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Survey of the Canton Battery Site, Waipori, Otago

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Introduction

The Canton Battery and water wheel (site H44/831) are located within the OPQ Conservation Area near Lake Mahinerangi in the Waipori Goldfield (Figures 1 and 2). The reserve is administered by the Department of Conservation (DOC). Although a number of companies have been associated with the claim, the surviving five stamp battery and water wheel are primarily associated with the New Canton Gold-Mining Company.

Figure 1. Location of the OPQ Conservation Area

The Department of Conservation has recently commissioned an updated conservation plan for the site (Petchey 2015), and in conjunction with the Otago Goldfields Heritage Trust (OGHT) is planning to undertake remedial work to repair decayed timbers in the battery structure. One outstanding task was the completion of a detailed map of the battery site and its immediate surroundings, and the University of Otago Anthropology Society (UOAS) was invited to assist in surveying the site. This provided students an opportunity to learn or practice basic surveying and map making skills, learn more about Otago's Gold mining past, and contribute to the heritage management of an important public site. The survey day was run on 13th March 2016 and was attended by 13 members.

Brief History of the Canton Battery

The following is taken largely from the Conservation Plan (Petchey 2015): The Waipori Goldfield was first discovered in late 1861, when three men found gold in the Lammerlaw Creek, a tributary of the Waipori River (*Otago*

Witness 21/12/1861). In the following years the goldfield was the site of quartz mining, alluvial mining and dredging. The Canton claim itself is thought to have first been worked by a group of Chinese miners, who spent £2,500 sinking a shaft near Pioneer stream. They failed to locate the reef and ceased operations in 1870 (Smith 1990: 69). A second attempt to work the reef followed in 1879, also by a group of Chinese miners, who also failed. A third attempt on the claim was initiated in 1887 by Long and Party (AJHR 1888 C5: 40; 1888 C6: 31) followed in 1889 by Eaton and Party (AJHR 1889 C2: 123), who installed a large water wheel. In 1890 the Canton Reef was taken over by a party of miners on tribute in the interests of a Sydney syndicate with up to 18 miners employed (Still 2015). The mine was abandoned shortly afterwards.

In 1897 the claim, along with the Otago Pioneer Quartz (OPQ) claim, was acquired by the New Zealand Minerals Company (AJHR 1896 C3A: 19; 1897 C3A: 20; Galvin 1906: 164) before both were transferred to the O.P.Q. (Waipori) Gold-mines (Limited) (AJHR 1900 C3; 24). Ten years later the Canton claim was pegged out by Pearsall and others (AJHR 1908 C3: 34) with the mine re-opened in 1910 by the New Canton Gold-mining Company. The claim was sold for the final time in 1911 or 1912 to R.J. Cotton. At this time, the shaft was approximately 180 feet deep, and was being emptied by a 6 inch pump driven by a water wheel (AJHR 1912 C2: 52). The last record of the mine working is in 1912 (AJHR 1912 C2: 53; Smith 1990: 71).

Figure 2. The Canton Battery in 2016 (Hannah Arnhold).

The Stamper Battery

The Canton battery is located on the south side of Mitchell's Flat, close to the Waitahuna-Waipori road. It is signposted with a DOC marker and is easily accessible along a cleared track. The battery site consists of the battery itself, a concrete engine bed, the remains of the small pumping water wheel and the probable site of the main mine shaft (Figure 3). All but the water wheel are located on dry ground, but the land on front of the battery and around the water wheel is boggy due to the choking of the stream bed by weeds.

As the purpose of the site survey was to undertake a more thorough investigation of the surroundings of the Canton battery and water wheel they shall only be briefly described here (for a more thorough description see Petchey 2014 & 2015). The Canton battery is a five stamp mill, but it was built using the camshaft for a larger ten stamp mill. There is no evidence to suggest that the full ten stamps were ever fitted as there is no damage to the camshaft where the extra five stamps would have been mounted and the timber guides are only grooved for the existing five stamps. The mill has a trestle type frame with a heavy timber trestle structure to support the camshaft. Only the centre trestle remains completely intact. The mortar box is a one-piece cast iron item. The projecting flange around the screens and the apron has been broken away and the makers place is also missing. At 63 inches long this is the longest mortar box recorded in New Zealand (Petchey 2013: 208). The Canton water wheel has deteriorated significantly in the past twenty years, being relatively intact in 1995. The wheel is half buried in its original position, on the edge of the Pioneer Stream, with four surviving exposed spokes and a small portion of the shroud visible.

Survey

As the surviving machinery has already extensively recorded (Petchey 2014, 2015) the purpose of the survey was to establish the extent of, and map, the surrounding landscape whilst providing an opportunity for students to practise fundamental surveying skills. Two plane tables and open alidades were set up at opposite ends of the battery with students spilt into two groups. The first group was focussed behind the battery where a series of water races and channels were hidden by large, head high, tussocks. The second group focussed their efforts to the front of the battery. This group were tasked with determining the stream boundary, the probable location of the mine shaft and other features.

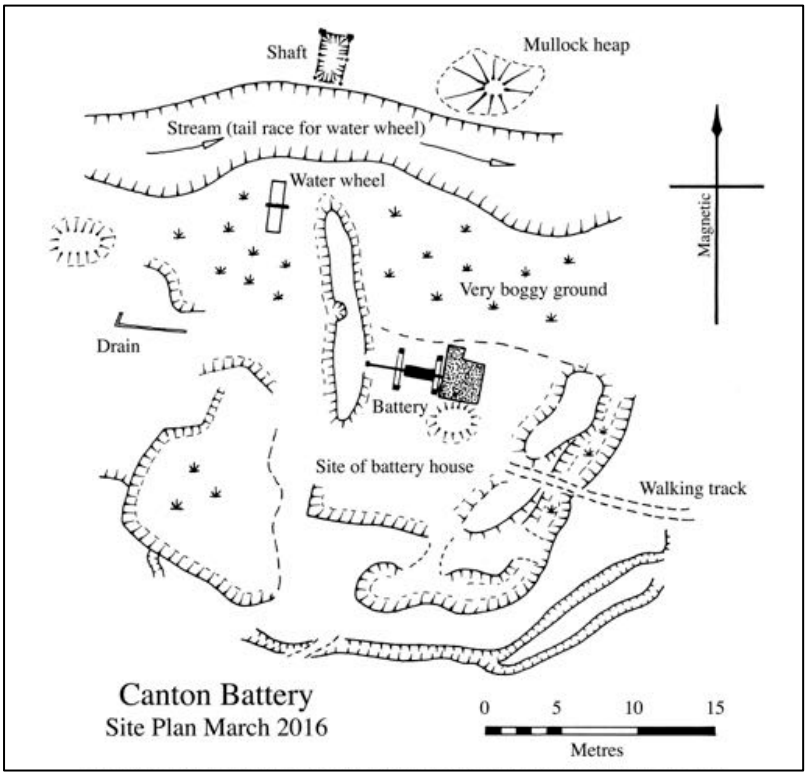

Figure 3. The plane table map of the Canton Battery site by the UOAS.

Behind the Battery

The first group was tasked with mapping the area behind the remaining battery structure. The main structural points of the battery structure, and the second mapping station were the first points mapped to allow for the consolidation of the two maps.

Immediately behind the battery is a relatively open rectangular grassy area that extends approximately 8 m behind the battery before reaching a raised bank. This flattened area is the site of the building that would have originally housed the battery, with the right angle in the south west corner of the bank the most intact (Figure 3). A number of channels had been cut into the rear bank, with the largest in the SE corner (Figure 3). These likely represent the water races where water was fed into the battery, especially as they connect

with a series of races in the tussock south of the battery (Figure 3). These races extend a significant distance behind the battery complex and are overgrown primarily with tussock, although species such as Coprosma are also present. The condition of these channels necessitated a series of pedestrian surveys to determine their extent. These surveys resulted in the decision to focus on the larger, and often deeper (Figure 3), channels closest to the battery site as they were the most defined and clearly associated with the goldmining activity. In several locations, notably within the channel running perpendicular to the walking track, there was significant pooling of water and associated boggy terrain. At several points throughout the ditch complex there were raised areas running across the channels, effectively blocking the path of individual channels. It is uncertain if these bridging structures were designed to allow movement within the channels, or are a post-abandonment development.

In front of the Battery

The second group was focussed on determining the extent of the boggy ground around the front of the battery, clarifying the stream boundary, and locating key features such as the water wheel and probable site of the mine shaft.

Figure 4. Working around the remains of the Canton water wheel (Hannah Arnhold).

As with the first surveying group, the main structural points of the battery itself were mapped first. The remaining structures associated with the battery, namely the partially buried water wheel (Figure 4), were then mapped. Although infilled (or collapsed) the shaft was still easily identified as a rectangular depression in line with the water wheel, with several upright timbers and vertical iron rods from the shaft head structure still in place. As

the survey extended out from the battery the ground surface became increasingly waterlogged, a result of the choking of the creek, resulting in much of the surveying being conducted on boggy terrain. This became most troublesome when determining the stream boundary. The ground became less water logged on the northern aspect of the creek, between the creek and the road, where ground was sufficiently raised above the water table. Extending the survey further to the west of the site, more features were identified and mapped. This included a series of raised banks associated with the channel system mapped by the first survey group. A drain feature was identified to the west of the battery, although only a portion was able to be mapped as it extended underground (Figure 3).

Conclusions

The primary product of this surveying exercise was the preparation of a site map of the Canton battery, which has allowed a more detailed understanding of the remaining structure's relationship to site's wider goldmining landscape. This is especially evident when considering the system of water channels to the rear of the battery and associated banks. The map will assist with future conservation work undertaken by DOC and OGHT. Of equal importance was the acquisition and practice of basic field surveying and mapping skills by students, as well as an introduction to the archaeology of Otago. The goldfields are not only an important aspect of Otago's history but a representation of heritage management and historical archaeology. As such, it was a valuable experience for the students, as these are skills they will draw on in the future. Further work may be undertaken to extend the map, particularly to record the full extent of the water channels south of the battery.

Acknowledgements

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Figure 5. The survey day participants in front of the Canton Battery (Peter Petchey).

References

Abbreviations:

AJHR *Appendices to the Journals of the House of Representatives*
OW *Otago Witness*

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