander Turnbull Library, Wellington, New Zealand. <http://natlib.govt.nz/records/22816173>)



Figure 10: Possible haul path, approx 50m downstream from 'Kauri ricker' waypoint (see Table 1) on true left bank of Te Karo stream



Figure 11: Kauri ricker, illustrative of the size of tree HMS Tortoise was harvesting. The walking stick is approximately 1.2m long

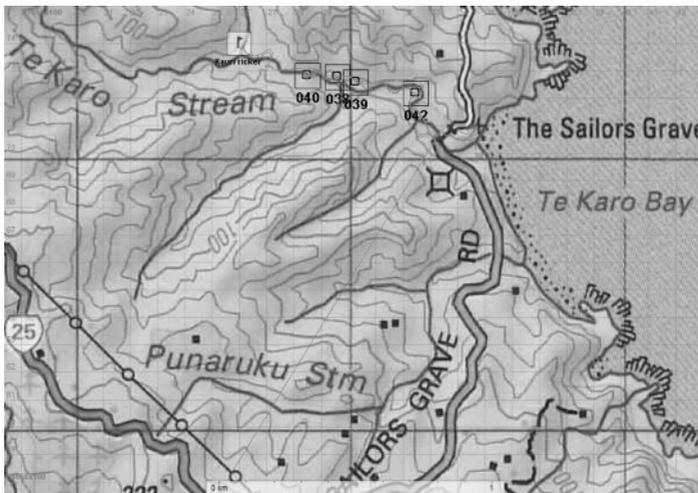


Figure 12: TUMONZ topo map showing GPS waypoints and tracks (of the search parties, recorded by GPS)

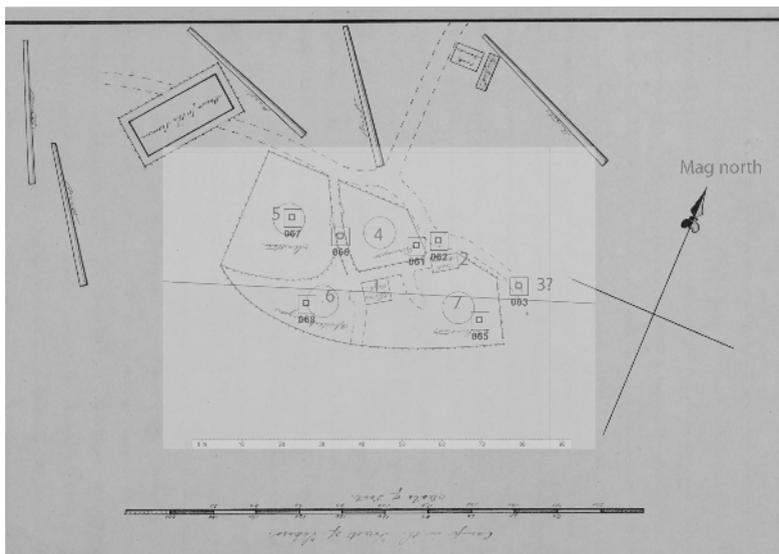


Figure 13: GPS waypoints of recorded features superimposed on Laslett's plan of CITF (note that the plan is not able to be geo-referenced, as there are no natural features shown, but the scales of both images roughly correspond). It is assumed that the north point shown on Laslett's sketch maps would have been magnetic north, as a magnetic compass would have been the only instrument he had to determine cardinal points. Te Karo Stream would have been off the top of the sketch map (i.e. to the north).

Waypoint No.	NZTM Grid Reference	Comments
038	1852571E 5905768N	Te Porawa - Te Karo streams junction
039	1852636E 5905751N	Find site - iron winding handle. Probably found by WKC trap line workers and jammed in a stump near a trap. The exact circumstances of the find were not able to be determined.
040	1852459E 5905774N	Probable site of 'camp in the forest' (CITF)
042	1852858E 5905709N	Trap-line track junction with Te Porawa stream
'Kauri ricker'	1852226E 5905888N	No waypoint recorded - measured off map. Location of small kauri ricker of representative size of spars that HMS <i>Tortoise</i> would have been harvesting
061	1852476E 5905772N	Pit/whare marked '1' on Fig 10 (possibly the officers' mess)
062	1852481E 5905773N	Pit/whare marked '2' on Fig 10 (possibly the officers' cookhouse - rocks could be part of a fireplace)
063	1852501E 5905762N	Pit/whare marked '5' on Fig 10 (unknown pit/whare not marked on Laslett's plan - possibly a latrine?)
064	1852897E 5905575N	Pit/whare approximately 6m x 3m x 0.7m deep in eucalypt grove next to track; not thought to be associated with HMS <i>Tortoise</i> ¹
065	1852491E 5905753N	Possible tent terrace marked '7' on Fig 10 (2nd officer Lt Bowen's tent)
066	1852457E 5905774N	Possible tent terrace marked '4' on Fig 10 (Purveyor Laslett's tent)
067	1852444E 5905778N	Possible tent terrace marked '5' on Fig 10 (Master's tent) (Lt Jeffrey was appointed 'Master Ashore')
068	1852448E 5905757N	Possible tent terrace marked '6' on Fig 10 (Assistant Ship's Surgeon Domville's tent)

¹ An article in the *Feilding Star* 9 September 1911, p. 1, mentions a whare near the Sailors Grave: "We got to the Sailors Grave in a couple of hours, where we rested a while and boiled our billy in the old rafters' whare at the southern side of the Driving Creek." The author talks about a storm they witnessed while at the whare, from where they could see waves surging up the creek, so Waypoint 064 could be the site of this whare. It is unlikely to be associated with HMS *Tortoise*, however.

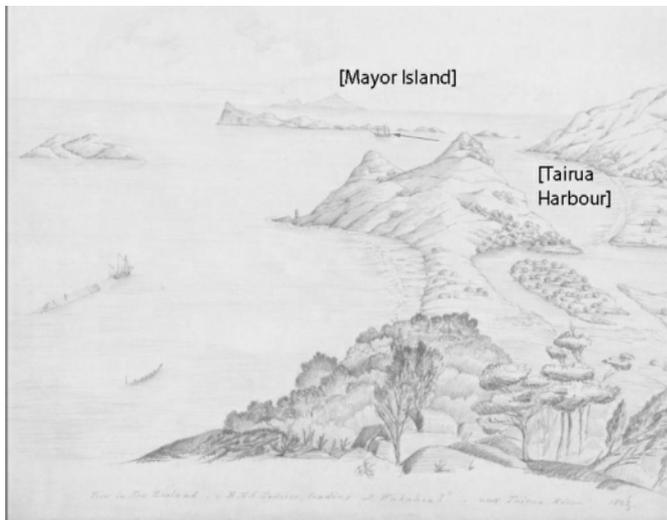


Figure 14: Sketch of HMS Tortoise (indicated) anchored off Wakahou (Slipper Island) during loading. Spars are being towed from Te Karo by the ship's boat. (Laslett, Thomas 1842, View in New Zealand, H.M.S. Tortoise loading at Wakahou Is., near Tairua River, 1842, Rex Nankivell Collection NK1114, National Library of Australia <http://nla.gov.au/nla.pic-an2946195>)



Figure 15: View south from summit of Pumpkin Hill (Mayor Island is behind Slipper Island, but largely concealed by haze)

Probable Haul Path and a Spar-sized Kauri Ricker

John Logan Campbell's book *Poenamo* gives a detailed account of Māori contractors hauling spars from the bush on Waiheke Island (Logan Campbell 1881: 79-82). A copy of a sketch produced for this book graphically illustrates the process (Figure 9).

Along the banks of the Te Karo stream there are remains of sections of pathway that are likely to be haul-paths for logs. Erosion has destroyed most of these features, but what remain are well-padded (approximately 10 cm deep) channels that are consistent with the hauling of numerous logs of spar size. There is no historical record of horse pack-trails, nor even extensive foot travel in this catchment, that would account for these features. A photo of a section of a likely haul-path c. 1.5m wide is at Figure 10. The spars harvested had a maximum diameter of 25 inches (Laslett 1881: 156) (approximately 0.3 m), so the path shown is consistent with numerous logs that width being hauled along it.

Very close to a stream junction on the true left bank of the Te Karo stream (marked 'kauri ricker' on Figure 12) a small ricker was found, that was measured and photographed as an example of the size of tree HMS *Tortoise's* crew would have been harvesting (see Figure 11). A summary of the measurements for this tree, and an example of a larger tree taken from Laslett's cargo list (Laslett 1881: 156) is provided on the full site report submitted to the Heritage New Zealand Digital Library.

Sketch of HMS *Tortoise* at Anchor in the Lee of Slipper Island

While at Te Karo, the first author took the opportunity to climb Pumpkin Hill, in an attempt to re-create Laslett's sketch of the *Tortoise* at anchor in the lee of Slipper Island. Figures 14 and 15 demonstrate that Pumpkin Hill was almost certainly the vantage-point of the sketcher.

Summary and Possible Way Ahead

Lack of an authority for investigation under Section 56 of the HNZPTA 2014 meant that detailed (below-ground) investigation could not be carried out. However, the authors are confident that the site of CITF has been located, and numerous features identified, including man-made terraces and pits which may have been where. The location and layout is consistent with Laslett's hand-drawn maps and descriptions. It is hoped that a more detailed investigation of the CITF and Sailors Grave site will be carried out by a University summer field school or as a postgraduate student project, to supplement and verify the rich historical sources available, including crew journals and the ship's log.

References:

- Bennett, F. 1986. *Tairua*, Arrow Printing, Morrinsville
- King, M. 2003. *The Penguin History of New Zealand*, Penguin, Auckland.
- Laslett, T. 1881. *Journal of Fourth Voyage to New Zealand: 1841-43*,
<http://www.tapuhinatl.lib.govt.nz/cgi-bin/spydu/FULL/ARCHIVESNR/OPHDR/444/1029146,2>
- Logan Campbell, J. 1881. *Poenamo*, Wilson and Horton, Auckland
- Reed, A. H. and Reed, A. W. (Eds.) 1951. *Captain Cook in NZ: the Journals of Captain James Cook*, A.H. and A.W Reed, Wellington
- Riddle, J. 1996. *Saltspray and Sawdust: One Thousand Years of History in Mercury Bay, Te Whanganui-a-Hei*, Gumtown Publishers, Whitianga
- Smekalova, T., Voss, O. and Smekalov, S. 2008. *Magnetic Surveying in Archaeology: More Than 10 Years of Using the Overhauser GSM-19 Gradiometer*, Polytechnical University of St Petersburg, St Petersburg
- Zeidler, J. A. 1995. 'Archaeological Survey and Site Discovery in the Forested Neotropics' in Stahl, P. W. (ed). *Archaeology in the Lowland American Tropics: Current Analytical Methods and Recent Applications*, Cambridge