WAIHI NORTH PROJECT – FAST TRACK APPROVAL: ASSESSMENT OF HISTORIC HERITAGE AND ARCHAEOLOGICAL EFFECTS

APPENDICES

Prepared for Oceana Gold (New Zealand) Ltd
Document Number:

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APPENDIX 1: NZAA SITE RECORD FORMS

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T12/681

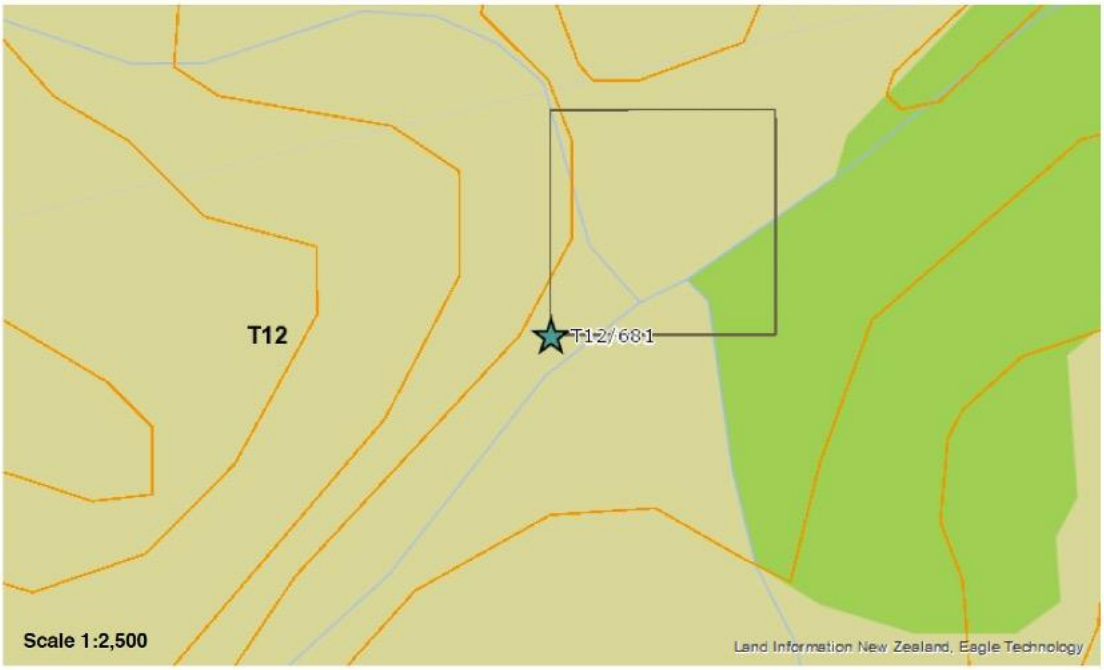
SITE TYPE: Mining - gold

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1850383 **Northing:** 5868875 **Source:** CINZAS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T12/681



Finding aids to the location of the site

Brief description

BATTERY

Recorded features

Stamper battery

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T12/681

Supporting documentation held in ArchSite

T12/681

REMAINS OF WATER RACE

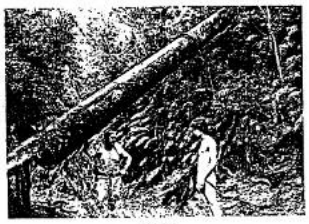


FIG X
WATER RACE DOWNPIPE

At the time the Royal Standard property was placed under protection, the water races had not been completed, though substantial work was carried out including tunnelling.

It appears that the Ø 0.5m downpipes were put into place but never connected to the main water race formation. Thus today they remain isolated stretching across the Royal Standard Mine tramway track.

The Downpipes are in reasonably good condition except the middle section which is severely rusted.

T12/681

ADDITIONAL OBSERVATIONS

Within the Royal Standard Claim Area there are a number of road formations, a race formation, adits, shafts and mining relics other than those already described (see Fig XI).

What the initial survey, as summarised in this report, has established is that this area has great potential to be developed as an area of major attraction within the Coromandel Forest Park.

It is, however, stressed that a prerequisite to that development is the conducting of a comprehensive study of the Royal Standard Claim Area which goes far beyond the scope of this report. In such a study the original layout of the Battery and Cyanide Site as envisaged in 1896, the extent of the water race formations, an assessment of the damage to the Main Site and track formations caused by mining companies and Mr Mayclair, the variety of mining operations and historical value of the mining relics would all be investigated. Further to this, careful consideration would be given to the re-establishing of the plant removed by Mr Mayclair back on their original sites (which is not necessarily the site from which Mr Mayclair removed them).

This report deliberately makes no recommendations other than of a general nature, on the future development of this Area. To have done so would be piecemeal and in the absence of an exhaustive study may have proved in the long term damaging.

FIG XI
WINCH IN ROYAL STANDARD CLAIM AREA ADITS
HISTORY UNKNOWN

T12/681

FIG VI
WATER PIPE

FIG VII
BOLT/CAST GATE VALVE

It is virtually impossible without an exhaustive study beyond the determinants of this survey to accurately portray this site as it originally appeared.

T12/681

PRESSURE VESSEL

FIG IX
PRESSURE VESSEL

This vessel is situated approximately 40m from the Main Battery Site beside the Royal Standard Mine tramway that runs directly behind the Main Site.

It is constructed of riveted steel plate and cast iron being 1.8m x Ø 0.8m with a hiereno top.

The Vessel is likely to have been an air receiver and to have been associated with the cyanide process. Its present position is unaccounted for. It has been stripped of all fittings, however is in sound condition.

T12/68

The Main Battery excavations are still visible (Fig I) and clear of vegetation. The excavations form two tiers rising 15ms. They are devoid of any foundation blocks.

Below the Battery excavations are the remains of two collapsed cyanide tank cones (Fig III).

FIG III
REMAINS OF CYANIDE VATS

These collapsed cones are constructed of sheet iron plate riveted in sections to form a circle with a 2.1m Ø. Each section is tapered from 0.3m to 0.84m and is 2.4m long.

The cones are in poor condition and showing signs of severe rusting.

The only other items worthy of note are as follows:

6 0.23m pipe joining rings (Fig VIII)
- still tarred
- good condition

1 1.77m x Ø 0.3m shaft (Fig VIII)
- reasonable condition

1 1.8m x Ø 0.25 water pipe (Fig VI)
- reasonable condition

3 0.10m Gate Valves (Fig V)
- good condition

2 0.075m Gate Valves (Fig V)
- good condition

1 0.20m Valve and Top plate (Fig IV)
- no internal mechanism
- Stenfield and Connolly Ltd. Milnsbridge and
- No. 295

T12/69

1 0.20m Gate Valve (Fig VII)
- bolt/cast
- good condition

2 0.15m Elbows (Fig VIII)
- 1 reduces 0.20m to 0.15m

Miscellaneous lengths of 0.05m water piping (Fig VIII).

FIG VIII
ASSORTED IRONMONGERY

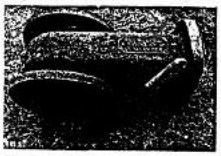


FIG IV
0.20mm VALVE

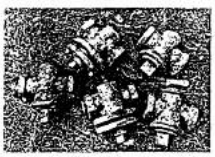


FIG V
GATE VALVES
Plus each

T12/681

T12/681

PRESENT CONDITION OF SITE

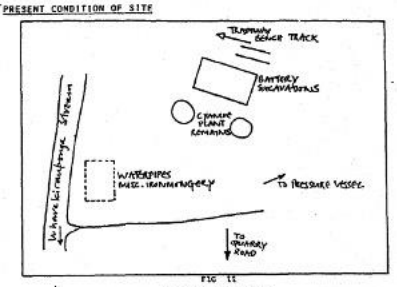


FIG 11

PRESENT LAYOUT OF SITE

(i) ACCESS:

Drive south from Whangamata on State Highway No.25 before turning down Quarry Road (as marked on NZMS 260 T12). Travel to the end of this road where it finishes at the Wharekirauponga Stream. Here ford the stream and walk past the disused quarry site following the Wharekirauponga Track for approximately 1.5kms before reaching the Royal Standard Battery Site at NZMS 260 T12 607304.

The track leading to the Battery Site is distinct and unencumbered.

(ii) VEGETATION:

The site is an open grassy area with regenerating bush and shrub.

BACKGROUND

A salient fact to remember about the Royal Standard Battery site is that it was never completed nor was it ever used to crush ore. It was in truth a remarkable failure.

In 1896 the Royal Standard Gold Mining Company acquired the majority of claims in the area. Over the next two years it set about systematically squandering its shareholder's capital on the building of a water race, battery excavations, a 3 mile tramway and expensive plant. This was done before the company had established that the local reef systems were payable.

The preparations for the erecting of a substantial Battery of 80 head of stamp (60 head initially) with double discharge Morters proceeded rapidly as though there was no questioning the fact that the Royal Standard Claims would be producing bullion for decades to come. No economy was employed and thus when this mad extravagance was finally halted, followed by a total abandoning of the project and the eventual sale of the site for a pittance, the loss to the shareholders was substantial.

The company had ignored the first cardinal rule of gold mining: establish a body of payable ore before investing in capital works, and so paid the price.

When the Royal Standard property was declared under Protection in 1898 the tramway from the Battery Site to the Otahu Inlet was near completion, the water race only partially constructed and, though the machine site had been excavated, there was no machinery on the ground. It is also worthy of note that near the Battery Site a spacious Manager's residence and other houses had been erected to form a small settlement.

THE TRAMWAY

The track which runs from the Disused Quarry at the end of Quarry Road to the Battery site follows the path of the original Royal Standard Tramway. It was initially constructed so as to allow the easy transportation of plant and materials to the Main Battery site from Otahu Inlet.

Today only the cuttings, deteriorating tramway bridges and a number of sleepers remain. It is a picturesque walking track and all effort should be taken to ensure that it remains as unchanged as possible.

In addition to this a second tramway which linked the Royal Standard Workings and the Main Battery Site ran due south from the main site for approximately 2.4kms.

THE BATTERY AND CYANIDE PLANT REMAINS

Presently there is no substantial plant remaining on the Battery Site. The last of the machinery was removed in the 1970's from this Site and its vicinity, by Glen Hayclair of Waihi.

Mr Hayclair removed the following:

10	Bovus Scott - Western Stamps
2	Morcar Bowes
3	Cast Iron King Posts
1	A & C Price Pelton Wheel
1	Reckant Air Compressor

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

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SITE RECORD FORM (METRIC)

Metric map number T12
Metric map name Thames
Metric map edition 1st

NZAA METRIC SITE NUMBER T12/651
DATE VISITED March 1983
SITE TYPE Goldmining battery
SITE NAME: MAORI
OTHER Royal Standard Battery

Grid Reference Easting 2,760,700 Northing 6,430,400

1. Aids to relocation of site *(attach a sketch map)*

From the end of Quarry Road walk past the disused quarry and follow the Wharekirauponga Track for 3.5km until reaching the battery site. The track is distinct and unencumbered.

2. State of site and possible future damage

Open grassy area with regenerating bush and scrub. Machinery remains in moderate condition.

3. Description of site *(Supply full details,history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*

Tramway
Battery and cyanide plant remains
Air receiving vessel
Water race downpipes
Miscellaneous items recorded

4. Owner Address: Dept of Conservation, Coromandel Forest Park
Tenant/Manager Address:

5. Nature of information *(hearsay, brief or extended visit, etc.)*: visit
Photographs *(reference numbers, and where they are held)*: Negs and prints held Regional Archaeologist, Waikato DOC
Aerial photographs *(reference numbers, and clarity of site)*:

6. Reported by: John Broad
Address: 210a Augustus St, Thames
Filekeeper: Louise Furey
Date: 25/7/88

7. New Zealand Historic Places Trust *(for office use)*

DM	Type of site
--	Local environment today
BC	Land classification
BB	Present condition and future danger of destruction
EY	Local body

T12/681 (m)

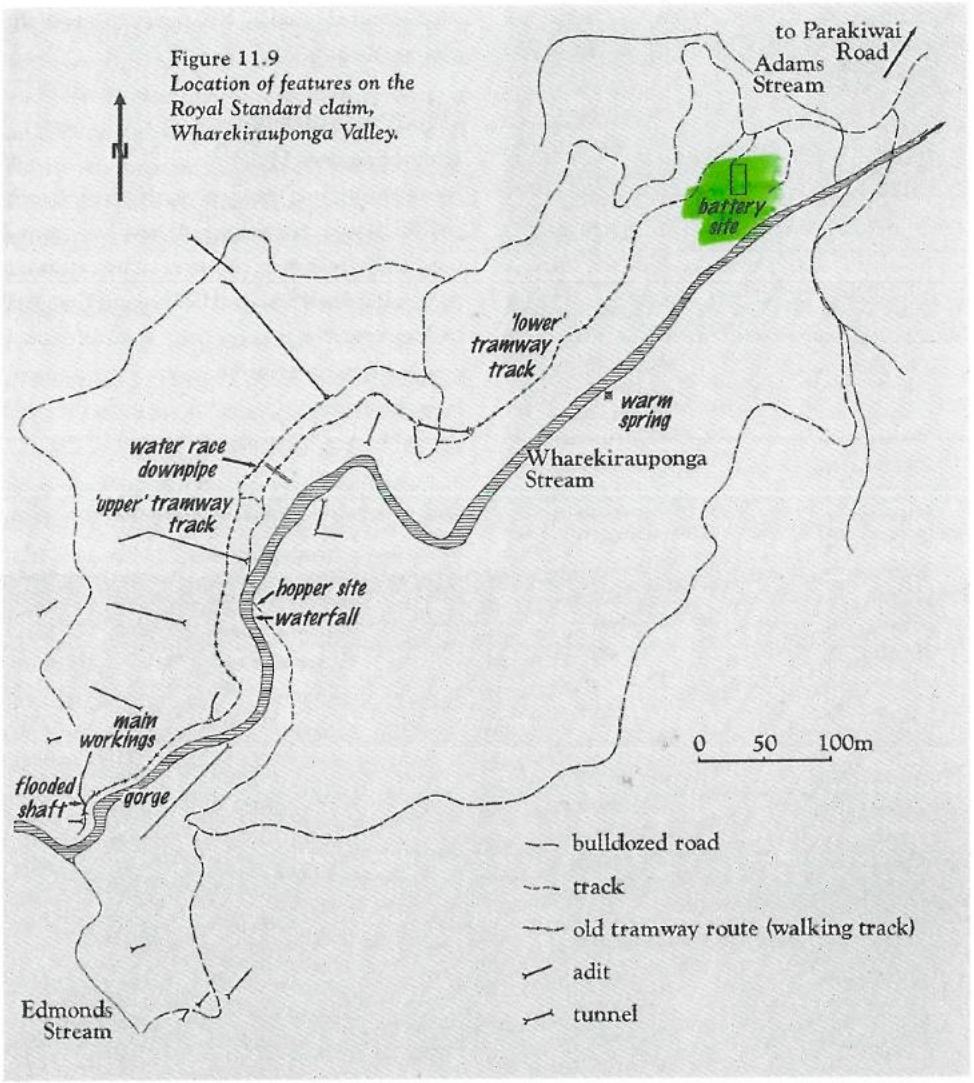


Figure 11.9
Location of features on the Royal Standard claim, Wharekirauponga Valley.

By late 1902 known ore reserves in the upper levels had largely been exhausted, and in 1905 the property was sold to H.H. Adams. The Auckland Goldmining Company was subsequently formed, and managed to extract a further 2,700 tons of ore from the upper levels, which yielded almost 6,000 ounces of bullion. Considerable exploratory work was also undertaken in the lower levels, but as no payable ore was found, the company ceased operations in 1908. In total, the mine produced about 15,000 ounces of bullion, valued at around £25,000.

FIGURE 11.8 *(left) Intake at the upper end of the Luck-at-Last Battery's 150-metre long water supply pipeline (pressure pipe). Water was brought from further up the Wharekawa Valley by a race, and fed into the pipeline via a pressure tank (see Figure 11.2).*

The Auckland Mine workings are situated on the steep ridge between Wentworth Falls and

Moore + Ritchie (1996) Coromandel Gold

Tornado Stream. Nowadays the area is covered in thick bush, and the adits and other features are difficult to locate. However, an old tramway route can still be traced around the northern side of Wentworth Valley from the main (No. 4 level) adit, to a spur directly opposite the battery site. From there, ore was apparently transferred to an aerial tramway, terminating at the battery. Little remains of the battery itself, except for part of the concrete foundations, numerous bricks and pieces of old iron. Nothing is known of its design or operation, other than that power was provided from water-driven pelton wheels, supplemented by an 80 h.p. steam engine in the summer months.

Wharekirauponga

(Royal Standard Mine)

Some prospecting was done in this area as early as 1893, but no claims appear to have been pegged until 1895. In 1896 most of the claims were taken over by the Royal Standard Goldmining Company of London, which spent vast sums of money constructing an eight-kilometre long tramway from their claim to Otahu Inlet, a water race, and several houses. They also purchased all the

FIGURE 11.10 *The Royal Standard tramway route now provides easy access up the Wharekirauponga Valley. Wooden sleepers are still visible in places along the track.*

Royal Standard tramway to T12/681 (m)

Moore + Ritchie (1996) T12/681(M)

machinery for a battery, but never transported it to the site. (The few pieces of machinery there now are believed to date from the 1920s.) Unfortunately, insufficient work had been undertaken to establish if there was an economic gold deposit, and when a manager arrived from England in 1897 he immediately called a halt to all activities. By this time the company had squandered many thousands of pounds.

In 1899 the claim was sold by public auction to a Captain Hodge of Coromandel. He carried out a limited amount of prospecting, and subsequently sent 14 tons of quartz to the Thames School of Mines for treatment, which yielded 19 ounces of bullion. However, an attempt to raise further capital in England to continue operations failed, and the area was abandoned.

Geologically the area is somewhat unusual in that the gold-silver mineralisation is hosted by rhyolite lava flows and volcanic ash deposits, erupted some 5–6 million years ago. Analyses of the quartz veins indicate that the gold and silver were deposited at temperatures of between 240 and 280°C, deep underground. Hot water probably still exists at depth, as evidenced by the presence of a warm spring on the east bank of Wharekirauponga Stream.

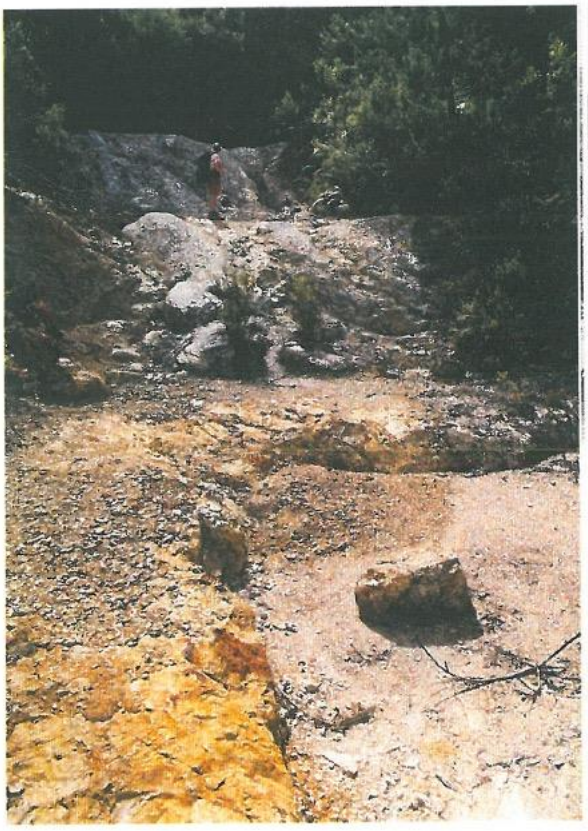
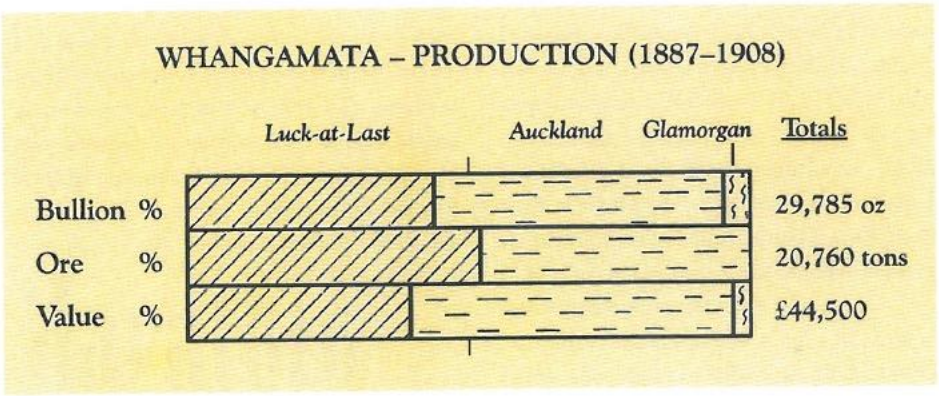


FIGURE 11.11 *The Royal Standard Battery site. Three levels were excavated into the hillside, but no concrete was ever poured, no building erected, and none of the machinery ever used.*



 Moore + Richie (1996)

Access

Public access to the Luck-at-Last Battery and mining area is via a well-formed track which starts from Taungatara Road, just before the ford across Wharekawa River. It is about a one hour walk to the battery site, and a further 20–30 minute walk to the No. 3 and No. 4 level adits, water race tunnel and upper tramway. Access to the main mine workings is via a partly overgrown but well-formed track starting east of the battery site.

NOTE: *Taungatara Road may be closed at times of high fire risk, or during logging operations. Enquire at the Tairua Forest H.Q. north of Whangamata (weekdays only 8 am to 4.30 pm) for further information.*

The Glamorgan workings are located on the hillside just north of the DOC campground, at the end of Wentworth Valley Road, and are easily reached by following a track from the south side of the ford. Several adits are accessible from an old bench track along the foot of the hill.

The Auckland Battery site is a 30–40 minute walk from the DOC campground, along the well-formed Wentworth Valley track. There is no marked track from there to the mine, but the low-level adit can be reached by climbing up the ridge directly opposite the battery site (from the river crossing on the main track) for about 200 metres, then following the overgrown tramway route around the hillside to Tornado Stream (15–20 minutes).

Access to the Royal Standard Mine is from the end of Parakiwai Road (single lane for the last kilometre). It is an easy 1¼ hour walk to the battery site along the old horse-drawn tramway route. The battery site is about 100 metres south of Adams Stream, just off the main track. Nearby, a 'lower tramway' track leads to some of the old mine workings and a small gorge. An 'upper tramway' track, which begins further south, leads directly to the main workings near the upper end of the gorge, but this is unmarked and largely overgrown.

NEW ZEALAND ARCHEOLOGICAL ASSOCIATION INCORPORATED

Site Record Form

ARCHSITE
archaeological site recording scheme

NZAA Site Number:	T12/1290	**Site Coordinates (NZTM)**	
Imperial Site Number:	N49/?	**Easting:**	1851476
Site Type:	Transport/	**Northing:**	5872549
Site Name(s):		**Source:**	CINZAS

Finding Aids to the Location of the Site:

Brief Description:
MINE/ETC

Condition of Site when last visited:
No Recent Info

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORD FORM (NZMS260) NZMS 260 map number T12, T13 NZMS 260 map name Thames, Paeroa **NZMS 260 map edition** Ed 2 (1984), Ed 1 (1980)	NZAA METRIC SITE NUMBER T12/1290 **DATE VISITED** Three visits over period January-April 2007 **SITE TYPE** Mining SITE NAME: MAORI **OTHER** Wharekirauponga

Grid Reference Easting 2761805 Northing 6434072 (this is for the car park at the start of the track in to the gold mining area)

1. **Aids to relocation of site *(attach a sketch map)***

From either Whangamata or Waihi, travel on SH25 to the junction of Parakiwai Quarry Rd at NZMG 634352 (approx 4km south of Whangamata). Travel west on Parakiwai Quarry Rd, to the parking area at the end of the road (approx 3 km). This is adjacent to the start of the track leading to the Wharekirauponga mining area. The track is well signposted and follows the route of an old tramway (some sleepers are still in place, but no rails). After approx 50 minutes easy walk, the area that contained mining infrastructure (including a battery site) and several mine adits is reached. See maps at Part 2.

2. **State of site and possible future damage**

The overall site includes a large area of the Wharekirauponga valley, and has been described in a single record for the sake of completeness and ease of reference. It can be considered as having the following main components:

a) The tramway running south from the Otahu River estuary area, which splits into "upper" and "lower" tramways in the vicinity of the battery site.
b) A clearing (WP 215) which appears to be the site of mine buildings and various other activities, eg storage.
c) The battery site (WP 299) - already recorded as site T12/681.
d) Mine workings, at various points along the upper and lower tramways, and apparently also on the true right (eastern) bank of the Wharekirauponga Stream, which were not visited in the surveys.

The main threats are re-growth, which is quite advanced at the battery site, and the removal or deterioration of artefacts. Most artefacts are metal, and subject to rusting, but a few are wooden & so subject to rot, which is at an advanced stage.

3. **Description of site** (Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)

History:

Wharekirauponga is notorious for being a "gold rush that never was". Extensive capital works were carried out by the Royal Standard company, including construction of an 8km tramway from the Otahu Inlet, and the clearing and assembling of equipment for a battery site (which was never constructed) when senior management realised there was insufficient gold for the claim to be a commercial proposition, and it was abandoned.

The history of the area is described by Moore and Ritchie (1996 122-125), Downey (2002 202-203) and Isdale (1984a, 1984b). There was prospecting in the area from 1893, but few claims were registered until 1895, when a considerable number of small claims were recorded. The Royal Standard Company of the UK bought and consolidated most of these small claims in 1896, into a single claim known as the Royal Standard Mine.

The company went about building an extensive tramway and made preparations (including clearing a site, purchasing equipment and transporting it to the site) to construct a large battery. A water race (to power the battery) and several houses were also constructed. According to Isdale (1984b), by April 1897, the company employed 197 men and: "New batteries scheduled included that at of the Royal Standard at Wharekirauponga, in construction, with 80 stamps, able to put through 2,400 tons in 24 days."

In February 1898 a new manager (a Mr Pascoe) arrived from England, who "… had with him F.P. Hobson of the Discovery Finance Corporation of England, to check up on things."(Isdale 1984b) It was soon realised that the viability of the claim had not been demonstrated and, by April 1898, the new manager had called a halt to most activities. By this time, the company had spent many thousands of pounds:

> "Chill winds were beginning to blow on the Royal Standard. The 'Waihi Miner' reported [7th April 1898]: 'The Royal Standard, which twelve months ago was looked upon by its advocates as likely to rival in a few years the famous Waihi mine, is not regarded as favourably as formerly. There has been expended on it

> something like £30,000 in the formation of tramways, water races, buildings, importation of machinery and preparation for a big battery. A proportion, but evidently a small proportion, of the money has been used in actual mining.'" (Isdale 1984b)

On 23rd May 1898, the 'Waihi Miner' noted the "… discharge of nearly all hands, leaving only mine manager Pascoe and Assistant Superintendent Hobson, recently sent out from England." (Isdale 1984b)

A geological report on the Royal Standard claim stated: "… the auriferous belt was confined to an area of little more than a third of a square mile … while various kinds of quartz were present the best values got were evidently in soft, white, kaolinic material, the quartz being of poor grade. An inspection by the writer of a number of veins showed that they did not extend far in any direction, occurring more as floating lenses of quartz than anything else." (Downey 2002 234-235)

One ounce of bullion per ton of quartz was the planning figure used to determine whether a mine was viable or not (Gavalas 2005 12) - the average production of all the Hauraki mines was 3 oz per ton (Moore and Ritchie 1996 40). Downey (2002 280) shows the total production from the Royal Standard claim as 90 oz of bullion from 79 tons of quartz - above the magic figure of 1 oz per ton. However, the total yield was likely to be low, due to the poor geology of the area. A fundamental tenet of mining had been disregarded - always determine the value of the field before investing significant amounts of capital in mining it!

In 1899, the claim was sold by public auction to a Captain Hodge of Coromandel, who had 14 tons of ore assayed at the Thames School of Mines. This produced a yield of 19 oz of bullion, again over the key figure of 1 oz per ton. Attempts were made to raise further capital to continue operations, but this did not eventuate. According to Downey (2002 234): "nothing of any consequence has since been done on the ground".

There is some conjecture as to what happened to the battery equipment and whether it was actually transported to the site. Moore and Ritchie (1996 122-123)state: "They also purchased all the machinery for a battery but never transported it to the site. (The few pieces of machinery there now are believed to date from the 1920s)." Downey (2002 234) states that the company purchased a battery and transported it to "… the locality" (not specified whether this was the actual battery site or not). However, at some stage in the 1960s or early 1970s, a Mr Glen Mayclair of Waihi wrote to Mr Bert McAra (the Inspector of Mines for the Hauraki District until 1973 - see McAra 1978 rear flap) about the possibility of removing battery equipment from the bush to set up on a private site. Mayclair (undated) describes the machinery at the Wharekirauponga site as follows:

> "The battery was made by Bowes, Scott and Western. It is not assembled, in fact is scattered around the bush flat. There are three steel kingposts, various kingpost braces, a pile of stamps, two stamp boxes, cam shaft, Pelton wheel (Prices of Thames) and a host of small bits and pieces."

A site survey done by NZ Forest Service (c.1980) notes: "Presently there is no substantial plant remaining on the battery site. The last of the machinery was removed in the 1970s from this site and its vicinity by Glen Mayclair of Waihi." It is apparent that at least the majority of the battery machinery was transported to the site but not assembled, and that the main elements were removed (presumably illegally) some time around the 1970s.

Mayclair (undated) also notes that: "I also have an aerial photo taken in 1960, showing a bulldozed road going in to the battery site, this road leaving the back corner of Mr E.T. Anderson's farm …and joining the main stream at the junction with Thompson Stream. It is about half a mile along the tramline to where the battery is at the junction with Adams Stream." This was probably the route used to remove the battery machinery.

Site Survey:

The Royal Standard battery site was recorded as T12/681 in 1984. The wider Wharekirauponga site, including the battery, was re-surveyed during three one-day site visits over the period Jan - Apr 2007. As well as the author, participants included Neville Ritchie, Sean Sawyers & Ingrid Greenslade (all DoC), David Carley and Stephanie Green.

Areas investigated included the main tramway from the Otahu inlet (now the main access route to the mining area), the clearing at WP 215 (apparently the site of mine houses and buildings), the battery site (WP 299), the lower tramway to the waterfall at NZMG 603300, and the upper tramway from the tramway tunnel at WP 298 to a slip at WP 315 (where it was decided that it was unsafe to proceed any further). For detailed sketch maps of the area, showing the tramways and mine workings, see Moore

and Ritchie (1996).

Numerous artefacts and mine workings were found - see the next section for details. Apparently DoC intends to upgrade the tracks in the area and provide interpretation - this is strongly supported, as the area is relatively easy to access and there are many features of historical and archaeological significance. The mine workings and tram tracks remaining on the upper tramway are considered to be of particular value. Groups of casual walkers encountered during the surveys were very interested to hear about the history of the area.

4. Owner Dept of Conservation Hauraki Area Office Address Pahau St, Thames	Tenant/Manager Address
5. Nature of information (hearsay, brief or extended visit, etc.) **Photographs** (reference numbers and where they are held) **Aerial photographs** (reference numbers and clarity of site)	Written references (see list at end of record), site visits conducted over period Jan-Apr 2007, discussions with Mr Merv Grafton (Waiomu) re interpretation of some of the artefacts Held on D. Wilton's network drive at Massey University
6. Reported by David Wilton Address Massey University Albany Campus Email: d.r.wilton@massey.ac.nz Mobile: 021 1868401	Filekeeper Date DR. NEVILLE A. RITCHIE REGIONAL ARCHAEOLOGIST DEPT. OF CONSERVATION 29/6/07 PRIVATE BAG. HAMILTON
7. Key words Mining, battery, Coromandel	
8. New Zealand Register of Archaeological Sites *(for office use)* NZHPT Site Field Code	

Latitude S		Longitude E	
HA	Type of site	BB	Present condition & future danger of destruction
	Local environment today		Security code
AA	Land classification	MW	Local body

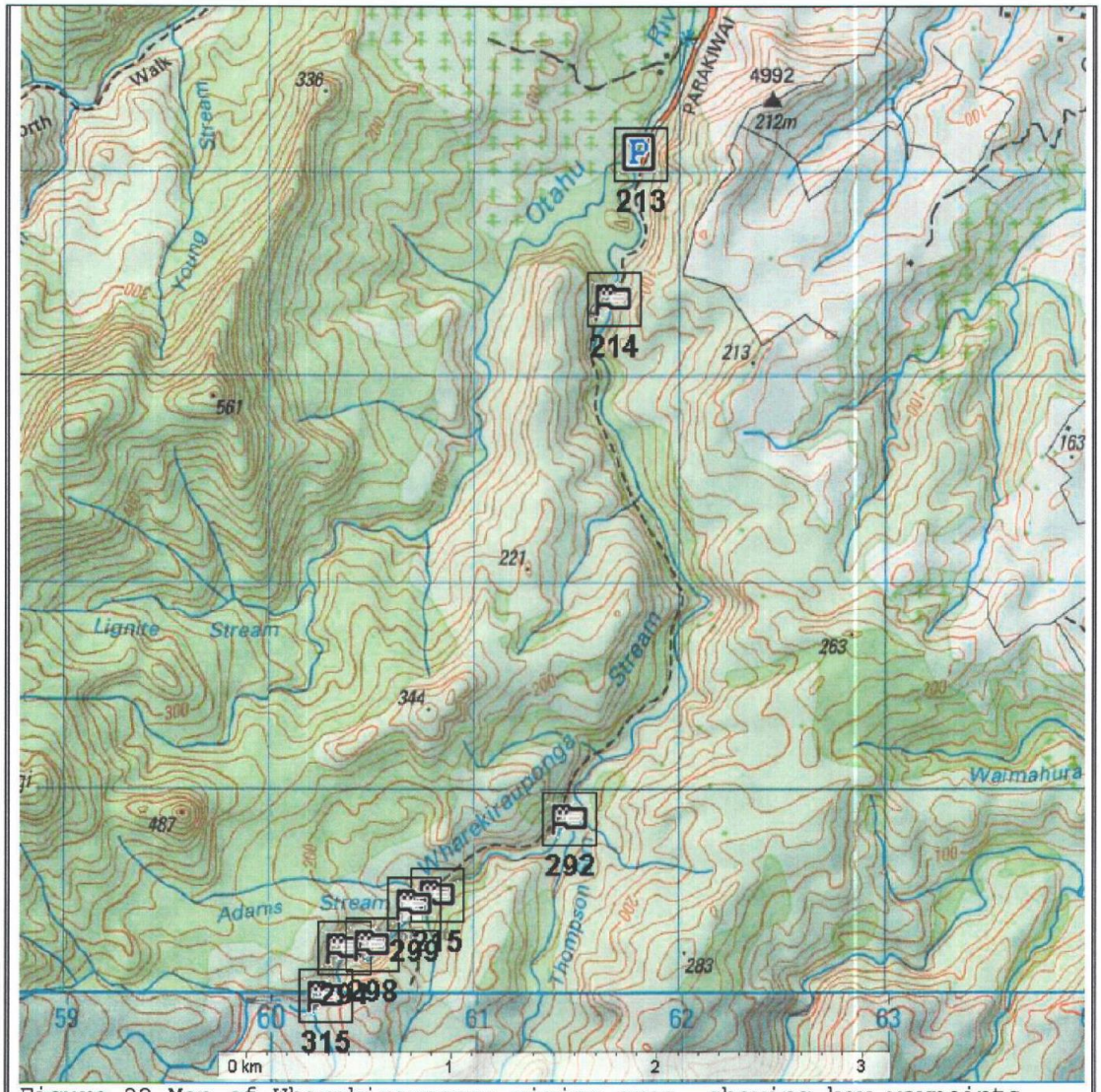


Figure 22 Map of Wharekirauponga mining area, showing key waypoints

References:

Downey, J. F. (2002) *Gold-Mines of the Hauraki District*, Cadsonbury Publications, Christchurch.

Gavalas, M. (2005) *Coromandel Landmarks*, Reed, Auckland.

Isdale, A. M. (1984a) *Notes on Whangamata Area*, Thames.

Isdale, A. M. (1984b) *Notes on Wharekirauponga Area*, Thames.

Mayclair, G. (undated) *Letter to Mr B. McAra*, Waihi.

McAra, J. B. (1978) *Gold Mining at Waihi 1878-1952*, Waihi Historical Society, Waihi.

Moore, P. and Ritchie, N. (1996) *Coromandel Gold: A Guide to the Historic Goldfields of Coromandel Peninsula*, Dunmore Press, Palmerston North.

NZ Forest Service (c.1980) *Survey Report - Wharekirauponga Area*,

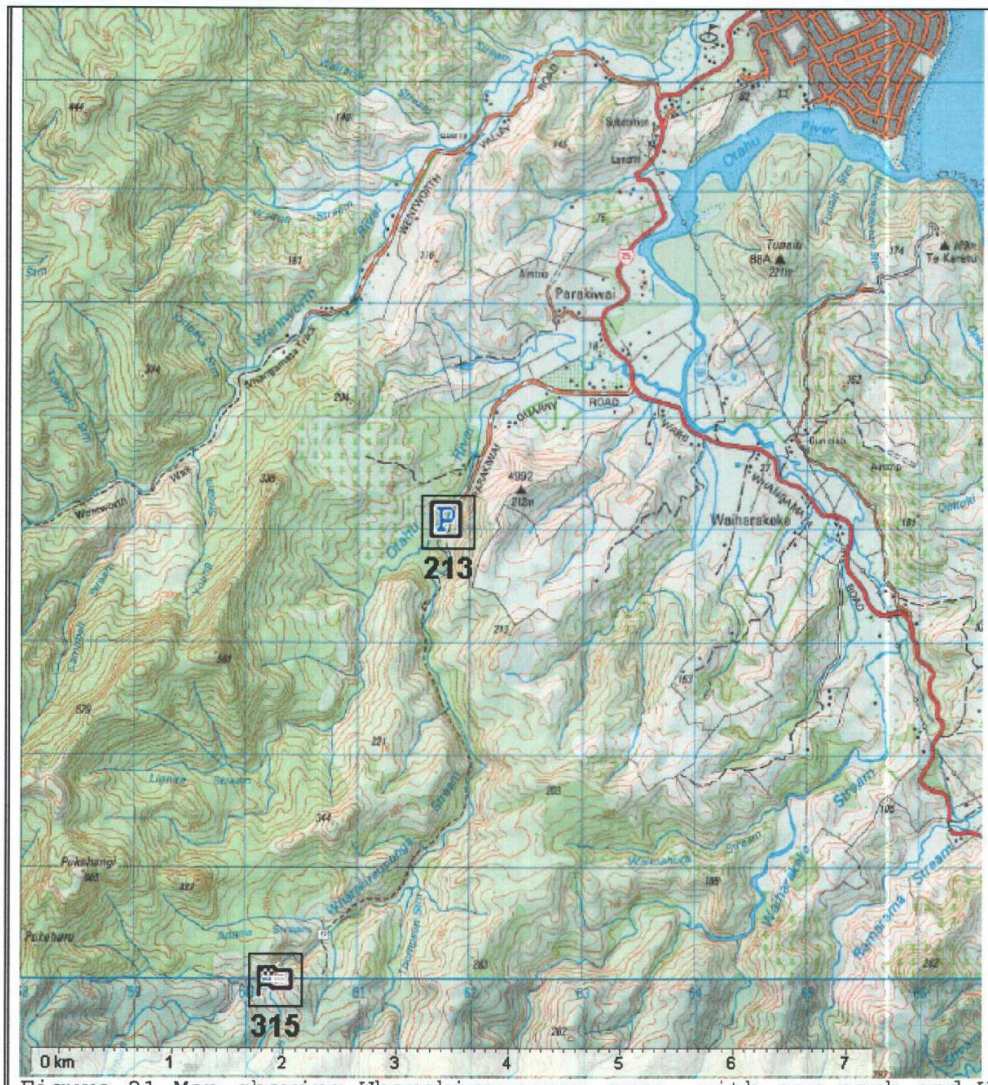


Figure 21 Map showing Wharekirauponga area, with car park and WP 315, the furthest point reached on the upper tramway

Figure 19 Metal remnants in adit entrance WP 314 (probably the tipping mechanism for a cart)

Figure 20 Metal rails in adit, WP 314

Figure 17 Adit entrance WP 296

Figure 18 Rails on upper tramway (WP 312)

Figure 15 Water race pipeline crossing track at WP 294

Figure 16 Cave dug into bank (WP 313) with remains of door sill (probably an explosives store)

Figure 13 Sections of cyanide tank frame at battery site WP 299

Figure 14 Pressure vessel WP 219

Figure 11 Miscellaneous metal remnants at battery site WP 299

Figure 12 Cylindrical shaft at battery site WP 299

Figure 9 Gear wheel vicinity battery site WP 299

Figure 10 Hydraulic joint, battery site WP 299. Inscription on side reads: "Glenfield and Kennedy Ltd Kilmarnock".

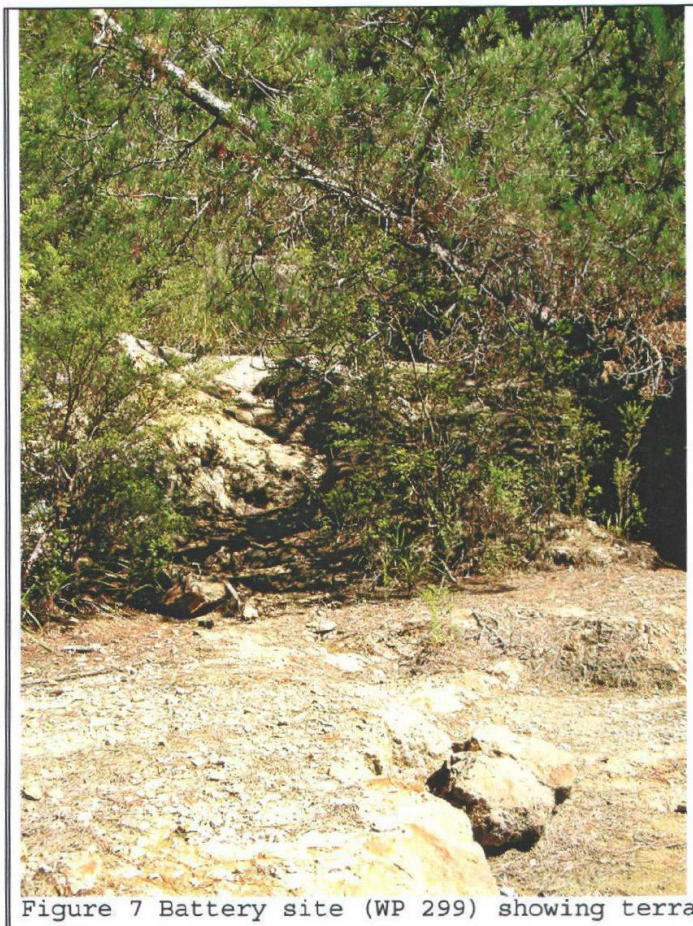


Figure 7 Battery site (WP 299) showing terraces

Figure 8 Hydraulic valve at battery site WP 299

Figure 5 Remnants of fireplace or furnace, vicinity of WP 215

Figure 6 Brick bearing inscription "JJ Craig Auckland". Several of these were found in the vicinity of the clearing at WP 215 and the battery site at WP 299.

Figure 3 Tramway sleepers at WP 222

Figure 4 Possible loading bay - one of two at WP 292. This is at the junction of Thompsons Stream, and possibly associated with the removal of battery components from the site c.1970s

Figure 1 Bridge remnants at WP 214

Figure 2 Hopper at WP 301 (this is thought to be associated with quarrying, rather than gold mining)

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/306

SITE TYPE: Mining - gold

SITE NAME(s): Favona Shaft

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853523 **Northing:** 5858766 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/306

Finding aids to the location of the site

Marked adjacent to Favona Road on Waihi Borough Council's 'shaft map'. However, Favona Road is an unformed 'paper road'. Shaft 3m from boundary fence.Site extends over a low hill 20m N of Old Valley Road and into neighbouring properties to N & W.

Brief description

Main shaft is on N side of hill, comprising a depression 20m across and 2.5m deep adjoining a poured concrete building/machinery foundation (15x7m).

Recorded features

Mullock heap, Foundations, Shaft

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/306

Site description

Condition of the site

Shaft now open. Mullock heap adjoining the shaft on property to W. Terraces and collapsed drives on hill above E of site.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/306

Supporting documentation held in ArchSite

Site No: T13/306 **Site Type:** mine shaft

Site Name: Favona shaft

Location: GR 637203

Historical Resume: The Favona shaft was sunk during the years 1895-98 to a depth of 310ft. The initial shaft (70ft deep) was excavated by the Favona and Brilliant G.M.C. and opened out a level at 60ft. In 1897 the claim was taken over by the Waihi Consolidated G.M.C. which continued sinking to a total depth of 310ft. Further levels were opened out at 200 and 300 ft. Despite proving that the Favona lodes, a large reef system of chalcedonic (flinty) quartz, were extensive negligible payable ore was encountered (Morgan 1924: 133-134, 185). In 1899 the company's funds were exhausted and it disposed of the property to a syndicate (Waihi Syndicate Ltd) which took up the adjoining Ohinemuri claim. After this little was done in the Favona section. In 1905 the syndicate began sinking a new shaft, the Consolidated (T13/307) on the northern boundary of the property. Work continued in the Consolidated shaft for a decade. In 1915, the syndicate restored the Favona shaft to working order after failing to find any payable quartz via the Consolidated shaft. Despite a good deal of work over a two year period (1915-17) on the different levels within the large Favona lode, it also proved unproductive. All work ceased on the property in 1917 (Downey 1935:244-245).

Historical Significance: Local, minor. Despite the energy and finance invested by various companies, the Favona lode proved to be a non-paying proposition.

Potential for Interpretation/Development: Minimal. The location could be marked as part of a self-guiding heritage trail around Waihi. Failed ventures such as this (in addition to bore-holes) were an integral element in proving the extent and nature of payable goldfields.

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD FORM (NZMS 260)

NZMS 260 map number T13
NZMS 260 map name Paeroa
NZMS 260 map edition 1st 1980

NZAA METRIC SITE NUMBER T13/306
DATE VISITED 2/12/88
SITE TYPE mine shaft
SITE NAME: MAORI / OTHER Favona Shaft

Grid References Easting 2,7 6 3 7 0 0 Northing 6,4 2 0 3 0 0

1. Aids to relocation of site *(attach a sketch map)*

Proceed along Golden Valley Rd, Waihi to the stated grid reference. The site is located 10m north of the road amidst a grove of pine trees.

2. State of site and possible future damage

infilled, but still evident

3. Description of site *(Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here)*

Description: The site of the Favona shaft is marked adjacent to Favona Rd on the Waihi Borough Council's 'shaft map'. However, Favona Rd is an unformed 'paper road'. The visible evidence of the now infilled shaft is a 50cm deep rectangular grassed depression measuring 10 x 4m.

4. Owner
Address

Tenant/Manager
Address

Owner/Occupier: The shaft site is on private farmland. The owner was not ascertained.

5. Nature of information *(hearsay, brief or extended visit, etc.)* brief visit

Photographs *(reference numbers, and where they are held)*

Aerial photographs *(reference numbers, and clarity of site)* SN 5944 C/15

6. Reported by
Address N. Ritchie
DOC HM

Filekeeper
Date L. Furey

7. Key words Favona shaft, mining, Waihi

8. New Zealand Register of Archaeological Sites *(for office use)*
NZHPT Site Field Code

Latitude S

G	I	Type of site
E	X	Local environment today
A	C	Land classification

Longitude E

B	B	Present condition and future danger of destruction
–	–	Security code
M	W	Local body

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/817

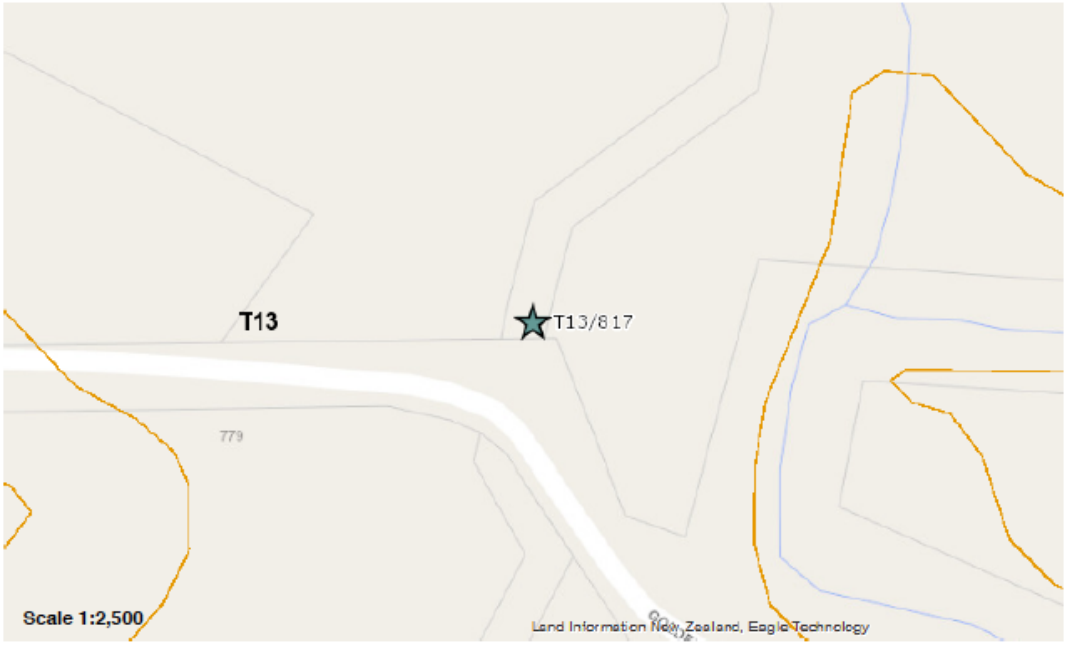
SITE TYPE: Mining - gold

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853816 **Northing:** 5858685 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/817



Finding aids to the location of the site

'From Favona Hill, on Golden Valley Road, running SW around SIlverton and Winner Hill, then NW to Union Hill, E of end of Clarke St.'

Brief description

'Water race. Designed to feed water from Ohinemuri River to Union Battery, either through earthen channels, pipes, or along a wooden chute suspended on trusses.'

Recorded features

Water race

Other sites associated with this site

T13/818, T13/820

Gladstone Pit

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/817

Site description

'Updated 22/09/2014 (Field visit), submitted by siankeith , visited 28/08/2014 by Peter Caldwell
Grid reference (E1853816 / N5858685)

The water race was visually inspected in Section 273 BLK XVI Ohinemuri SD. This appellation refers directly to the race in its situation from the Ohinemuri River to where it intersects with Golden Valley Rd. The race has mostly been infilled and appears as a depression c.2m wide across the open paddock. Part of the race is located within a natural gully.

Updated 22/09/2014 (Field visit), submitted by siankeith , visited 28/08/2014 by Peter Caldwell
Grid reference (E1853205 / N5857475)

The water race was visually inspected in Section 273 BLK XVI Ohinemuri SD. This appellation refers directly to the race in its situation from the Ohinemuri River to where it intersects with Golden Valley Rd. The race has mostly been infilled and appears as a depression c.2m wide across the open paddock. Part of the race is located within a natural gully.'

Condition of the site

'Updated 22/09/2014 (Field visit), submitted by siankeith , visited 28/08/2014 by Peter Caldwell

The race intersects with Golden Valley Road at this point. The race on the north side of Golden Valley Road has been mostly infilled. However, on the south side of the road the race has not been completely filled-in and indicates that the race was over 1 meter deep. The race is likely to be evident at least 1 meter below the current ground level, despite the minor disturbance of the modern culvert. It is considered that intact profiles of the race will be evident in this area.

At W end water race is concrete-faced, 1m deep with outer embankment/tramway. Elsewhere has been filled in and exists as an intermittently identifiable terrace in farmland. Threat: mining.'

Statement of condition

Updated: 10/08/2016, Visited: 28/08/2014 - Fair - Some intact features, but others may be unclear or damaged

Current land use:

Updated: 10/08/2016, Visited: 28/08/2014 - Grazing, Production forest, Indigenous vegetation

Threats:

Updated: 10/08/2016, Visited: 28/08/2014 - Farming practices, Forestry operations

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/817

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (METRIC)
Metric map number: T13
Metric map name: PAEROA
Metric map edition: Edition 1 1980

NZAA METRIC SITE NUMBER: **T13/817**
DATE VISITED: 25th October 2000
SITE TYPE: Water race
SITE NAME: MAORI:
OTHER:

Grid Reference Easting 2 7 6 3 5 0 0 Northing 6 4 1 9 0 0 0

1. Aids to relocation of site (*attach a sketch map*):
From Favona Hill, on Golden Valley Rd (1.4?) km east of the intersection with SH25, running southwest around Silverton and Winner Hill, then northwest to Union Hill, east of the end of Clarke St, Waihi.

2. State of site and possible future damage:
The route of the water race is principally in pasture around Silverton and Winner Hills. On Favona & Union Hill it is in dense undergrowth. Much has already been affected by modern gold mining, and future gold exploration, vegetation and weathering may affect the surviving evidence.

3. Description of site (*Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here*):
The water race was designed to gravity feed water from higher up the Ohinemuri River to the Union Battery. In most cases it ran along an earthen channel, but in lower places it was either siphoned through pipes, or flowed along a wooden chute suspended on tressels. In places the channel was quite defined while in others it had all but vanished. On the eastern slopes of Favona and Silverton Hills it was a hollowed out area 2-2.5 m wide and 0.5-1.0 m deep. The course disappeared in the area of the modern processing plant. It could be picked up again in places on the southern side of Winner Hill. As it follows the southern contours of the hill around to the western side, it runs approximately parallel to the modern farm race, and is between 2.0-3.3 m in width. The race doubles back around the base of Union Hill, where it runs close to, and crosses over the tramway. The final section to the Union Battery was not surveyed, and the recent mining activity probably means that most of it has been destroyed in this area.
Note grid reference is given approximately mid-way along the route shown in the figure.

Refer C Phillips 2000. Waihi Gold Mining drilling extension, Waihi. Unpub. report for Waihi Gold Mining company. Moore, Phil & Neville Ritchie 1996. *Coromandel gold: a guide to the historic goldfields of Coromandel Peninsula*. Dunmore Press Ltd., Palmerston North.

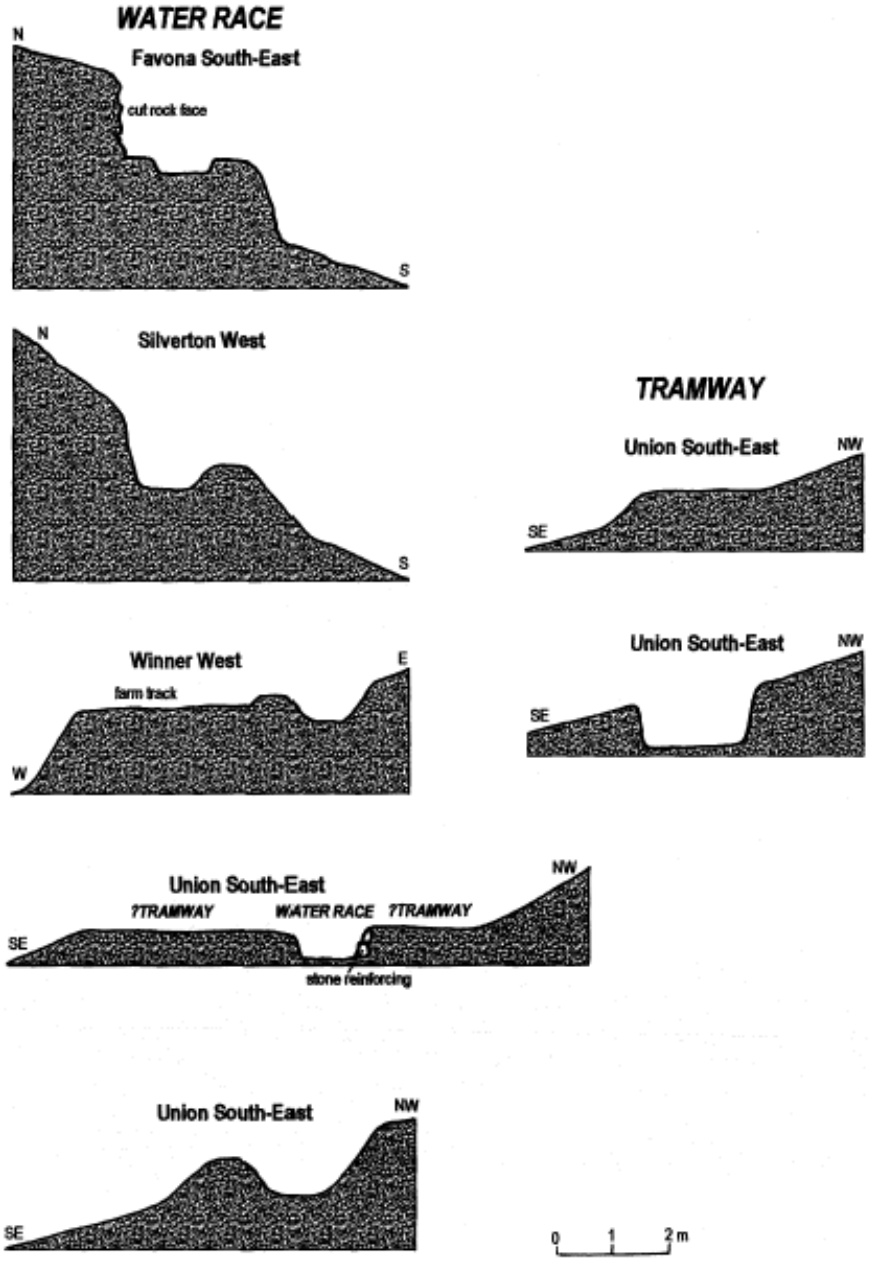
4. Owner: Waihi Gold Mining Company
Address: PO Box 190, Waihi
Tenant/Manager:
Address:

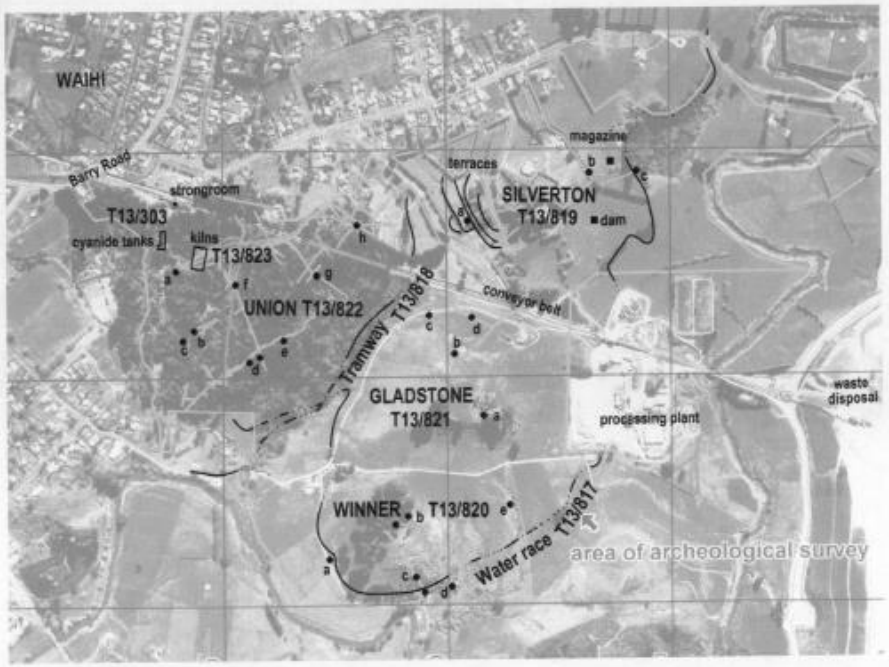
5. Nature of information (*hearsay, brief or extended visit, etc.*): Visit by survey team.
Photographs (*reference numbers*): Yes, see Phillips report
Aerial photographs (*reference numbers, and clarity of site*): Yes, see Phillips report, parts are visible

6. Reported by: Dr Caroline Phillips
Address: 40 Laingholm Drive
Laingholm, Auckland
Filekeeper:
Date:

7. New Zealand Historic Places Trust (for office use)
E14 Type of site
Local environment today
IA II Land classification
present condition and
B B future danger of
destruction
Local body

T13/817


WATER RACE
N
Favona South-East
cut rock face
S
N
Silverton West
S
TRAMWAY
Union South-East
NW
SE
Winner West
E
farm track
W
Union South-East
NW
SE
Union South-East
NW
?TRAMWAY
WATER RACE
?TRAMWAY
SE
stone reinforcing
Union South-East
NW
SE
0
1
2 m



Historic gold mining features, east Waihi
(conveyor belt, processing plant and waste disposal belong to the modern gold mining venture)

T13/817

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/818

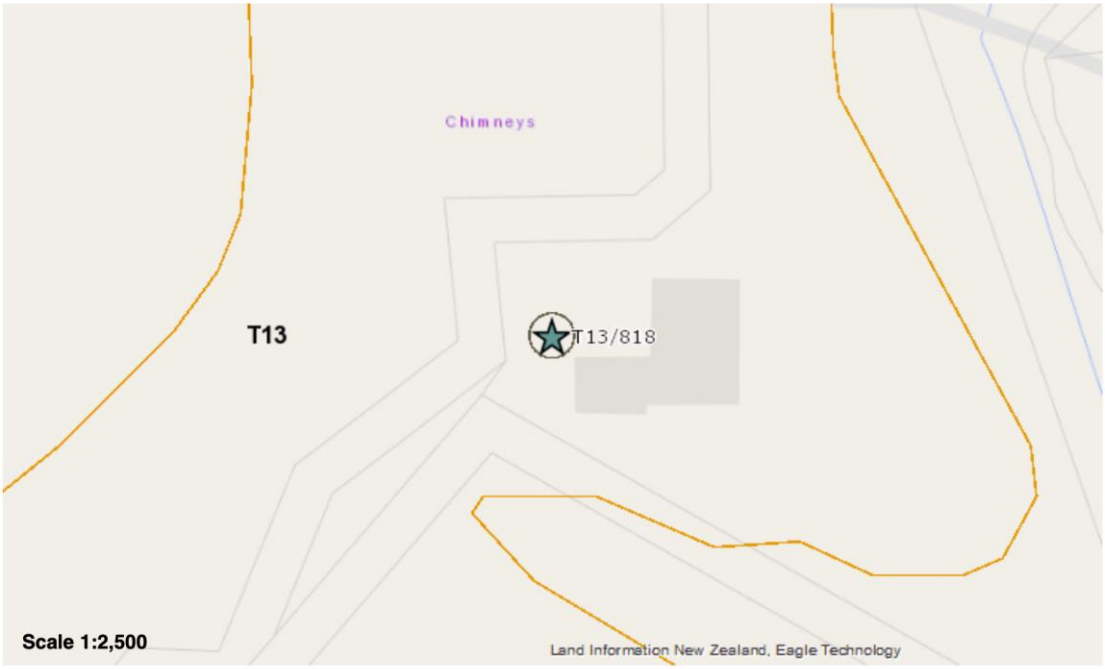
SITE TYPE: Transport/ communication

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853595 **Northing:** 5857759 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/818



Finding aids to the location of the site

From Silverton Hill, 2km E of Moore Street, running SW to Union Hill E of end of Clarke Street, Waihi.

Brief description

Tramway course sometimes cut as level terrace, sometimes excavated upto 1m, averaged 3-3.9m wide.

Recorded features

Tramway

Other sites associated with this site

T13/817

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/818

Site description

Condition of the site

Except on flats N of Clarke Steet and S of end of Moore Street, the course of the tramline is is not clear. In places it may be confused with T13/817 (water race). The N part of tramway, on Union Hill, was not visited. In farmland 20m N of Clarke Street.

Statement of condition

Current land use:

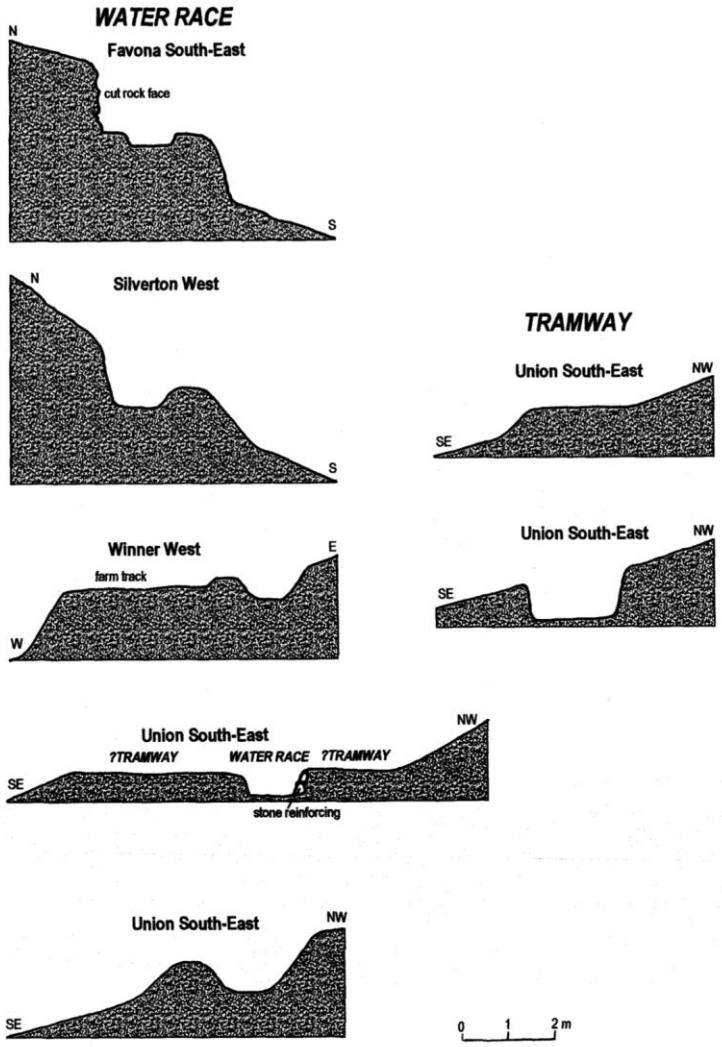
Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/818

Supporting documentation held in ArchSite

818



NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (METRIC)
Metric map number: T13
Metric map name: PAEROA
Metric map edition: Edition 1 1980

NZAA METRIC SITE NUMBER: **T13/818**
DATE VISITED: 25th October 2000
SITE TYPE: Tramway
SITE NAME: MAORI:
OTHER:

YY

Grid Reference Easting 2763300 Northing 6419500

1. Aids to relocation of site (*attach a sketch map*):
From Silverton Hill, 2 km east of Moore St, Waihi, running south-west to Union Hill east of the end of Clarke St, Waihi.

2. State of site and possible future damage:
The route of the tramway is principally around the south-eastern side of Union Hill, where it is in thick vegetation. Much has already been affected by modern gold mining, and future gold exploration, vegetation and weathering may affect the surviving evidence.

3. Description of site (*Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here*):
The tramway brought firewood to fire the kilns, and sometimes ore from the Waihi mines to the larger Victoria Battery at Waikino. In 1894 alone over 10,000 tons of firewood was needed for the ore-roasting kilns on Union Hill. Probably a small steam engine conveyed the trucks of timber or ore. The course of the tramway was sometimes cut as a level terrace and sometimes excavated by up to 1 m, and averaged 3.0 - 3.9 m in width. It was located in various places but, as passage was impeded by a heavy growth of blackberry, it was not possible to trace the entire route. At one point it cut across the water race. In addition modification of the land at the northern end, near the conveyor belt, had erased evidence of the tramway there, although a small section could be seen between the conveyor belt and Silverton Hill.

Note grid reference is given mid-way along the route shown in the figure
Refer C Phillips 2000. Waihi Gold Mining drilling extension, Waihi. Unpub. report for Waihi Gold Mining company. Moore, Phil & Neville Ritchie1996. *Coromandel gold: a guide to the historic goldfields of Coromandel Peninsula.* Dunmore Press Ltd., Palmerston North.

4. Owner: Waihi Gold Mining Company
Address: PO Box 190, Waihi
Tenant/Manager:
Address:

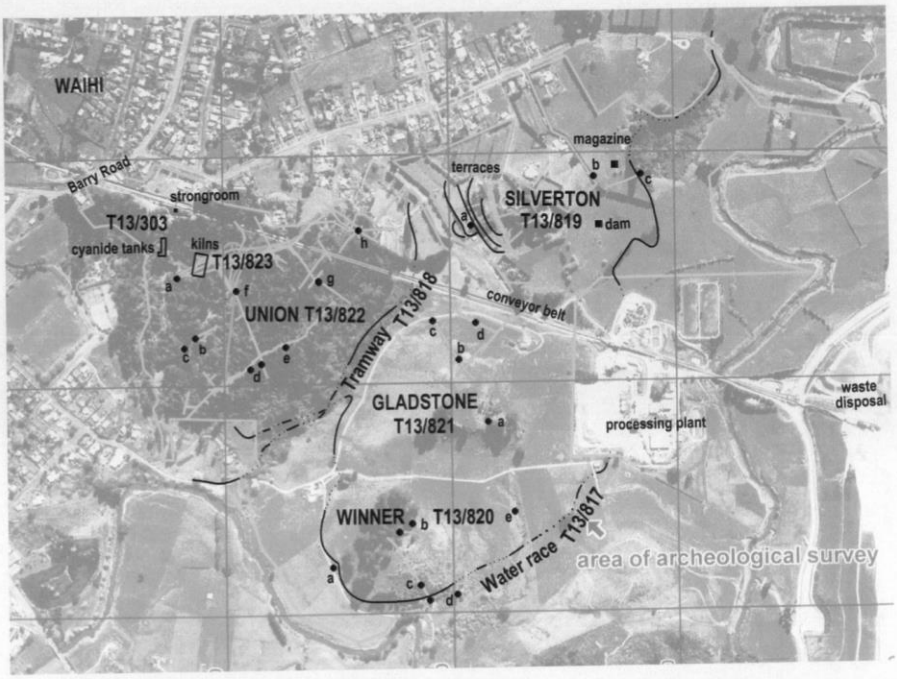
5. Nature of information (*hearsay, brief or extended visit, etc.*): Visit by survey team.
Photographs (*reference numbers*): Yes, see Phillips report
Aerial photographs (*reference numbers, and clarity of site*): Yes, see Phillips report, not visible

6. Reported by: Dr Caroline Phillips
Address: 40 Laingholm Drive
Laingholm, Auckland
Filekeeper: Owen Wilkes
Date: 17/12/00.

7. New Zealand Historic Places Trust (for office use)

BB Type of site
Local environment today
AI Land classification
present condition and
BB future danger of
destruction
MW Local body

N53



Historic gold mining features, east Waihi
(conveyor belt, processing plant and waste disposal belong to the modern gold mining venture)

818

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/819

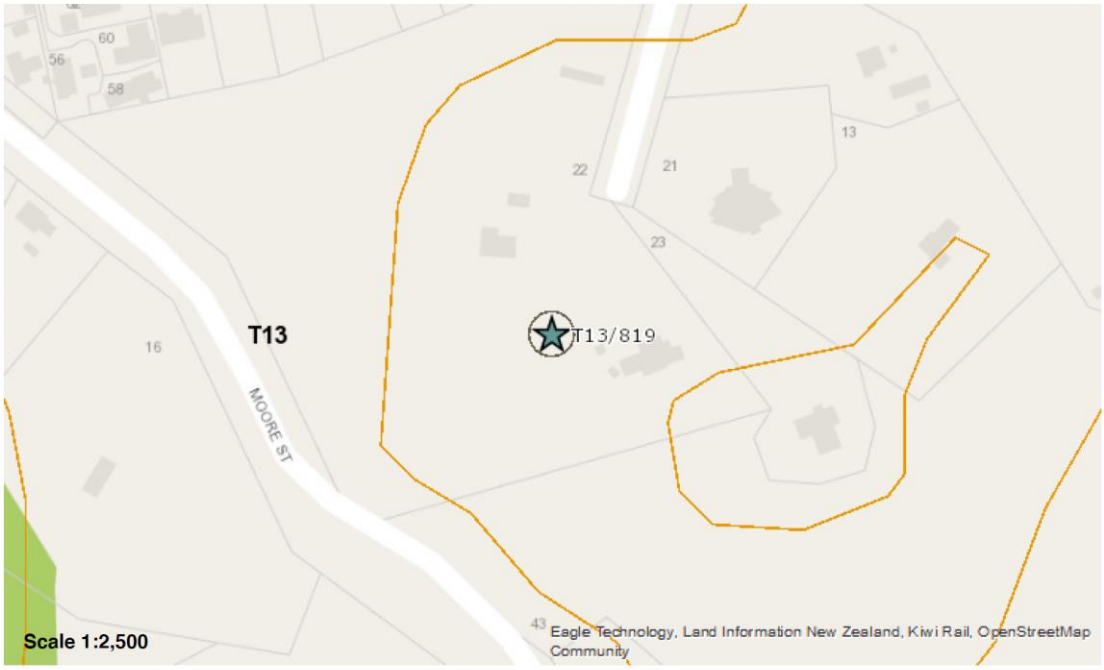
SITE TYPE: Mining - gold

SITE NAME(s): Silverton Hill and Battery

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853308 **Northing:** 5858302 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/819



Finding aids to the location of the site

On Silverton Hill, a low hill rising immediately E of Moore St, Waihi.

Brief description

Silverton Hill is a site complex of terraces, shafts and possible drives. Brick magazine foundations (12x7m) on large artificial mound and cut into scarp.

Recorded features

Shaft, Drive, Magazine

Other sites associated with this site

T13/818

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/819

Site description

Condition of the site

The S and E parts of site have been recently destroyed by the new Martha Mine processing plant. Large terraces and collapsed shafts are main visible features.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/819

Supporting documentation held in ArchSite

C

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (METRIC)
Metric map number: T13
Metric map name: PAEROA
Metric map edition: Edition 1 1980

NZAA METRIC SITE NUMBER: **T13/819**
DATE VISITED: 25th October 2000
SITE TYPE: Gold mining drives & shafts
SITE NAME: MAORI:
OTHER: Silverton Hill & Battery YY

Grid Reference Easting 2 7 6 3 6 0 0 Northing 6 4 1 9 8 0 0

1. Aids to relocation of site (*attach a sketch map*):
On Silverton Hill, 2 km east of Moore St, Waihi.

2. State of site and possible future damage:
The hill is partly in pasture and partly in trees, with several house and garden sections. There are a number of shafts and drives, and terraces. Future gold exploration, vegetation and weathering may affect surviving structures.

3. Description of site (*Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here*):
Most of the drives and shafts on Silverton Hill are marked on the Waihi Gold Mining Company map. (a) The hill is the site of a complex overlay of shafts and drives, the most hazardous of which are fenced off. (b) On a slope is an area of distinct slumping, which corresponds with the line of another smaller drive. (c) A drive, which is cut by the water race. Opposite this is a bank formed from the deposition of tailings. Around shaft (a) there are a series of terraces on the western slopes probably relating to the Silverton Battery. Exposed scarps at the back of two terraces revealed a fairly consistent layer of overburden covering original dark topsoil. The foundations of a magazine, of unknown date, were located situated on a large artificial mound and cut into a scarp. It appears to have been made of brick and measures approximately 12 x 17m. A dam-like feature 9 x 6m, was located on the eastern slopes. It was difficult to ascertain whether this is a recent farming feature or a mine related one.

Refer C Phillips 2000. Waihi Gold Mining drilling extension, Waihi. Unpub. report for Waihi Gold Mining company. Moore, Phil & Neville Ritchie1996. *Coromandel gold: a guide to the historic goldfields of Coromandel Peninsula*. Dunmore Press Ltd., Palmerston North.

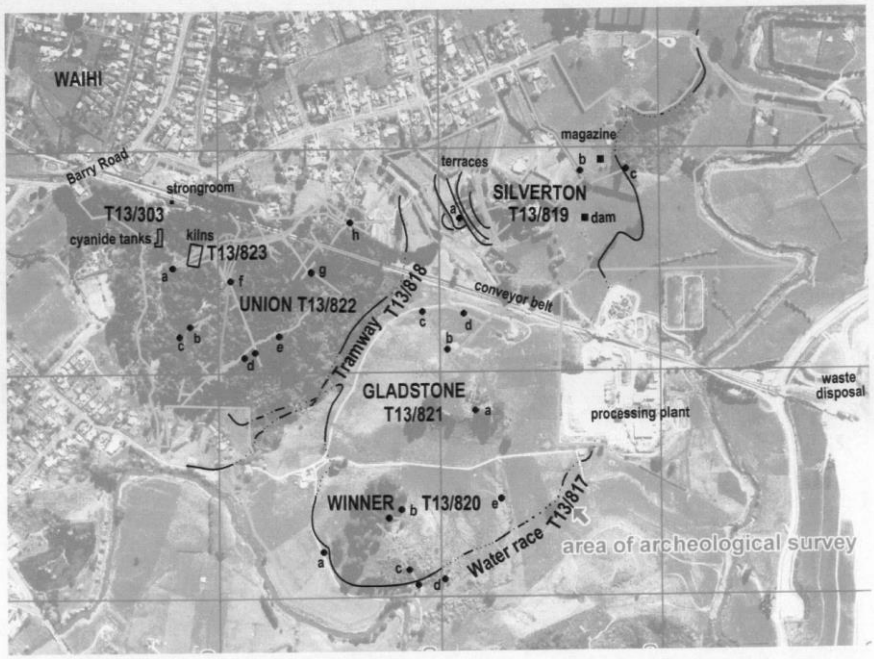
Owner: Waihi Gold Mining Company
Address: PO Box 190, Waihi
Tenant/Manager:
Address:

5. Nature of information (*hearsay, brief or extended visit, etc.*): Visit by survey team.
Photographs (*reference numbers*): Yes, see Phillips report
Aerial photographs (*reference numbers, and clarity of site*): Yes, see Phillips report, terraces are visible

6. Reported by: Dr Caroline Phillips
Address: 40 Laingholm Drive
Laingholm, Auckland
Filekeeper: Owen Wilkes
Date: 17/12/00.

7. New Zealand Historic Places Trust (for office use)
SH Type of site
Local environment today
AI Land classification
AB present condition and future danger of destruction
MW Local body

N53



Historic gold mining features, east Waihi
(conveyor belt, processing plant and waste disposal belong to the modern gold mining venture)

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/820

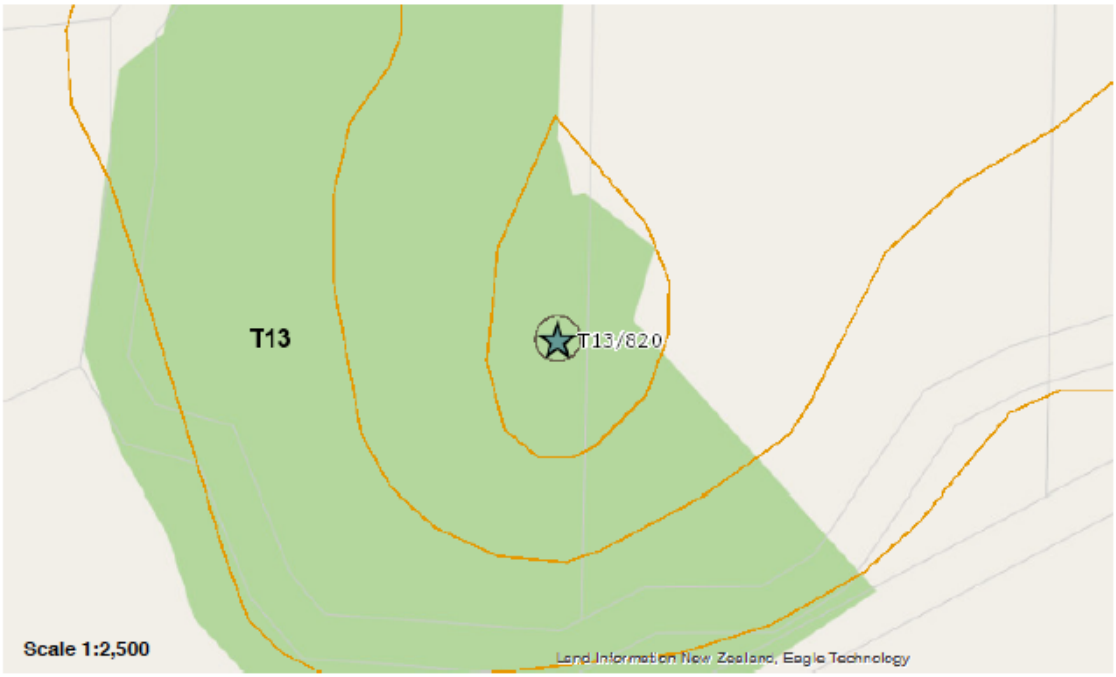
SITE TYPE: Mining - gold

SITE NAME(s): Winner Hill

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853105 **Northing:** 5857575 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/820



Finding aids to the location of the site

Winner Hill is 4km SE of end of CLarke Street, Waihi. Winner Hill is bounded to E, S and W by T13/817 (water race).

Brief description

Extensive complex of goldmining remains - drives, shafts, terraces and tailings - over a wide area.

Recorded features

Tailings, Drive, Shaft, Terrace

Other sites associated with this site

T13/817, T13/818, T13/819

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/820

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (METRIC)
Metric map number: T13
Metric map name: PAEROA
Metric map edition: Edition 1 1980

NZAA METRIC SITE NUMBER: **T13/820**
DATE VISITED: 19th October 2000
SITE TYPE: Gold mining drives & shafts
SITE NAME: MAORI:
OTHER: Winner Hill

Grid Reference Easting 2 7 6 3 4 0 0 Northing 6 4 1 9 0 0 0

1. Aids to relocation of site (*attach a sketch map*):
On Winner Hill, 4 km southeast of the end of Clarke St, Waihi.

2. State of site and possible future damage:
The hill is partly in pasture and partly in pine trees and weedy vegetation. There are a number of shafts and drives, some are marked and others are not. Future gold exploration, vegetation and weathering may affect surviving structures.

3. Description of site (*Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here*):

Most of the drives and shafts on Winner Hill are marked on the Waihi Gold Mining Company map (a) Indicates the position of an isolated shaft and drive. Apart from a discernable hollow in the ground no other surface evidence was noted. (b) Near the summit of the hill, was an area of spoil relating to the entrance of two marked drives. (c) Two other mining features, on the southern slopes of Winner Hill, indicating a surface collapse and a ventilation shaft relating to a marked drive, the entrance of which was open, with a tailings spoil heap below. (d) Considerable evidence of tailings could be seen at the entrance to this drive, with another drive slightly to the east. This rather complex worked area needs detailed surveying. (e) Further to the east, another drive had an exposed entrance with mining debris evident in the streambed below.

Refer C Phillips 2000. Waihi Gold Mining drilling extension, Waihi. Unpub. report for Waihi Gold Mining company. Moore, Phil & Neville Ritchie 1996. *Coromandel gold: a guide to the historic goldfields of Coromandel Peninsula*. Dunmore Press Ltd., Palmerston North.

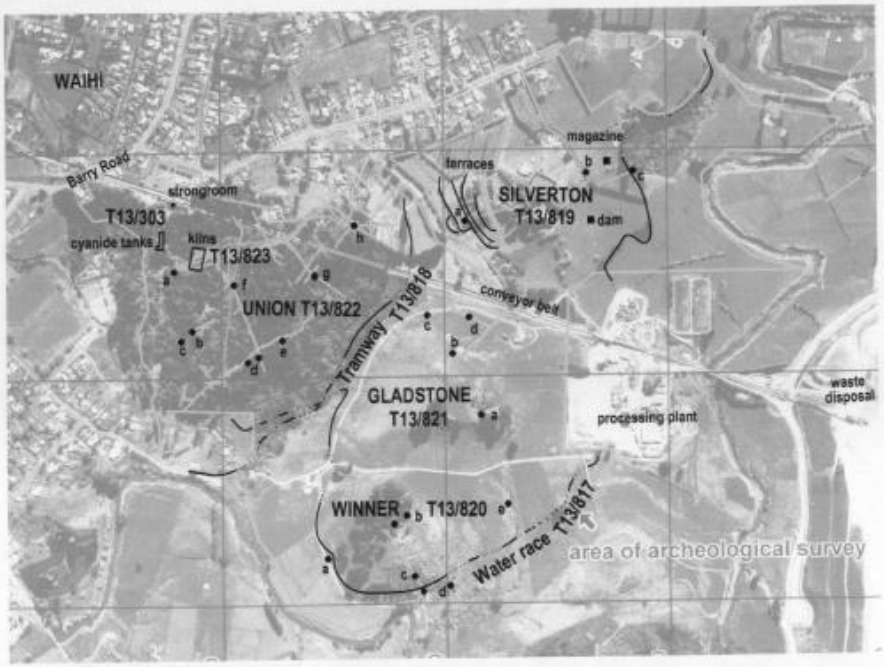
4 Owner: Waihi Gold Mining Company
Address: PO Box 190, Waihi
Tenant/Manager:
Address:

5. Nature of information (*hearsay, brief or extended visit, etc.*): Visit by survey team.
Photographs (*reference numbers*): Yes, see Phillips report
Aerial photographs (*reference numbers, and clarity of site*): Yes, see Phillips report, not visible

6. Reported by: Dr Caroline Phillips
Address: 40 Laingholm Drive
Laingholm, Auckland
Filekeeper: Owen Wilkes
Date: 17/12/00.

7. New Zealand Historic Places Trust (for office use)

GJ Type of site
present condition and
AIB future danger of
destruction
local environment today
AIW local body
AIJ land classification



Historic gold mining features, east Waihi
(conveyor belt, processing plant and waste disposal belong to the modern gold mining venture)

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/821

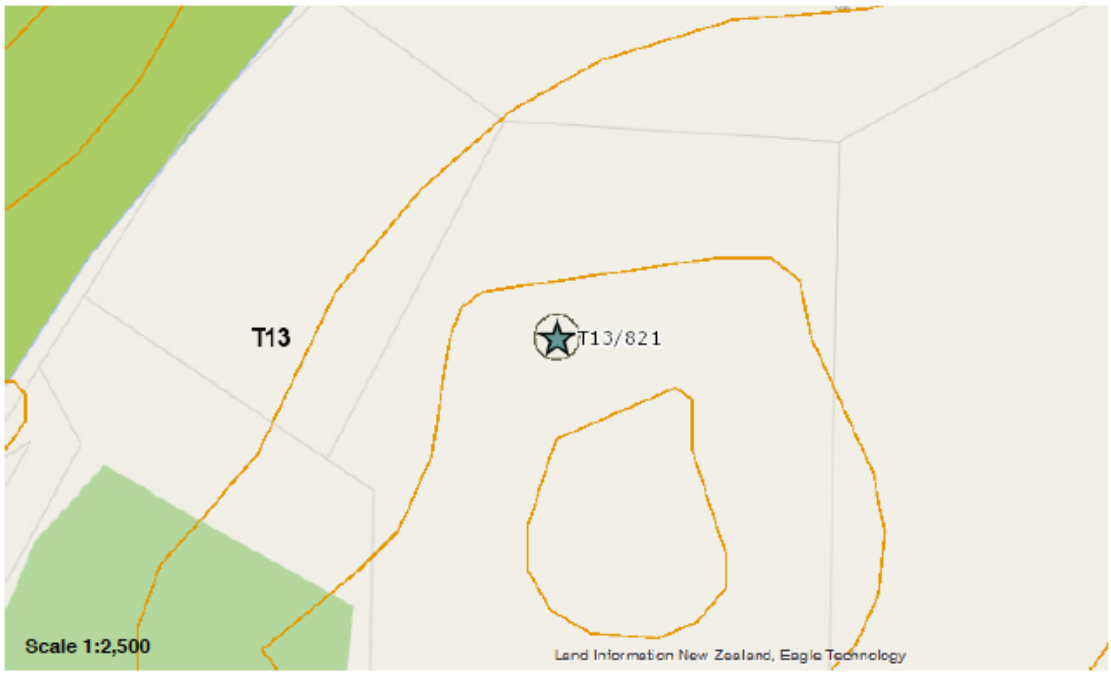
SITE TYPE: Mining - gold

SITE NAME(s): Gladstone Hill

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853204 **Northing:** 5857925 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/821



Finding aids to the location of the site

On Gladstone Hill, to N of Winner Hill, and 4km E of the end of Clarke St, Waihi.

Brief description

Extensive complex of collapsed drives, terraces, mullock heaps and tailings. Features extend from summit down N and W slopes.

Recorded features

Mullock heap, Terrace, Tailings, Drive

Other sites associated with this site

T13/822, T13/819, T13/820

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD INVENTORY	NZAA SITE NUMBER: T13/821

Supporting documentation held in ArchSite

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION
SITE RECORD FORM (METRIC)
Metric map number: T13
Metric map name: PAEROA
Metric map edition: Edition 1 1980

NZAA METRIC SITE NUMBER: **T13/821**
DATE VISITED: 19th October 2000
SITE TYPE: Gold mining drives & shafts
SITE NAME: MAORI:
OTHER: Gladstone Hill YY

Grid Reference Easting 2763500 Northing 6419300

1. Aids to relocation of site (*attach a sketch map*):
On Gladstone Hill, 4 km east of the end of Clarke St, Waihi.

2. State of site and possible future damage:
The hill is mainly in pasture, with a few pine trees. There are a number of shafts and drives, some are marked and others are not. Much has already been affected by modern gold mining, and future gold exploration, vegetation and weathering may affect surviving structures.

3. Description of site (*Supply full details, history, local environment, references, sketches, etc. If extra sheets are attached, include a summary here*):

Most of the drives and shafts on Gladstone Hill are marked on the Waihi Gold Mining Company map. (a) An isolated drive, corresponding to the map, was located near the summit where a noticeable area of tailings radiated out from the, now blocked, entrance, (b) A fenced off shaft could also have contributed to the tailings seen below (c) Nearby, in a disturbed area bisected by the access road, it appeared that the tailings had been utilised for a platform in one corner, and a square concrete foundation block sat in front of a collapsed drive. Remnants of steel rods protruded from the block, and this construction may have been part of a mill site. (d) A shaft at the base of the hill was being currently used as a dumping ground for dead stock. Several shafts and drives shown on the Company map are not now visible on the surface.

Refer C Phillips 2000. Waihi Gold Mining drilling extension, Waihi. Unpub. report for Waihi Gold Mining company. Moore, Phil & Neville Ritchie 1996. *Coromandel gold: a guide to the historic goldfields of Coromandel Peninsula.* Dunmore Press Ltd., Palmerston North.

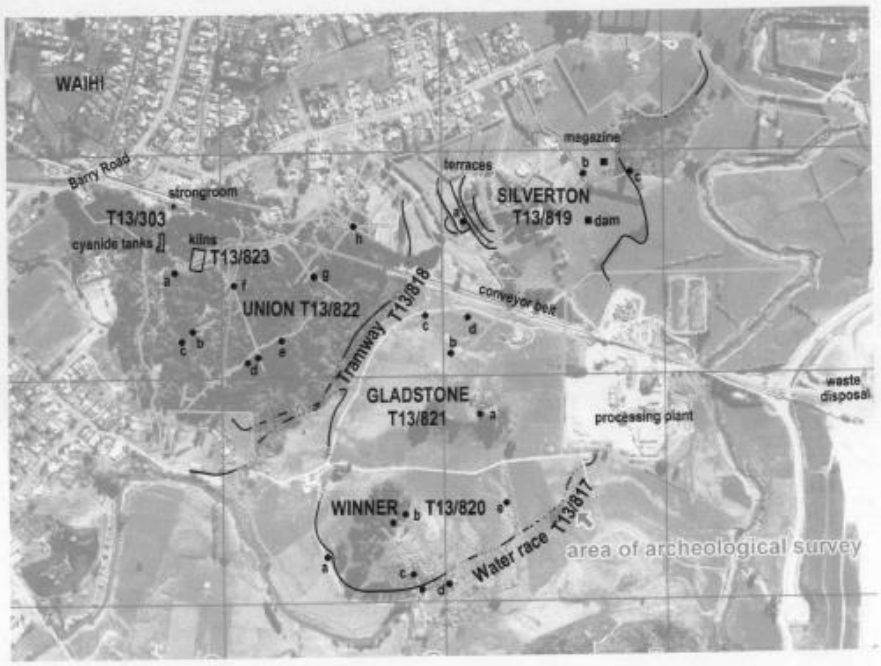
4. Owner: Waihi Gold Mining Company
Address: PO Box 190, Waihi
Tenant/Manager:
Address:

5. Nature of information (*hearsay, brief or extended visit, etc.*): Visit by survey team.
Photographs (*reference numbers*): Yes, see Phillips report
Aerial photographs (*reference numbers, and clarity of site*): Yes, see Phillips report, not visible

6. Reported by: Dr Caroline Phillips
Address: 40 Laingholm Drive
Laingholm, Auckland
Filekeeper: Owen Wilkes
Date: 17/12/00.

7. New Zealand Historic Places Trust (for office use)
GH Type of site
Local environment today
AI Land classification
present condition and
BB future danger of
destruction
WN Local body

N53



Historic gold mining features, east Waihi
(conveyor belt, processing plant and waste disposal belong to the modern gold mining venture)

T13/821

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/961

SITE TYPE: Mining - gold

SITE NAME(s): Mataura Water Race

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853346 **Northing:** 5862458 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/961

Finding aids to the location of the site

The intake of the water race was located in the Mataura Stream near the current day bush line at the unformed end of Willows Road, Waihi. The race winds its way south and west around the hills to the Walmsley Creek Water Supply Dam.

Brief description

Recorded features

Water race

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/961

Site description

Updated 20/08/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim
Grid reference (E1853346 / N5862458)

The Mataura Water Race forms part of the High Level (or high pressure) Water Race (also known as the Waitete water race) that was completed by 1892 to deliver additional water to the the Waihi Gold Mining Co. battery at Union Hill in Waihi from the Waitete, Walmsley and Mataura Streams. A wooden intake dam was constructed in the Mataura Stream near the edge of the current day bush line and the Mataura Water Race or Waihi Gold Mining Company Water Race was constructed around the contour of the hills and valleys on an easy grade for 5.593km to terminate on the banks of the Walmsley Creek. There a retaining dam was built and a further race, the Walmsley Water Race, was constructed to conduct water across to Bulltown and then by pressure pipe to the Pelton wheel via Pipe Lane and the battery on Union Hill.
A reliable supply of water was a significant part of mining operations in Waihi and played an integral role in maintaining power supply (i.e. to Pelton wheels and steam engines) and processing the ore (i.e. wet crushing, washing, slimes, separation, cyanide and other processes.

Condition of the site

Updated 20/08/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim

Condition for first 1km of race from intake, rest of race not inspected:
The Race has been significantly modified, retaining none of its original profile having been infilled and levelled. The Race alignment is all the survives as a gently graded, levelled cut into the slope of the hillside, in many places widened to form farm tracks and farm races, in others it is no longer visible at all where it once crossed flat ground. One small length (c.10m long) of race retains what appears to be a highly modified profile or outer bank near the intake of the race

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/962

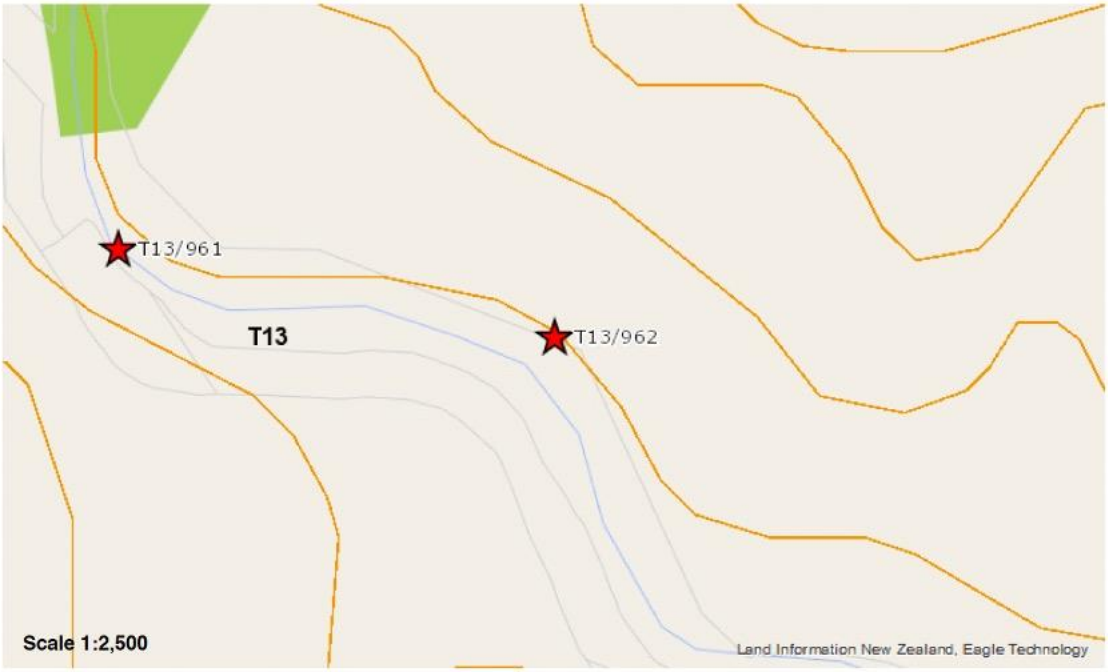
SITE TYPE: Transport/ communication

SITE NAME(s): Willows Timber Tramway

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1853539 **Northing:** 5862419 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/962



Finding aids to the location of the site

From the headwaters of the Mataura Stream valley it followed the eastern side of the stream on the unformed paper road, then essentially along the alignment of Willows Road. It then joined the larger Waihi Goldmining Co Tramway into Waihi

Brief description

Recorded features

Tramway

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/962

Site description

Updated 09/09/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim
Grid reference (E1853539 / N5862419)

The alignment of the Willows Timber Tramway essentially follows what is now Willows Road, and there is no visible evidence of the tramline in these areas. Several sections of benching around the hillside are visible today along the eastern (opposite) side of the Mataura Stream at the end of Willows Road and are likely to be the remains of the tramway alignment. No associated structural remains such as rails or sleepers were present today. It was common practice to remove these items for reuse once a tramway was no longer functional. In fact some of the rails from this tramway were apparently used for structural beams in the barn on the farm.

Tramways were a convenient and economic solution to the problem of moving heavy materials, and a multitude of tramways ran across Waihi township and the surrounding areas. Horses were the early motive power, even when the rakeline (rail) from the Victoria Battery was commissioned and locomotives used, ore and wood were still hauled to the Waihi Battery by horse.
In the early mining days, timber was used for building and supports for the drives underground and was also burnt for roasting quartz at the new Battery kilns. This destroyed the sulphur content and when cool the quartz was crushed to powder. The demand for timber was insatiable but the densely clad hills north and east of the Waihi township provided a valuable source. Boilers were almost exclusively wood fired until the Paeroa to Waikino portion of the railway to Waihi was completed in 1904. Coal could then be cheaply railed to Waikino, and then sent from the Victoria Battery via the rakeline. Firewood came from the Walmsley and Mataura Valleys via horse drawn tram lines along the Waihi Co. Tramway. Two of the earlier settlers who extracted timber were the Walmsley brothers, Horatio and Sheriff, who leased a block of Crown land at the end of what is now known as Walmsley Road. A tramline was constructed from the Waihi Co. battery at Union Hill to the end of the lease approximately 3 miles long, now the watershed for the Borough water supply. By 1896 the bushland was well cleared and grassland was developing well below the Walmsley Water race. About 1901 the Waihi Co. secured another bush block on the opposite side of the range and built a side tram line to the Walmsley Valley Waihi Co. Tramway to Willows Road (Wharry Road), – the new contractors being Cambie and W. Cornes. This was the Willows Timber Tram (Robinson Oct 1969; Armour Oct 1968).

Updated 09/09/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim
Grid reference (E1853539 / N5862419)

The alignment of the Willows Timber Tramway essentially follows what is now Willows Road, and there is no visible evidence of the tramline in these areas. Several sections of benching around the hillside are visible today along the eastern (opposite) side of the Mataura Stream at the end of Willows Road and are likely to be the remains of the tramway alignment. No associated structural remains such as rails or sleepers were present today. It was common practice to remove these items for reuse once a tramway was no longer functional. In fact some of the rails from this tramway were apparently used for structural beams in the barn on the farm

Condition of the site

Updated 09/09/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim

Condition for north-western extent only, rest of tramway alignment not inspected - only sections of benching along the tramway alignment are visible on the eastern side of the Mataura Stream at the end of Willows Road. No associated structural remains such as rails or sleepers were present today.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/963

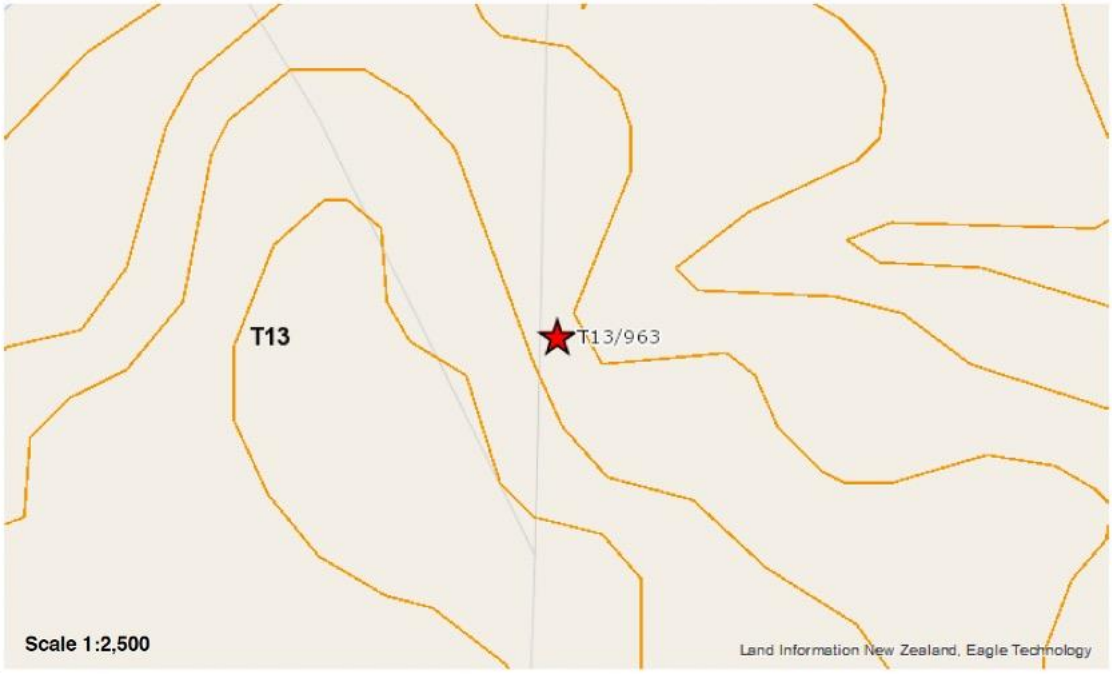
SITE TYPE: Timber milling

SITE NAME(s):

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1852898 **Northing:** 5862310 **Source:** On Screen

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/963



Finding aids to the location of the site

Located in the foothills of the Coromandel Range between the Walmsley Stream and the Mataura Stream, north of Waihi. Access from the end of Highland Road or Reservoir Road

Brief description

Recorded features

Tramway

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/963

Site description

Updated 16/09/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim
Grid reference (E1852898 / N5862310)

The remains of a series of bush tramway alignments visible as a gently graded levelled bench cut in the slope of a farmed hillside. In places it has been widened to form a farm track. No associated structural remains such as rails or sleepers are present today. Only part of the tramway alignment was inspected and it is unknown to what extent the rest of the original series of tramways survives in this area.

The original series of tramway alignments was identified from https://qgiscloud.com/Waitete/Ohinemuri_GIS/

Tramways were a convenient and economic solution to the problem of moving heavy materials, and a multitude of tramways ran across Waihi township and the surrounding areas. Horses were the early motive power, even when the rakeline (rail) from the Victoria Battery was commissioned and locomotives used, ore and wood were still hauled to the Waihi Battery by horse.
In the early mining days, timber was used for building and supports for the drives underground and was also burnt for roasting quartz at the new Battery kilns. This destroyed the sulphur content and when cool the quartz was crushed to powder. The demand for timber was insatiable but the densely clad hills north and east of the Waihi township provided a valuable source. Boilers were almost exclusively wood fired until the Paeroa to Waikino portion of the railway to Waihi was completed in 1904. Coal could then be cheaply railed to Waikino, and then sent from the Victoria Battery via the rakeline. Firewood came from the Walmsley and Mataura Valleys via horse drawn tram lines along the Waihi Mining Co. Tramway (Willows Tramway), Walmsley Tramway and other bush tramways, including this one.

Condition of the site

Updated 16/09/2020 (Field visit), submitted by rodclough , visited 30/07/2020 by Tatton, Kim

Only sections of benching along the slope of a hillside visible. No associated structual remains such as sleepers or rails are present today.

Statement of condition

Current land use:

Threats:

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHSITE
archaeological site recording scheme

Site Record Form

NZAA SITE NUMBER: T13/971

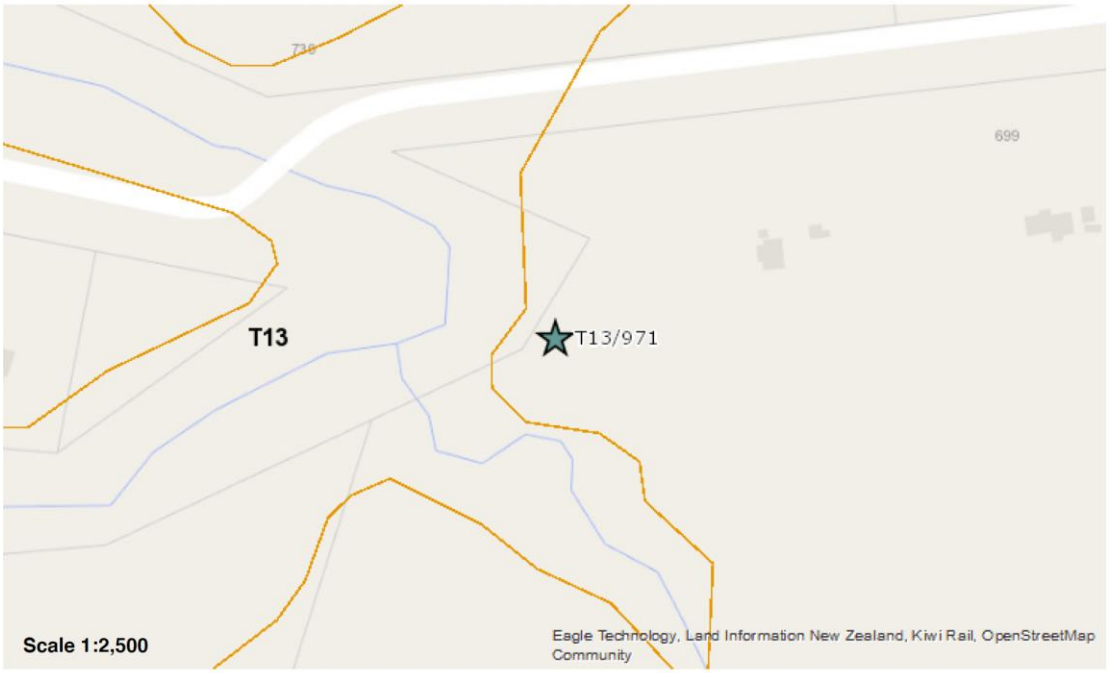
SITE TYPE: Mining - gold

SITE NAME(s): Queen of Waihi shaft

DATE RECORDED:

SITE COORDINATES (NZTM) Easting: 1854218 **Northing:** 5858435 **Source:** Handheld GPS

IMPERIAL SITE NUMBER: **METRIC SITE NUMBER:** T13/971



Finding aids to the location of the site

Located southeast of the Queens Bridge over the Ohinemuri River on Golden Valley Road, Waihi. Currently fenced off in pasture on the eastern side of the river

Brief description

Gold mine shaft

Recorded features

Shaft

Other sites associated with this site

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

SITE RECORD HISTORY	NZAA SITE NUMBER: T13/971

Site description

Updated 22/10/2020 (Field visit), submitted by rodclough , visited 18/06/2020 by Tatton, Kim
Grid reference (E1854218 / N5858435)

The Queen of Waihi Shaft dates from around 1895-96 and was sunk into the rhyolite to a depth of 150 feet (50m). Waihi companies that went out of existence between 1909 and 1920 included the Queen of Waihi mining company. Today this shaft is visible as a depression on the ground filled with soil and rubbish that was previously fenced to prevent access but this has since fallen down

Condition of the site

Updated 22/10/2020 (Field visit), submitted by rodclough , visited 18/06/2020 by Tatton, Kim

Today this shaft is visible as a depression on the ground filled with soil and rubbish. The shaft will be capped by OceanaGold Ltd as part of the development of a proposed Northern Rock Storage

Statement of condition

Updated: 15/02/2021 - Fair - Some intact features, but others may be unclear or damaged

Current land use:

Updated: 15/02/2021 - Industrial/ commercial

Threats:

Updated: 15/02/2021 - Property development

APPENDIX 2: HAURAKI DISTRICT PLAN HISTORIC HERITAGE INVENTORY RECORDS

Historic Heritage Inventory

Gladstone Battery, Waihi

Photo Courtesy E Lens

Location: Located on the Southeastern boundary of Waihi (lat 37° 23'S, long 175° 50'E) in the southern portion of the Coromandel Peninsula. Between Union Hill and Gladstone Hill, Waihi

Heritage Status
Historic Places Trust Registration Number:
Historic Places Trust Category:
HDC Heritage Category: C - Heritage Item. Local or Neighbourhood Significance
Other:

Physical Description: Remains of a 5 stamp battery and the Gladstone shaft.

Other known names:

Notable features:

Style:

Materials:

Date of Construction: 1903

History: Mineralisation was identified at Gladstone Hill as far back as the 1870's-early 1880's.

Architect:
Designer:
Builder:
Engineer:

District Plan Schedule
Number: HAU245
Heritage Category: C

Heritage Type:
- ☐ Wahi Tapu
- ☐ Cultural Landscape
- ☐ Building
- ☐ Group of Buildings
- ☐ Structure
- ☐ Monument
- ☐ Historic Place
- ☐ Archaeological Site
- ■ Other

Date Period:
1881-1910

Significance:
- ☐ Archaeological
- ☐ Architectural
- ☐ Cultural
- ☐ Historic
- ☐ Scientific
- ■ Technological

Thematic Context
- ☐ Maori
- ☐ Early Settlement
- ■ Industry (mining)
- ☐ Extraction
- ☐ Forestry
- ☐ Agriculture
- ☐ Transport
- ☐ Communication
- ☐ Commerce
- ☐ Residential
- ☐ Social/Cultural
- ☐ Civic
- ☐ Health
- ☐ Educational
- ☐ Church/yard
- ☐ Other

Historic Heritage Inventory

Gladstone Battery, Waihi

District Plan Schedule Number: HAU245
Heritage Category: C

History of changes:

Condition: unknown

Integrity: unknown

Current Uses:

Former Uses: gold processing

Registered owner:

Legal Description:

Reference Source: Eric Lens – Gladstone Workings Document

Associated Pictures:
Photo above shows Gladstone shaft and battery building. The shaft on the right has an ore shute to load trucks which get pushed into the battery building. The small opening in the middle of the end of the building is to allow passage of the cable from winding drum to poppet sheave (for lifting of the shaft cage). The (weather board) battery building suggests three levels (stone breaker near roof, stampers below this, and one or more lower levels for cyaniding), and the chimney from the lean-to suggests a small boiler (for the Tangye engine). Work ceased at this shaft circa 1902 (E. Lens).

Historic Heritage Inventory

Royal Standard Battery, Wharekirauponga

District Plan Schedule Number: HAU271

Heritage Category: B

Heritage Type:
- ☐ Wahi Tapu
- ☐ Cultural Landscape
- ☐ Building
- ☐ Group of Buildings
- ■ Structure
- ☐ Monument
- ☐ Historic Place
- ☐ Archaeological Site
- ☐ Other

Date Period:
1881-1910

Significance:
- ☐ Archaeological
- ☐ Architectural
- ☐ Cultural
- ☐ Historic
- ☐ Scientific
- ■ Technological

Thematic Context
- ☐ Maori
- ☐ Early Settlement
- ■ Industry (mining)
- ☐ Extraction
- ☐ Forestry
- ☐ Agriculture
- ■ Transport
- ☐ Communication
- ☐ Commerce
- ☐ Residential
- ☐ Social/Cultural
- ☐ Civic
- ☐ Health
- ☐ Educational
- ☐ Church/yard
- ☐ Other

Location: Coromandel State Forest Park, Coromandel (from end of Parakiwai Quarry Road)

Heritage Status
Historic Places Trust Registration Number:
Historic Places Trust Category:
HDC Heritage Category: B - Heritage Area. Regional or Sub-Regional Significance
Other:

Physical Description: A walking track runs along the former tramline from the end of Parakiwai Road. There are extensive remains of an old mining operation including the remains of the battery foundations (the battery was not built), other tramways, tunnels, adits, shafts and machinery.

Other known names:

Notable features:

Style:

Materials:

Date of Construction: c.1896

History: The Royal Standard claim was taken up by the company of the same name in 1896. Considerable money was spent in constructing a tramway which connected the mine with the Otahu Inlet and purchasing a battery to explore the reefs. The results were terrible and the company was ordered to stop in 1897 by the English manager. The mine was abandoned until 1899 when Captain Hodge bought the mine at auction and had limited success in working the claim for a few years.

Architect:
Designer:
Builder:
Engineer:

History of changes:

Condition: poor

Integrity: substantially altered

Current Uses: walking track

Former Uses: mining site and tramline

Historic Heritage Inventory

Royal Standard Battery, Wharekirauponga

District Plan Schedule
Number: HAU271
Heritage Category: B

Registered owner:

Legal Description:

Reference Source: Downey, J.F (1935) *Goldmines of the Hauraki Goldfield. Cadstonbury Press, Christchurch;* Ritchie and Moore, *Coromandel Gold*, Dunmore Press; Waihi Heritage Group

Associated Pictures:

APPENDIX 3 : RECORDED HERITAGE FEATURES AT T12/681 / T12/1290 ROYAL STANDARD BATTERY, GOLD MINING AREA AND TRAMWAY

T12/681 / T12/1290 Royal Standard Battery, Gold Mining Area and Tramway – Historic Features

Waypoint #	NZTM Easting	NZTM Northing	Original Description (2008)	2024 Survey
215	1850505	5868951	Clearing. Probable site of mine buildings. Numerous artefacts within approx. 30m radius, including metal pipes, a metal tank or container (approx. 1 x 1.5 x 0.25m) and the remnants of a brick oven or furnace	
216	1850649	5868947	Chamber in bank 1 x 2 x 0.7m (according to Merv Grafton, probably an explosives store)	
219	1850403	5868971	Pressure vessel	The abandoned pressure vessel is located on a large terrace on the Lower Tramline Track, near the DoC sign for the 'Royal Standard Battery.' It is constructed of rivetted steel plate and cast iron being 1.8m x 0.8m wide with a biezeno top. The vessel is likely to have been an air receiver and to have been associated with the cyanide process. Its present location is unaccounted for. It has been stripped of all fittings, however, is in a sound condition. E1850398 N 5868961 At the back of the terrace on the Lower Tramline Track the bank has been excavated to form two large square cuttings which may have been formed for buildings. A mound of rocks has been piled in front of one of the cuttings. However, a bulldozed road was formed to the battery site along the tramway to remove the machinery and the terrace and cuttings could be the result of these later earthworks
220	1850401	5868947	Metal drum, badly rusted	
222	1851442	5871011	Wooden sleepers, remnants of the Upper Tramway	

291	1851314	5871721	Clearing next to tramway route, with possible trench on one side. Bank looks as if it has been excavated into	
294	1850053	5868696	Water race down pipe crosses tramway track	E 1850065 N5868694 Same as originally recorded. Pipe diameter approx. 0.5m. Very rusted. Apparently, the downpipes were put into place but never connected to the main water race formation. Thus they remain isolated stretching across the tramway track
295	1850024	5868629	Pipe 3 x 0.1m diameter	Metal pipe still visible running along the uphill side of the Lower Tramline track north of Adit 296. Brick imbedded in the track near by
296	1850020	55868617	Adit entrance with lengths of pipe and timber	North of swing bridge a 1.8m wide x 2.15m high adit has been excavated into the upper bank beside the Lower Tramline track. Appears to extend for some depth. Sleeper timbers visible of the floor and a metal plate is on the floor of the entrance.
297	1850085	5868766	Adit entrance off Upper Tramway Track track (terrace approx. 5m x 30m between Upper and Lower Tramway)	
298	1850192	5868711	Tunnel on Lower Tramway	
299	1850393	5868908	Battery site. Three distinct levels (terraces) cut into the side of hill. Numerous artefacts within 80m radius, including components of cyanide tanks, bricks, pipes of various diameter, hydraulic fittings, unidentified battery components	No substantial remains of the plant remain on the battery site, with the last of the machinery removed in the 1970s E1850404 N5868915 - lower terrace of Battery site E1850414 N5868927 - remains of cyanide tank on terrace adjacent to main Battery site. Collapsed cones constructed of sheet iron plate riveted in sections to forma a circle with a 2.1m diameter. Each section is tapered from 0.3m to 0.84m and is 2.4m long. In a poor condition. E1850417 N5868935 - metal pipe and plate on terrace adjacent to main Battery site
300	1850524	5868937	Two unidentified metal objects at the Wharekirauponga Stream crossing point	
301	1851317	5871739	Large metal hopper (thought to be associated with the Parakiwai Quarrying operation, rather than gold mining)	

313	1850013	5868498	Small cave cut into bank 1 x 1 x 0.7m, with wooden door sill (thought to be an explosives store)	
314	1849956	5868481	Entrance to mine adit on Upper Tramway, with metal rails and metal hinged frame, thought to be the tipping mechanism of a cart	Main workings area
315	1849964	5868460	Slip – furthest point to which possible to safely follow the Upper Tramway	
401	1849972	5868390		Terrace 3-4m wide x 22m long immediately below the track just south of the intersection of tracks. Four buildings referred to as a 'store' are shown in this vicinity on early survey plan ML 3836 (1897)
402	1849963	5868265		Adit – excavated into a 5m high bank east and immediately above Edmonds Stream. The entrance is 1.1m wide x 2m high with an arched roof and approx. 17m deep. Small exploratory excavation into the walls on either side at the end of the adit. A curved cutting leads into the adit entrance, which is retained with stones on the right side of the entrance. A terrace extends west from the entrance cutting and is benched around the base of the bank for some distance
	1849980	5868220		A 'cookhouse' is shown at this location on early survey plan ML 3836 (1897)
403	1849873	5868330		A long, narrow cutting running parallel to the stream 6m long x 1.5m wide x 0.65m deep. Located below Drill Site 1. A ponga log lies along the top edge of the cutting wall near the entrance. Could have had a roof, with ponga lined walls and used as a store?
404	1849893	5868425		Shaft – small 1.5 x 1m collapsed shaft located just off the track
405	1849904	5868402		Immediately above the Wharekirauponga Stream north of its junction with the Edmonds Stream is the area previously described as the 'main workings.' A narrow miners track runs along the steep cliff above the stream on its western side. Adit – E1849904 N5868402; 1m wide x c.1.7m high x 20m deep

				Below this adit is a group of three adits accessed by the steep track a). E1849906 N5868403 2.3m wide x 1.9m high x 15-20m deep b). 1.5m wide x c. 2m high x c. 10m deep. Wooden upright timber, and timbers remain on floor and roof. Adit has a side tunnel which joins up with adit a). c).Large adit 2m wide x 2.5m high x 7m long where it branches left and right. Inside the entrance, which is 3.2m high inside, there are notches in the rock walls which would have supported timber bracing The right branch is a tunnel 16m long with a second entrance to the north 1.9m wide x 1.9m high. The narrow miners track continues and there are two further adits in the cliff face
406	1849912	5868362		Shaft – located on a terrace (4.5m x 6m) immediately above (east) of the confluence of the Wharekirauponga Stream and Edmonds Stream. Shaft measures approx. 3m x 2m and is full of water. Collapsed bracing timbers are visible in the side of the shaft
407	1849894	5868408		Adit reported by OceanaGold staff
408	1849942	5868423		Adit – located above shaft 407. An approx. 20m long x 1-1.5m wide x 3m deep (max) cutting in the bank creates a narrow winding track to the entrance of a small adit. The adit is 1.4m wide x 2.1m high x 10m deep. At the entrance to the cutting rock has been used as retaining to create two separate bunds 4.5m x 3m. These form two opposing side entrances into the cutting.
				The Lower Tramway leads from the Battery site to some of the old mine workings and a small gorge. The tramway formation

				is very good in parts and now forms a wide level walking track. No trails or sleepers were visible surviving in situ. 100m north of the swing bridge is a deep cutting for the tramway
				The Upper Tramway begins further south than the Lower Tramway and leads directly to the main workings near the upper end of the gorge, but this is unmarked and largely overgrown
				Water Race constructed to power the Royal Standard Battery

WP 215. Remnants of fireplace or furnace (2008)

WP 219 Pressure vessel on the large terrace on the Lower Tramline Track above the battery site (2024)

WP 219. Pressure vessel (2024)

WP 219 The back of the large terrace on the Lower Tramline Track has been excavated to form two large square cuttings, possibly for previous buildings (2024)

WP 222. Tramway sleepers (2008)

Deep cutting on the Lower Tramway Track north of the swing bridge

WP 294. Water pipe crossing the Lower Tramline Track (2024)

WP 295. Pipe running along the uphill side of the Lower Tramline track north of Adit 296 (2024)

WP 296. Adit entrance with metal plate on the floor (bottom of photo) (2024)

WP 298 Tunnel on the Lower Tramway Track (2024)

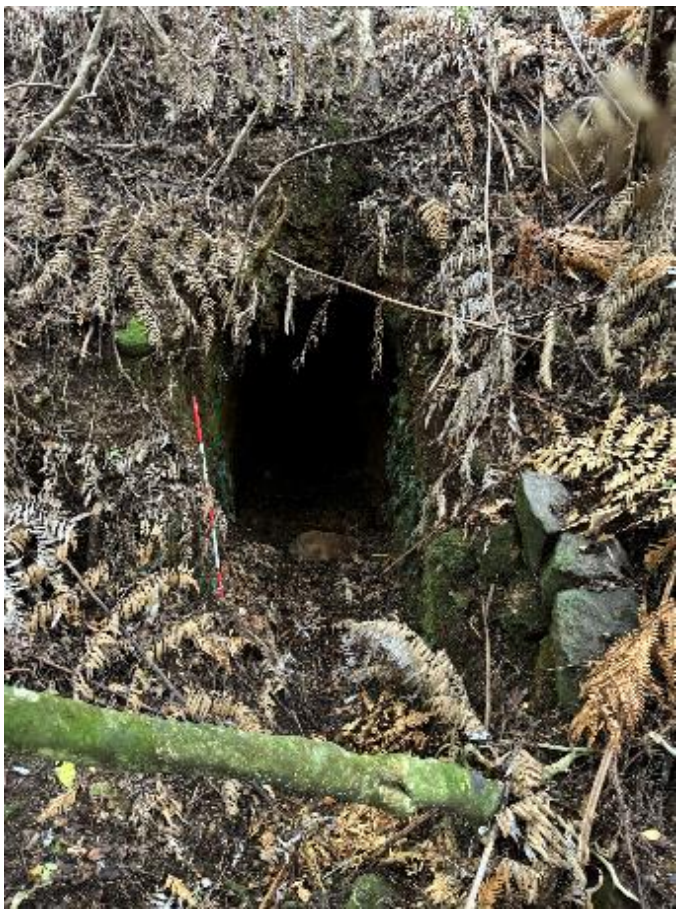
WP 299. Lower terrace of the Royal Standard Battery site (2024)

WP 299. Sections of cyanide tank frame at battery site (2024)

WP 301. Metal hopper thought to be associated with quarrying, rather than goldmining (2008)

WP 313. Cave dug into bank with remains of door sill (probably an explosives store) (2008)

WP 314. Metal remnants in adit entrance (probably the tipping mechanism for a cart) (2008)



WP 402. Adit entrance. Stone retaining visible to right of entrance (2024)

WP 402. Terrace in front of Adit (2024)

WP 405a). Adit (one of three). Narrow miners track to the adit visible on the cliff edge to the left (2024)

WP 405b). Adit entrance (2024)

WP 405b). Adit - floor timbers inside the adit (2024)

WP 405b). Adit - roof timbers inside the adit (2024)

WP 405c). Adit – entrance to adit (2024)

WP 406. Shaft (2024)

WP 406. Shaft (2024)

WP 408. Stone retained ‘bunds’ at the entrance to the cutting leading to the adit (2024)

WP 408. Stone retained ‘bunds’ at the entrance to the cutting leading to the adit (2024)

UNION HILL (WAIHI) HERITAGE LANDSCAPE MANAGEMENT PLAN

Report prepared for Waihi Gold Company Ltd

By

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January 2016

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Cover photo: Waihi Battery tube mill floor, looking northeast, December 2012

INTRODUCTION

Purpose

Union Hill is a significant heritage site containing the remains of 19th and early 20th century mining, ore processing and refining activities. The most significant industrial remains are located within land owned by Waihi Gold Company Ltd (WGCL). Following a recommendation in an earlier conservation plan for the area, WGCL (formerly as Newmont Waihi Gold) has chosen to voluntarily fund the development of this management plan. While the area is of fundamental importance to WGCL due to the location of the overland conveyor, Trio Ventilation Shaft and the Trio Underground Mine, it is recognised that a number of stakeholders have an interest in Union Hill and the area holds considerable potential for tourism, both in the short and long term, with the heritage features being fundamental to the overall visitor experience.

This management plan provides guidance for the long term management of the heritage remains within WGCL's property at Union Hill. It outlines heritage management guidelines and procedures relating to:

- the planning and undertaking of any new works related to mining;
- the potential effects of the Trio underground mining operation;
- maintenance and conservation of the heritage remains;
- visitor use and amenities; and
- research.

This is not a statutory management plan and does not require WGCL to carry out or fund any of the maintenance or recommended conservation works detailed in the plan. WGCL is one group among various interested stakeholders and believes that the best way to move forward is to establish a management group to oversee the implementation of this management plan. This would enable any proposed works to be agreed and prioritised, and to have the various stakeholders either lead or take an active part in their implementation. The extent to which those works can be implemented will depend on the availability of resources, and it is noted that funding for such work is available from various external sources.

Land Status and Scope of Plan

The area addressed in this management plan is the land owned by WGCL shown in Figure 1. It largely comprises Pt Sec. 356 Blk XVI Ohinemuri SD covering 11.33 ha. The majority of the heritage features on Union Hill are located within this land block, the northern part of which has been scheduled in the Hauraki District Council (HDC) Hauraki District Plan as the 'Union Hill (Waihi Battery) Historic Area' (Category B, HAU247).

Continued on next page

Land Status and Scope of Plan, *continued*

WGCL also owns a smaller (1.9687 ha) block in the northeastern part of Union Hill (Sec. 224 Blk XVI Ohinemuri SD), and two properties to the south: Pt Sec 211 Blk XVI Ohinemuri SD (2.3849 ha) and Lot 2 DPS 63204 (0.0179 ha). The last two properties previously made up the Keatley block and were acquired in 2012. WGCL also owns numerous other property in the wider area surrounding Union Hill.

The heritage remains that make up the heritage landscape of Union Hill extend beyond both the scheduled Historic Area and the boundaries of the main land block owned by WGCL.

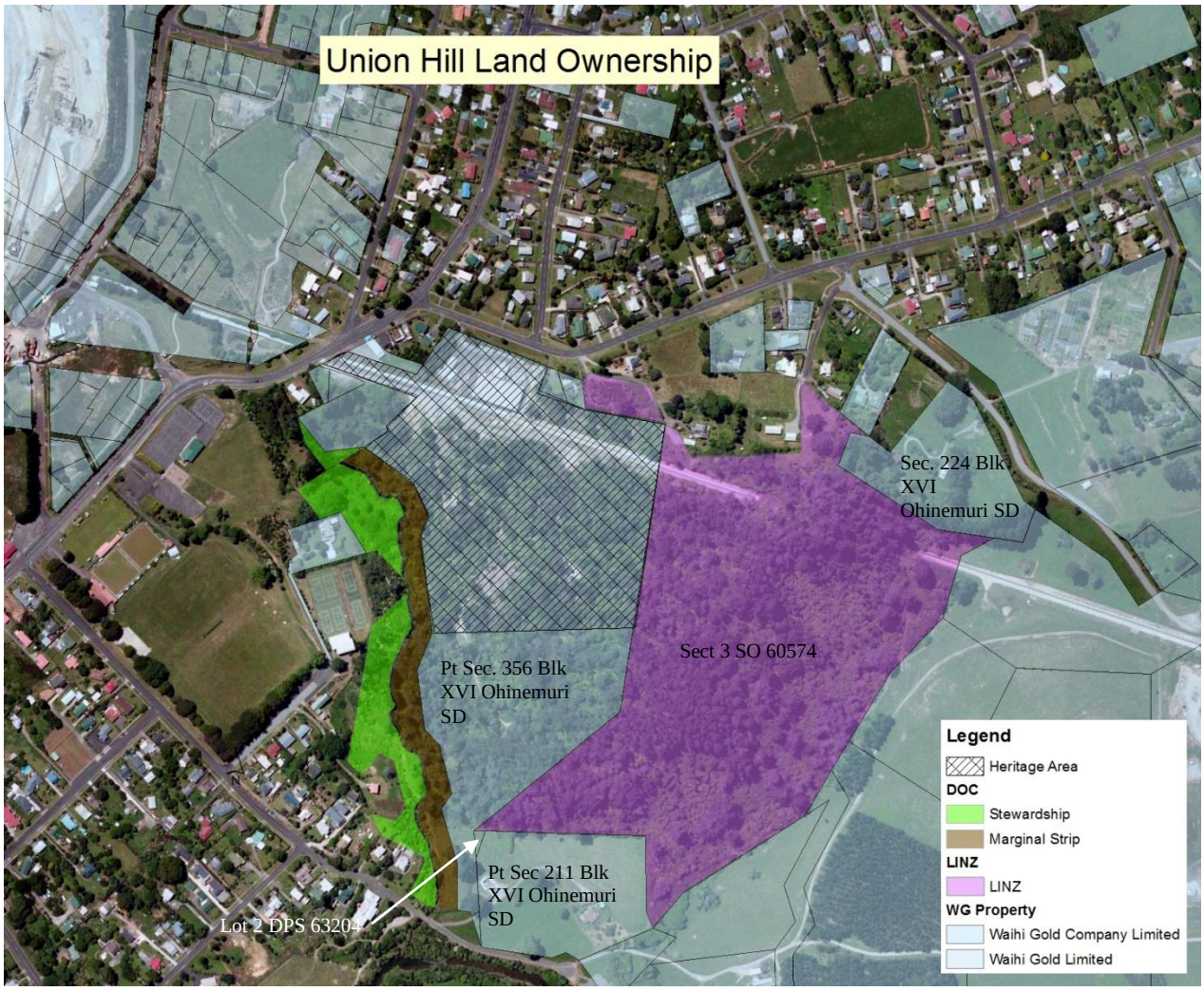

Figure 1. Plan of Union Hill showing current land ownership, and the extent of the Union Hill (Waihi Battery) Historic Area defined in the HDC ~~Proposed~~ Hauraki District Plan (hatched) (provided by WGCL)

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Land Status and Scope of Plan, *continued*

Related heritage features are located on adjacent land to the east managed by Land Information New Zealand (LINZ) comprising Sect 3 SO 60574 (13.9ha) and on Crown land to the west, alongside Mill Stream, managed by the Department of Conservation (DOC), with a few features on the northeastern and southern blocks owned by WGCL. Union Hill is also part of the wider mining landscape in Waihi and the Ohinemuri district, which includes the world famous Martha mine and the Victoria Battery at Waikino.

While related heritage features on adjacent land are identified in this plan (see the inventory of heritage remains in Table 2), the guidelines and procedures in this management plan apply only to WGCL's land holdings.

Land Use

WGCL holds consents to mine the area beneath Union Hill as part of its Trio mining operation. It maintains access routes, drainage systems and surface plant including a vent shaft for the Trio mine. In the future further drilling/prospecting may be required.

The adjacent land to the east owned by LINZ, like much of the WGCL land, is under regenerating native bush interspersed with pine and wattle trees. WGCL is granted access to the land for drainage and other maintenance purposes on an 'as required' basis.

The adjacent land to the west, on either side of Mill Stream, is managed by DOC and contains a public walkway (Mill Stream Walkway).

Until now public access to Union Hill has been restricted, but the local community wishes to see it developed into a public park for recreational, educational and tourism purposes, focussing on both its historic heritage and its ecological values. WGCL supports this initiative, and resource consent to develop walking tracks within its land on Union Hill has been granted.

Stakeholders

The following stakeholders are identified as having a particular interest in the management of Union Hill:

Waihi Gold Company Ltd (WGCL): WGCL owns the main block of land at Union Hill which contains the scheduled Union Hill (Waihi Battery) Historic Area, among others (see above).

Land Information New Zealand (LINZ): LINZ owns the land to the east of the WGCL block, which includes extensive mining remains.

Continued on next page

Stakeholders, *continued*

Department of Conservation (DOC): DOC manages the land to the west of the WGCL block along Mill Stream, which also contains various remains related to the mining industry.

Hauraki District Council (HDC): HDC is responsible for ensuring the sustainable management of historic heritage within the district through its District Plan provisions. HDC has granted land use consent to mine under Union Hill for the Trio mining operation and for the installation of public walkways and signage, subject to various conditions. HDC also owns land near Union Hill on Baker Street and Barry Road.

Heritage New Zealand Pouhere Taonga (Heritage NZ): Heritage NZ promotes the protection of New Zealand's heritage, and has listed the group of air agitation cyanide tanks on Union Hill as a Category I Historic Place (no. 135). Heritage NZ also has a statutory role under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA) relating to pre-1900 archaeological remains on Union Hill.

Ngati Tamatera: Waihi is within the wider rohe of Ngati Tamatera.

Ngati Hako: Waihi is also within the rohe of Ngati Hako.

Vision Waihi Trust (VWT): The VWT developed out of the WCCC[1] and in consultation with other community groups has prepared a 'Union Hill Visitor Experience draft concept plan' (2009).

Waihi Heritage Vision (WHV): WHV developed out of the WCCC, and is focused on identifying, researching, recording and preserving Waihi's heritage sites.

Waihi Walkways: The group's mission is to create a series of linked public walkways around the Waihi and Ohinemuri District. The organisation contributed to the development of the VWT 'Union Hill Visitor Experience draft concept plan' (2009).

And the local community generally.

A draft (2012) version of this plan was referred to the various stakeholders for comment and amendments made where appropriate.

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[1]The Waihi Community Consultation Committee (WCCC) was established by WGCL in 2003 at the request of HDC. The committee comprised 23 nominated members of the community. The WCCC developed a concept titled 'Waihi's Golden Legacy. A 2020 Vision for the future of Waihi' (2004) that includes a Heritage and Wildlife Park at Union Hill.

Statutory Requirements

Resource Management Act 1991 (RMA)

Section 6 of the RMA 1991 recognises as matters of national importance: *'the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga*' (S6(e)); and '*the protection of historic heritage from inappropriate subdivision, use, and development*' (S6(f)).

All persons exercising functions and powers under the RMA are required under Section 6 to recognise and provide for these matters of national importance when '*managing the use, development and protection of natural and physical resources*'.

Historic heritage is defined (S2) as '*those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, deriving from any of the following qualities: (i) archaeological; (ii) architectural; (iii) cultural; (iv) historic; (v) scientific; (vi) technological*'. Historic heritage includes: '*(i) historic sites, structures, places, and areas; (ii) archaeological sites; (iii) sites of significance to Maori, including wahi tapu; (iv) surroundings associated with the natural and physical resources*'.

The HDC Hauraki District Plan prepared under the RMA includes a number of heritage protection provisions relevant to the management of Union Hill. Resource consents granted for the Trio Underground Mine conditions also include a number of relevant conditions.

<u>HDC Hauraki District Plan</u>

The Hauraki District Plan identifies a scheduled heritage area (Figure 1) and three individually scheduled heritage features on Union Hill:

- Union Hill (Waihi Battery) Historic Area – Category B heritage area HAU 247
- Union Hill Cyanide Tanks, Waihi – Category A heritage feature HAU003
- Union Hill Ore Kilns, Waihi – Category B heritage feature HAU113
- Union Battery Tramway [Silverton Tramway] – Category C heritage item HAU249

Under the plan provisions, it is a permitted activity to undertake minor works to Category A or B heritage features (the cyanide tanks and ore kilns) and any associated or ancillary heritage features relating to them, or within a Category A or B heritage area (6.1.5.2(1)(a) and (b)). Minor works are defined in Section 4 and include: cleaning or washing with materials/techniques not detrimental to the heritage fabric; general maintenance and/or minor repair (which is further defined); repair and revarnishing of surfaces, and the application of other, similar finishes; and activities that have an insignificant effect on the heritage fabric of the item (with examples provided).

Continued on next page

Statutory Requirements, *continued*

Repair, alteration or demolition of a Category A or B heritage feature and/or any associated or ancillary heritage feature relating to them, or within a Category A or B heritage area, is only permitted where there is an immediate danger to life or potential excessive damage to adjacent property, as certified in each case by a registered structural engineer, and a suitably qualified and experienced conservation architect (6.1.5.2(1)(d)). Development, removal or demolition of a Category C heritage item is permitted (6.1.5.2(1)(c)) subject to notification and recording as set out in 6.1.5.8.(1). Activities such as lighting and fencing that will reduce danger to a heritage feature or person are also permitted (6.1.5.2(1)(e)).

The demolition (in whole or part) of a Category A heritage feature (the cyanide tanks) is a non-complying activity (6.1.5.6), except where there is an immediate danger to life or property as specified in 6.1.5.2(1)(d).

All other activities affecting Category A or B heritage features or within the Union Hill (Waihi Battery) Historic Area are either restricted discretionary or discretionary activities requiring resource consent (6.1.5.4, 6.1.5.5). This includes any repairs and alterations, even if carried out for conservation purposes, as well as the construction of any new building or structure and the installation of new signage.

HDC Trio Mine Consents (RC15774)

The Consent Order issued in August 2011 contains conditions requiring stability monitoring of the scheduled cyanide tanks and ore kilns, to determine whether the Trio mining operations are affecting the stability of the structures. The conditions require (in summary):

- Stopping works and notifying the appropriate bodies if features of archaeological, historical or cultural significance are discovered (#17).
- Taking all reasonable measures to ensure that the operation of the Trio Underground Mine does not adversely impact on the heritage items identified in the Hauraki District Plan (#18).
- Preparation of a Heritage Items Monitoring Plan to be approved by the Manager – Planning and Environmental Services, which must include a methodology for a condition survey of the cyanide tanks and ore kilns (#19a), a methodology for ongoing monitoring of the structures, and requirements for reports to Council (#19).
- Three months of baseline monitoring relating to the impact of vibrations on the heritage items located on the surface of Union Hill (#20).

Continued on next page

Statutory Requirements, *continued*

- A review of the Heritage Items Monitoring Plan following baseline monitoring, submission of the plan for review to the NZHPT (now Heritage NZ), and then to the Manager – Planning and Environmental Services for approval, with any further reviews following the same process (#21).

A baseline monitoring plan was prepared by WGCL in November 2011. A baseline photographic condition survey of the scheduled cyanide tanks and ore kilns was carried out in June 2011. Monitoring involves both visual inspection/photographs of identified reference points and the installation of extensometers. It was carried out monthly prior to the start of production blasting and is being carried out weekly thereafter, with monthly review of information from accelerometers and extensometers fitted to the cyanide tanks.

In addition to the consent requirements, the plan also provides for the monitoring of an area of open cut mines, and the masonry walls of the battery (see heritage inventory in Table 2, below, for a list of heritage features).

Walkways Consent (RC 202.2012.00000109.001)

Resource consent for the construction of a track and fence, earthworks and the erection of signage within the scheduled Historic Area was issued in December 2012, subject to conditions which include (in summary):

- The work must be carried out in accordance with the Authority issued by the NZHPT (now Heritage NZ) (#2).
- All earthworks must be undertaken by hand methods unless otherwise approved by the on-site archaeologist (#3).
- If non-European archaeological items are discovered, works must be halted in the vicinity and the Council contacted immediately (#4).

Stage 1 of the consented walkways construction has been completed.

Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA)

In addition to any requirements under the RMA 1991, the HNZPTA 2014 protects all archaeological sites whether recorded or not, and they may not be damaged or destroyed unless an Authority to modify an archaeological site has been issued by Heritage NZ.

Continued on next page

Statutory Requirements, *continued*

An archaeological site is defined by the HNZPTA s. 6 as:

> *'(a) any place in New Zealand, including any building or structure (or part of a building or structure) that –*
>
> *(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and*
>
> *(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and*
>
> *(b) includes a site for which a declaration is made under section 43(1)*'[under this section a place post-dating 1900 may be formally declared by Heritage NZ to be an archaeological site]

Any works undertaken on Union Hill that have the potential to impact on known features or subsurface deposits relating to 19th century mining, ore processing and refining require an Authority from Heritage NZ before those works can be carried out. Known pre-1900 features include the battery, ore kilns and most of the shafts and adits.

The cyanide tanks have been listed by Heritage NZ as a Category 1 Historic Place under the HNZPTA (no. 135), and consultation with Heritage NZ should be undertaken in relation to any conservation or other works affecting the heritage feature.

Authority No. 2012/512

An Authority was issued to WGCL (as Newmont Waihi Gold) by the NZHPT (now Heritage NZ) in December 2011 to carry out earthworks and site modifications to install vibration monitoring sensors on the cyanide tanks and ore kilns.

The work has been completed.

Authority No. 2012/542

An authority was issued by the NZHPT (now Heritage NZ) in January 2012 (with the consent of WGCL) to Brigid Gallagher to allow archaeological investigations at the battery site to provide information to assist in the walkway construction. The investigations have now been completed.

Continued on next page

Relationship to Conservation Plan

A Conservation Plan for Union Hill, Waihi was prepared for WGCL and Vision Waihi Trust by Phillip Moore, Eric Lens and Ruth Ordish in November 2009, and amended in June 2010. The plan covers the whole of the Union Hill historic landscape, including the land managed by LINZ, DOC and HDC, but excludes the Keatley property subsequently acquired by WGCL (Figure 1). The conservation plan is a not a statutory plan.

The conservation plan has the objectives of *'protecting and preserving all significant historic sites and features in the area; retaining the "character" of the place; removing immediate threats (to the remains); promoting improved public access and appreciation of the historic heritage; promoting opportunities for community involvement in conservation and research; and ensuring future development of the place is compatible with its cultural heritage significance*'. The plan includes a number of policies and recommendations aimed at achieving these objectives.

Key recommendations of the plan (p. 121) are:

- the preparation of a management plan for the entire area, 'to ensure appropriate care and protection of historic remains, proper vegetation management, and the implementation of a regular maintenance programme' (1.1); and
- the establishment of a management group 'to oversee the implementation of both the conservation plan and management plan. This should consist of representatives from at least the main stakeholders (Newmont, LINZ, DOC, HPT [now Heritage NZ], Waihi Walkways)' (1.2).

To date no formal management group has been set up to develop a collective management plan for the whole area, and this management plan commissioned by WGCL has therefore been developed primarily to guide management of the heritage remains on its own land. This is considered a priority as the 'Union Hill (Waihi Battery) Historic Area' scheduled on the Hauraki District Plan is entirely contained within the main land block owned by WGCL, and it is this area which contains the most significant and extensive heritage remains. However, many of the general heritage procedures outlined are applicable to heritage remains elsewhere on Union Hill, and this plan can be reviewed and extended in scope in the future if a formal management group is established.

This management plan aims to be broadly consistent with the policies of the Conservation Plan. It includes a historical summary and an inventory of heritage features, but does not repeat the detailed history, description and significance assessment of the heritage remains contained in the Conservation Plan.

HISTORY

Historical Summary[2]

Union Hill is part of the historic goldmining landscape of the 19th and early 20th century exploitation of the Coromandel and Hauraki goldfields. It played a significant role in the history of gold mining in New Zealand, particularly because it was part of a large operation involving the famous Martha mine, located less than a kilometre away. It was instrumental in bringing in large capital investment from abroad; and it was also at the forefront of many technological innovations in the industry.

The Ohinemuri district, which included Waihi, Waitekauri and Karangahake, was not accessible for gold mining until the mid 1870s, after land sale and lease agreements were concluded with Ngati Tamatera. The Ohinemuri Goldfield was declared open in 1875 and there was an immediate influx of prospectors to the area from New Zealand and abroad. The first Waihi lode was mined in 1878 by John McCombie and Robert Lee, who sampled the future Martha reef and panned the crushed quartz, obtaining good results. In 1880 the Martha reef was officially recognised, settlement at Waihi began and prospecting continued in the surrounding area, including the Rosemont, Union and Amaranth claims at Union Hill. During the 1880s several gold mining companies were formed, but the Waihi Gold Mining Company (WGMC) incorporated in 1887 became dominant.

Union Hill was first successfully mined in 1885, when the Union Gold Mining Company extracted 15 tons of high quality ore. It was later found to contain three main quartz reefs – the Union, Amaranth and Mascotte – and several minor veins. In 1887 it was acquired by the WGMC, which in the mid 1890s formed a subsidiary company, the Union-Waihi Gold Mining Company, to work the Union, Rosemont and Amaranth mines, and later Silverton. Mining on Union Hill continued until 1902.

In 1888 the construction of an extensive battery (or mill) to crush and process the ores began. After 1890, when the WGMC acquired the Martha mine, the Waihi Battery was expanded to process its ores, increasing its capacity from a 30 stamp battery in 1889 to a 60 stamp battery in 1890/91, with 30 more stamps added in 1894/5. At this stage it was the largest battery in New Zealand. Ore roasting kilns were used to prepare the ores for crushing, the first such kilns to be constructed on the Hauraki goldfield. They continued in use until 1902, when the battery converted from dry to wet crushing.

Continued on next page

[2] This summarises the information provided in the Conservation Plan (Moore, Lens & Ordish 2010) and the earlier Union Hill Heritage Assessment (Clough, Best & Hooker 2004). Further historical details and references to the various sources of information can be found in those reports.

Historical Summary, *continued*

The extraction and refining process also evolved, with recovery rates considerably improved by adoption of the cyanide process in the 1890s. Finely crushed ore was passed through cyanide tanks, the cyanide bringing the gold into solution so that it could be easily drained off, then processed with zinc to create zinc slimes which could then be refined in the melt house. Experiments with the cyanide process began in 1892, and a successful cyanide plant was in operation in 1894. The process was improved in 1909 with the construction of two tall concrete air agitation tanks to replace the original percolating vats, and a further four were built the following year.

Large quantities of water were required both for power supply via Pelton wheels and stream engines, and also for processing the ore (washing, wet crushing, slimes, separation, cyanide and other processes). In 1889 a dam was constructed on Ohinemuri River and another on Homunga Creek (Figure 2) and a low-pressure 4.2km water race was constructed to bring the water to the southeast side of the battery, driving two Pelton wheels at the bottom of a 52ft (c.16m) shaft. A high level race was completed by 1891 to bring water from the Waitete, Walmsley and Mataura Streams, arriving at the battery through pressure pipes along Pipe Lane and driving three Pelton wheels. Underground tunnels (tail races) took waste water from the wheels and drainage from the workings to the Ohinemuri River.

Transport between and from the mines and battery involved various tramways, initially running horse drawn trams except for the Silverton tramline on the eastern side of Union Hill, which had a locomotive. The Paeroa to Waihi railway, which greatly facilitated the transport of goods to and from the mines, opened in 1905.

Waihi Battery operated as a full battery and refinery until 1913, when the battery closed, but the refinery continued to be used to process zinc slimes from the company's other batteries – in particular the Victoria Battery at Waikino – until 1953. The third and final refinery was built in 1907.

Some limited prospecting was carried out on Union Hill in the middle decades of the 20th century, and in the 1970s and 1980s Mineral Resources (NZ) Ltd established a gold recovery plant on Union Hill to reprocess tailings. The company carried out prospecting and limited mining.

In 1987 the Martha mine was reopened by Waihi Gold Company and a conveyor was built across the northern end of Union Hill to carry ore from the mine to the ore processing plant at Baxter Road.

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Historical Summary, *continued*

WGCL acquired part of Union Hill in 2002, and continued drilling at the Amaranth, Trio and other veins. Their Trio underground mine commenced operations in 2012.

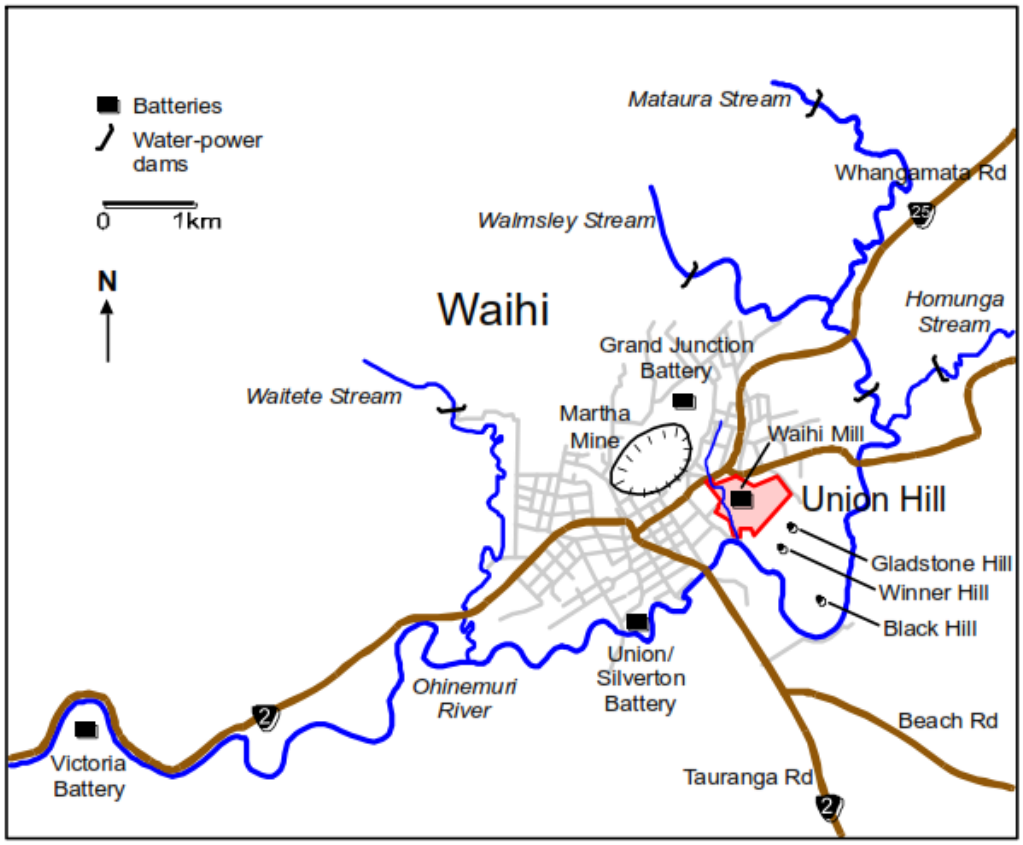

Figure 2. Location of Waihi Battery in relation to Martha mine and other batteries, and to the river system and dams (from Figure 1 of Conservation Plan: Moore, Lens & Ordish 2010)

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Table 1. Timeline of key events (information from Moore, Lens & Ordish 2010 and Clough, Best & Hooker 2004)

1875	Ohinemuri district officially declared a goldfield
1876	Prospecting in Waihi area
1878	First Waihi lode mined at what became the Martha mine by McCombie and Lee
1879	Waihi field opened for prospecting
1880	Official recognition of the Martha reef, and the start of the Waihi settlement
1885	Discovery of reef on Pride of Waihi (Rosemont) claim Union Gold Mining Company formed First shaft sunk on Union claim
1887	Waihi Gold Mining Company incorporated Union, Rosemont and Amaranth claims taken over by WGMC
1888-9	Construction of Waihi Battery First ore roasting kilns built Dams and low level water race constructed
1890	Martha mine acquired by Waihi Gold Mining Company Waihi Battery expanded from 30 to 60 stamps Horse tramway constructed from the Martha low level to the kilns on Union Hill
1891	High level water race constructed Old No. 1 shaft sunk
1894	Cyanide plant completed Waihi Battery expanded from 60 to 90 stamps
1894/5	Union-Waihi Gold Mining Company formed to work Union Hill claims
1895	New No. 1 shaft sunk
1898	Union-Waihi Gold Mining Company acquired the Silverton claim
1901	Union-Waihi Company's properties taken over by the Waihi Gold Mining Company
1902	Mining on Union Hill ended Waihi Battery converted to wet crushing
1904	Tube mills installed (among other improvements)
1905	Paeroa to Waihi railway officially opened
1907	Third and final refinery built
1909-10	Six air agitation ferro-concrete cyanide tanks built
1912	Miners' strike
1913	Waihi Battery closed (refinery remained in use)
1930s-40s	Minor exploration on Union Hill
1952	Martha mine closed

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HISTORY, CONTINUED

1953	Refinery closed
1955-60	Frewin Brothers operated at the Martha refinery site at Waihi
1970s-80s	Mineral Resources (NZ) Ltd acquired licenses, built a processing plant for tailings, carried out exploration and limited mining
1987-8	Martha mine reopened by Waihi Gold Company and conveyor put through Union Hill
1990-present	Limited exploration activities on Union Hill
2005	Construction began on Stage 1 of the Favona decline tunnel
2012	Trio Underground Mine commenced production

THE HERITAGE REMAINS

Description of Heritage Remains

Today there are still extensive and significant remains of the 19th and early 20th century mining and processing industry on Union Hill, despite the modifications of the 1970s and 1980s. The remains are set among regenerating native forest interspersed with exotics (pine and wattle trees). The heritage area is accessed from Barry Road along a vehicle track/road alongside and to the south of the WGCL conveyor, and the heritage remains are accessible to a varying extent from a walkway and between Barry Road and Clarke Street, and from existing vehicle access tracks (see Figure 5, below).

The most impressive and visible features are the 1909-10 cyanide tanks, the ore roasting kilns and the foundations of the battery itself, but there are a range of other structures and features including a melt house and refinery safe, strongroom and smoke chamber, mine shafts, drives and adits and mullock heaps (dumps of excavated waste rock).

Most of the heritage remains on the WGCL and LINZ properties were mapped and recorded in 2004 as part of a heritage assessment prepared by Clough & Associates (Clough, Best & Hooker 2004). Measured plans and section drawings of the main features were prepared at the time, and the features were surveyed in by WGCL surveyors These have been incorporated into the Conservation Plan, with some additional details identified and added to the plans. Other unidentified features are likely to be present, either buried under soil/tailings or concealed by vegetation.

Table 2 below provides an inventory of the known heritage remains, as referred to in the Conservation Plan (further detail on individual features can be found there). The inventory includes the features on properties adjacent to WGCL's land, and provides a brief description, a photograph (where feasible), and a summary of current condition and accessibility.

It should be noted that many of the photographs used in the inventory date back to 2004, when the features were cleared of vegetation for the initial heritage assessment and mapping (Clough, Best & Hooker 2004), as they were generally more visible in 2004 than during December 2012 when reinspected.

Figure 3 shows the location of the heritage features identified.

Plans of the main heritage features are provided in Appendix A.

Continued on next page

Archaeological Sites

There are five archaeological sites on Union Hill recorded in the New Zealand Archaeological Association (NZAA) database, four of which are in or extend within the WGCL properties (listed below). The extent of most sites is not clearly defined, and there is a good deal of overlap between sites T13/303, 822 and 823 in terms of which features they include:

T13/303	This includes the six concrete air agitation cyanide tanks, the strongroom and battery features, a shaft (unspecified) and a road or tramway.
T13/817	The entire low level water race that extended from a dam on the upper Ohinemuri River to the Waihi Battery.
T13/818	The route of the Silverton tramway, located on the southern and eastern side of Union Hill.
T13/822	This site extends over most of Union Hill to include all shafts, drives, adits, open cuts, tailings (probably mullock heaps), tracks, tramways and the water race.
T13/823	This mainly records the 10 ore roasting kilns, but also includes building foundations, shafts and roading.

The full extent of the archaeological remains surviving on Union Hill is not known. The Waihi Battery area was bulldozed and flooded with 1m or more of tailings during the 1970s–1980s, and additional unrecorded elements are likely to be concealed beneath vegetation growth, tailings, spoil and soil build up. However, the main surviving structures are clearly evident, and areas of structures and mining activity are recorded in various archival plans and photographs (Moore, Lens & Ordish 2010; Clough, Best & Hooker 2004), providing a good indication of the likely location of any buried remains as well as areas which have been too modified for any remains to have survived.

Significance

The heritage significance of the remains is well recognised. The Conservation Plan assesses the heritage significance of Union Hill as a whole to be high, based on its wide range of mining-related features in close proximity which illustrate the entire process from extraction through to refining; and which include remains of both national significance (the air agitation cyanide tanks) and regional significance (the Waihi Battery, Union No. 1 shaft, ore roasting kilns and smoke chamber).

The significance of the area of Union Hill containing these heritage features is recognised by the scheduling of the 'Union Hill (Waihi Battery) Historic Area', cyanide tanks, ore kilns and tramway in the Hauraki District Plan (see above). The significance of the cyanide tanks has also been specifically recognised by Heritage NZ, which has listed them as a Category I Historic Place.

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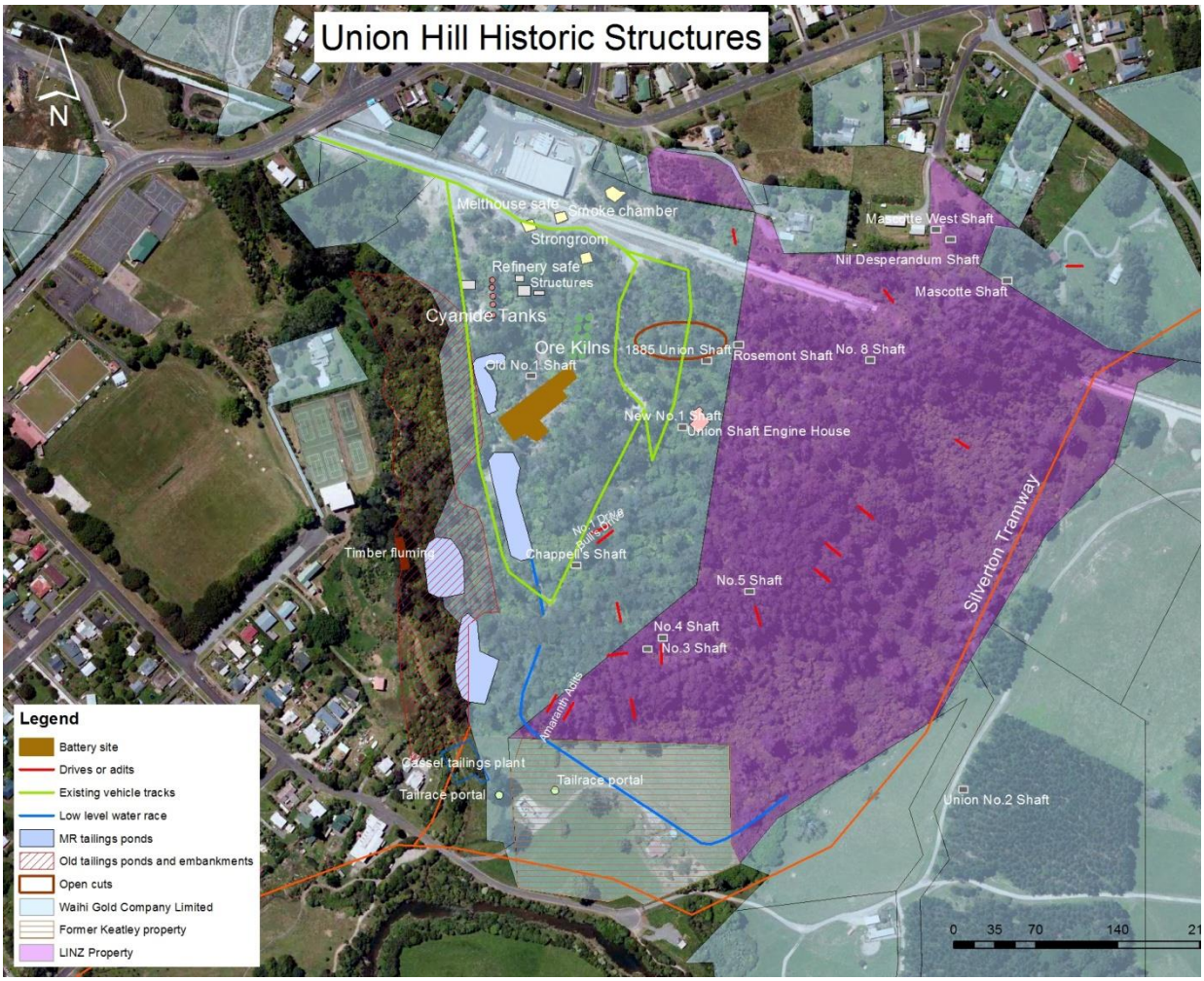

Figure 3. Location of heritage remains

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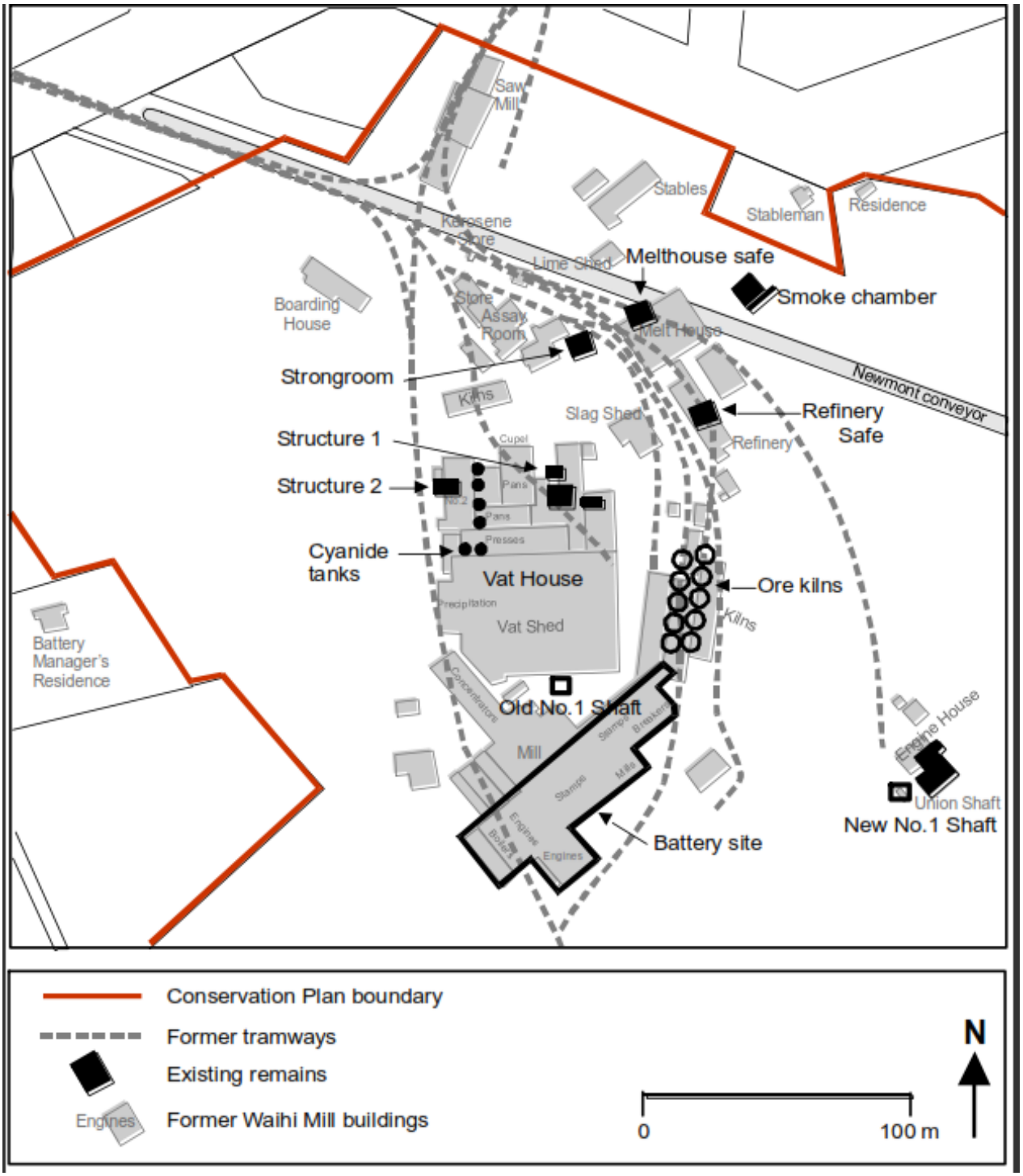

Figure 4. Surviving (and former) buildings of the Waihi Mill complex (from Figure 33 of Conservation Plan: Moore, Lens & Ordish 2010)

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Table 2. Inventory of heritage remains

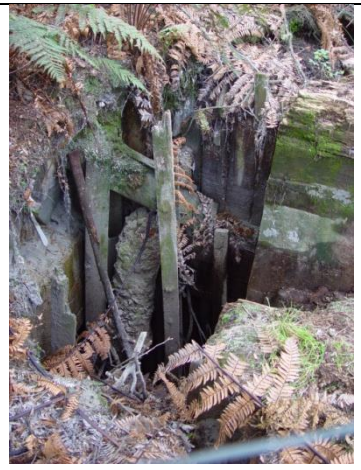
Abbreviations: WGCL = Waihi Gold Company Ltd; CP = Conservation Plan; MR = Mineral Resources (NZ) Ltd

Land owner	Feature	Description	Photo	Condition
Remains within Union Hill (Waihi Battery) Historic Area scheduled in the Hauraki District Plan				
WGCL	Battery foundations	Masonry and concrete foundations for upper and lower stampers, tube mill, engine house, boiler house; on three levels, with timber, metal (machine bolts, 2 stamper dies, chassis of mine truck) and brick elements; concrete A frame structure, chute, stone breaker, tanks, and possible additional machine foundations; over an area of c.85mx45m. (See Appendix A, Figures A, B and C)	  	Relatively stable condition, but facing stones missing on much of main wall, crack evident along face of tube mill floor, collapsed tube mill floor at southern end, collapsed masonry/foundations at engine house end. Encroaching exotic (pine, wattles) and native vegetation on the structures. In situ and displaced metal elements. Timber elements deteriorating. Boiler room floor covered by tailings and bulldozed material. Visible and semi-accessible, with dangerous areas (concrete tanks) fenced off. Stability of masonry wall being monitored during Trio mine operations (2004 photo at top; 2012 photos below)

WGCL	Kilns	10 ore roasting kilns in two rows, with associated access tunnels; c. 6.7m to 8m in diameter, c.8m to 8.8m in depth; 4 of the kilns are brick lined. A probable remnant of the 1886 Union Level drive consisting of a 2m section of tunnel is apparent in the wall between kilns 3 and 9. A buried tramway section is present at the southern end, subsurface but visible in a collapsed hole. (See Appendix A, Figure D)		Vegetation on kiln walls and some large pines – notably in kiln 7, where tree roots now an integral part of the kiln wall. Stable apart from rock falls within access tunnels and around one of the tunnel portals. Tunnel portal entrances cordoned off with safety signs. Kilns not clearly visible from access point at N end. Stability is being monitored during Trio mine operations (2004 photo)
WGCL	Cyanide tanks	6 ferro-concrete cylindrical air agitation cyanide tanks supported on bases with 6 radiating legs 2-2.6m long; c.16.5m high and 3.7m in diameter. (See Appendix, Figure E)		Good/stable condition, but concrete has been broken away from parts of bases; legs of one tank damaged by explosives. Stability is being monitored during Trio mine operations. Clear of vegetation externally but not internally. Tall pines located nearby with potential to fall and damage the tanks. Visible and easily accessible. (2004 photo)

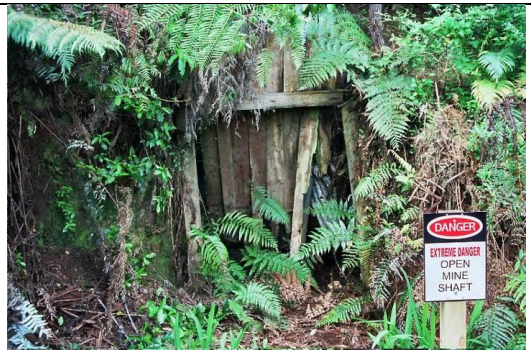
WGCL	Structure 1 and associated structures	Substantial concrete structure c.15m east of the cyanide tanks, Almost square, nearly 4m by 4m, with 2.35m high inward sloping plinth and 0.18m thick cover; hollow in the centre; 2 rectangular and 1 arch openings on the sides; short wall on one side with square post slots c.90mm square. (See Appendix A, Figure F). Two smaller associated concrete foundations immediately to the north (c.1.2m x 3m and 0.84m x 2m) and east (c.3.4m x 1.2m). Part of the cyanide treatment plant.		Stable condition but encroaching exotic and native vegetation. Potentially damaging vegetation on roof of structure. 5 tall pines nearby with potential to fall in the direction of the cyanide tanks or onto these structures. Accessible and partly visible (2004 photo)
WGCL	Structure 2	Concrete rectangular tank with iron-lined slots, 6-7m west of the cyanide tanks; c.6.5m by 4m, c.0.8m high, interior over 1m deep. Part of the cyanide treatment plant. (see Appendix A, Figure E)		Stable condition, but infilled with soil and vegetation encroachment obscures visibility. Accessible. (2012 photo)
WGCL	Strongroom	Concrete structure c.2.8m 3.8m by2.6m high; low arched roof; doorway at W end; 50cm thick walls; two internal rooms separated by steel door; plastered exterior except on SE wall; 'Built AD 1898' impressed in plaster at SE end. Reused by MR, who installed a concrete bench with steel cylinder embedded into it, and added a concrete floor in front and on SE side. (See Appendix A, Figure G)		Stable condition, some cracking in exterior plaster, damage around doorway with reinforcing iron exposed, outer door missing. Some vegetation beginning to establish on roof. Visible and accessible (2012 photo)

WGCL	Melt house safe	Rectangular concrete structure located near the conveyor service gates, now largely buried; c.5m x 3m, at least 1m high, with doorway on northern side. Part of the 3rd (final) refinery.		Good condition. Visible and accessible. (2012 photo)
WGCL	Smoke chamber	Square concrete structure on northern side of conveyor, c.7.5m square by 4m high, with an internal brick wall, 4 external openings, an external flue and chimney base, and ground level vents above the flue. Part of the 3rd (final) refinery. (See Appendix A, Figure H)		Cracking of concrete on two corners and around main opening, most internal brickwork removed. Large pine immediately adjacent may be cause of cracking. Currently fenced off, not visible or accessible (2012 photo)
WGCL	Displaced strongroom	Concrete structure near conveyor and Strongroom, c.3m by 2.7m and 3.6m high, with curved roughly plastered roof. Moved from original position by MR and tipped on end as part of ramp for tipping ore into crusher. (See Appendix A, Figure I)		Exterior in good condition, interior unknown. Vegetation growth on top of structure. Visible and accessible (2012 photo)

WGCL	Mineral Resources crusher foundations	1970s low concrete foundations S of conveyor near displaced strongroom; c.7m x 5m with outlying concrete pads (See Appendix A, Figure I)		Stable condition, now overgrown with vegetation partially obscuring the structure. Visible and accessible (2004 photo)
WGCL	Refinery safe	Concrete structure; c.5.5m by 2.5m, by c.5m high; with a flat roof and internal arched ceiling; doorway at E end and open arch at W end; concrete retaining wall perpendicular to S side. Associated with disturbed concrete foundations and a terrace/building platform nearby. Part of the 3rd (final) refinery. (See Appendix A, Figure J)		Exterior in good condition, plaster on interior walls and ceiling cracked and falling away. Outer steel door missing. A large pine has fallen on structure and vegetation has encroached since 2004 so that it is no longer visible or accessible (2004 photo)
WGCL	Old No. 1 shaft	2.4m by 1.2m, braced with kauri timber and divided into 3 compartments, northern one containing a ladder; E structure is a timbered trough 4m x 0.6m, opening into a c.2.4m by 2m timber lined pit of unknown depth. Probably associated with a beam pumping engine; shaft recorded as 38m deep. (See Appendix A, Figures A and K)		Timbers in reasonable condition, vegetation encroaching and obscuring visibility. Fenced off, not easily visible unless accessed from battery (2004 photo)

WGCL	New No. 1 shaft	Shaft c.4.3m by 1.8m with 3 separate compartments – a 1.8m x 1.8m pumping compartment and two 1.8m x 1.1m winding shafts; associated concrete foundations with steel bolts spread over area c.13m by 11m for pump and pump engine, compressor, winding engine and winch; clutch rods and control pedals still in original position; remains of boiler house in a pile of brick/concrete/metal to W. Shaft recorded as 198-204m deep. (See Appendix A, Figure L)		Shaft still open, but fenced off; some caving in of sides. Concrete foundations in good condition, but encroaching vegetation; visible and semi-accessible, partially fenced off and no obvious path access (2004 photo)
WGCL	Mullock dump at New No. 1 shaft	Large mullock dump (waste rock from New No. 1 shaft) extending W to upper vehicle track and for some distance SW; several tipheads evident		Accessible and visible on upper vehicle track behind Trio vent shaft
WGCL	1885 Union shaft	NE of New No. 1 shaft; c. 1.5m x 1m; depth unknown; no visible timbering.		Fenced off; not reinspected in 2012
WGCL	1887 shaft	Recorded c.30m north of Old No. 1 shaft, in area covered by later vat shed; no known remains		Not known, assumed to be filled in prior to construction of vat shed
WGCL	Rosemont cross cut	North of the conveyor near NE boundary; portal and W part of adit destroyed by earthworks for conveyor; shallow rubbish-filled portal trench survives, and mullock dump c.50 long with well defined pit head		Partly destroyed by conveyor construction; obscured by soil and rubbish dumping; associated mullock dump in good condition
WGCL	Rosemont low level cross-cut	Adit with portal originally located near Old No. 1 shaft; no visible evidence		Unknown
WGCL	Open cuts	A series of 5 open cuts or pits E of the ore kilns, N of 1885 Union shaft; numbered 1-5, upper to lower, in CP; 3 pits above upper track, 2 below; size varies from		Pit sides collapsing (variable, with Pit 1 best preserved); overgrown. Stability being monitored during Trio mine

		c.5m x 4.5m (Pit 4) to c.20m x 15m (Pit 3); depths vary from c.1.5m to 8m.		operations
Other Remains on Union Hill				
LINZ/WGCL	Rosemont shaft	Located c.30m east of the 1885 Union shaft, consisting of 2 trench-like arms; possibly an air shaft		Unknown; fenced off
WGCL	No. 1 drive and Bulls drive	NE of Chappell's shaft; two adits c.2m apart at the portals; both open; no timbering at either portal; Bulls drive c.25m long, 1m wide x 1.8m high with pick marks visible; No.1 drive smaller		Loose rock blocking entrance to No. 1 drive; Bulls drive partly filled with mud (2004 photo)
WGCL	Chappell's shaft	S of No. 1 drive and Bulls drive, near middle vehicle track; open shaft c.2m x 1.5m; no visible timbering or surrounding foundations; possible collapsed adit upslope from shaft		Open shaft; fenced off (2004 photo)

WGCL /LINZ	Amaranth adits	SW of No. 3 drive, on LINZ/WGCL boundary; 2 adits c.12m apart connected by a cross-cut tunnel c.16m into W adit and c.24m into E adit; E adit re-timbered by MR; benched area up to 4m wide in front of the adits, probably a remnant of an old road, with inclined trench dug through it by MR, with timber bridge over trench		Both adits in good condition; timbering of E adit in fair condition; MR's timber bridge rotting and collapsing; wire mesh gate across entrance to E adit, and pile of loose rock in front, but still accessible (2004 photo, not reinspected in 2012)
WGCL	No. 2 drive	SE of Chappell's shaft near LINZ/WGCL boundary; portal re-timbered by MR; mullock dump c.15m x 12m forming flat area in front of portal, with shallow depression in N corner; small tip head and corrugated iron ore chute at NW end from MR period; shallow trench to S of tiphead		Timber rotting and collapsing; adit blocked by rock fall c.3-4m in; ore chute rusting and only partly intact (2004 photo, not reinspected in 2012)
WGCL	No. 3 drive	S of No. 2 drive, on LINZ/WGCL boundary; small open adit accessible for 6-8m; portal trench c.6m long by 1.5m wide; mullock dump at portal c.9m x 4m forming flat area with pile of quartz at N end		Portal trench partly collapsed (2004 photo, not reinspected in 2012)
LINZ	No. 3 shaft	Southernmost shaft on LINZ land; open shaft; small mullock dump c.6-7m x 1.5-2m extending from SE corner of shaft		Fenced off; not reinspected in 2012

LINZ	No. 4 shaft	Immediately NW of No.3 shaft; open shaft; surrounding area has been bulldozed.		Fenced off; not inspected in 2012
LINZ	No. 4 drive	c.10m SE of No. 3 shaft; collapsed portal; portal trench not preserved; area levelled by MR; mullock dump c.11m x 1-3m with abundant quartz on S side of levelled area		Portal collapsed and not accessible; mullock dump modified by MR but otherwise well preserved. Not reinspected in 2012
LINZ	No. 5 shaft	NW of No. 4 shaft; open shaft; no visible timbering		Fenced off; not reinspected in 2012
LINZ	No. 5 drive	NE of No. 4 drive; adit open for some distance, with visible pick marks on walls and roof, and rails probably from MR period; portal timbered and wire mesh gate installed (by MR); portal trench 13m long by 1m wide, opening to large mullock dump		Portal trench and mullock dump well preserved but some collapse around portal; portal timbering and wire mesh collapsing (2004 photo, not reinspected in 2012)

LINZ	No. 1 drive east	NE of No. 5 drive; small partly open adit with c.10m x 1.5m portal trench; well defined mullock heap with abundant quartz		Collapsed portal; mullock heap in good condition (2004 photo, not reinspected in 2012)
LINZ	No. 2 drive east	NE of No. 1 drive east; partially collapsed portal trench c.12m x 1.5-2m; adit portal not visible; small mullock dump		Poor condition; adit not visible or accessible (2004 photo, not reinspected in 2012)
LINZ	No. 6 drive	NE of No. 2 drive east; portal trench c.10m x 1.5m; collapse around portal, but still open; no timbering; mullock dump c.12m x 1-4m extending from portal trench		Partly collapsed portal trench; well preserved mullock dump (2004 photo, not reinspected in 2012)

LINZ	No. 8 shaft	In northern part of LINZ land; open shaft, c.1.5m x 1.5m; no associated mullock dump		Good condition, fenced off (not reinspected in 2012)
LINZ	No. 8 Drive	Just N of conveyor tunnel; portal trench c.10m x 1.2-1.5m, opening to large flattish mullock dump with up to 4 tip heads; adit portal blocked by fallen material; adit may contain a reported original ore skip		Partly collapsed portal trench and access to adit blocked; condition of adit and possible ore skip not known; mullock dump in good condition (2004 photo, not reinspected in 2012)
LINZ	Prospecting trenches (P1-P3)	Small collapsed adits or prospecting trenches; P1 SW of No. 4 drive, 7m x 1m trench; P2 between No. 5 drive and No. 1 drive east, 4m x 1-.15m trench; P3 near No. 8 shaft, 3-4m x 1m.		Poor (P2, photo 2004, not reinspected in 2012)
WGCL	Mascotte shaft	Near northern boundary N of conveyor tunnel; c.3m x 2m open shaft with rails laid across it, open to a depth of c.3m; large mullock dump extending to NE; levelled platform cut into hill, c.15m x 10m, on E side, probably site of engine shed. (See Appendix A, Figure M)		Partly collapsed; used as a rubbish pit in past; overgrown; fenced off, not reinspected in 2012
WGCL	No. 7 drive	In NE part of property N of conveyor tunnel; adit portal within an old orchard only apparent as small hole; no surviving portal trench or mullock dump, with shed built in location where it would be		Infilled portal trench; area modified by earthworks; not reinspected in 2012

		expected		
LINZ	Nil Desperandum shaft	N of conveyor tunnel c.45m NW of Mascotte shaft; visible collapsed or infilled shaft visible only as small depression; associated mullock dump c.9m long		Collapsed/infilled; continuing minor subsidence; not reinspected in 2012
LINZ	Mascotte west shaft	Recorded immediately west of Nil Desperandum shaft, but no visible evidence		Unknown
WGCL /LINZ	Low level water race	Originally from Ohinemuri R. to Battery, sections of race still evident along SE boundary of LINZ land and in S area of WGCL land; sections of stone retaining wall built of quartz blocks near SE boundary at Silverton tramway crossing, largest section being 20m long and up to 1.2m high; original dimensions 3ft6in wide at base, 9ft wide at top, 2ft9in deep . Has been infilled in S (former Keatley) block. Archaeological site T13/817		Generally well preserved, but parts infilled by slumping and erosion, especially in northern section and former Keatley block. (2004 photo)
LINZ/ WGCL	Silverton tramway	Well defined section of route S of conveyor along SE boundary of LINZ block; 2-2.5m wide, cuttings on both sides in places, up to 1.8m high; crosses low level water race; route is evident as a linear trench N of conveyor in WGCL land. Archaeological site T13/818		Generally well preserved between conveyor and water race crossing, except for fallen trees, and erosion of cuttings; not reinspected in 2012
WGCL	Incline tramway	One section of tramway formation c.16m x 2-4m, with shallow drains at the sides running from N of Chappell's shaft to a tunnel portal is a remnant of the incline tramway from New No. 1 shaft to the Silverton tramway; tunnel c.1.7m x 2m		Only a short section has survived later works; tunnel portal partially collapsed; tunnel collapsed but accessible for c.5m.

		high. (See Appendix A, Figure N). Other tramways used to transport materials around the kilns, battery and refinery evident only as bench levels, former routes and displaced rail remnants.		
DOC	Timber flume	Remnant horizontal boards and upright supports of flume in bed of Mill Stream (c.20-30m upstream of the 'Cascades')		Waterlogged and relatively well preserved; not reinspected in 2012
WGCL	Tailrace tunnels, portals and channels	Portals and channels located in and on boundary of former Keatley property (photo shows channel from E portal). Water discharges under stone lined bridge beneath Clarke St		Portals not accessible for inspection (2012 photo)
WGCL	Concrete tank	Located in former Keatley property, built beside infilled low level water race, related to an early house. 6m x 2.4m x 600mm high, 400mm thick walls; internal compartments, 1.2m x 1.8m and 1.8m x 3.94m with 320mm dividing wall. (GPS 1852711 5857792)		Good condition; visible but not accessible as near existing house (2012 photo)
WGCL/ DOC/HDC	Other heritage landscape features	There are numerous other remnant industrial landscape elements including: <u>Early tailing ponds</u>: 3 areas in Mill Stream gully where early tailings were stored in shallow ponds contained by bunds extending across gully; disturbed by MR activities, but identifiable from exposures		Variable condition; generally not apparent to visitors

		of pink tailings, and surviving bunds of lower 2 ponds; associated with cut-off drains on W side of ponds (CP, Figure 68) Mineral Resources tailing ponds: 3 main areas within WGCL land, around and to south of Battery foundations (CP, Figure 68) Former tramways: in addition to the Silverton and Incline tramways (above), benching and displaced rails indicate the route of the upper battery tramway between the kilns and boiler house; and part of the route of tramways between Martha mine and the kilns is still evident (CP, Figure 33) Former roads: including a section of old road from Speaks Quarry (HDC land) into WGCL land; a section of road in front and E of Amaranth adit portals (CP, Figure 75) Site of Cassel cyanide plant: historically recorded near S boundary of WGCL and DOC land, but no visible remains; some mullock dumping on site; potential for subsurface remains (CP, Figure 68) Speak's Quarry and explosives magazine: early quarry, probable source of stone for Battery structures; explosives magazine near S end of quarry excavated into rock bank c.0.7m x 1.1m deep x at least 1.6m high, with curved ceiling, door and shelf indications; HDC land (CP, Figure 75) House sites: potential locations of historically recorded workers houses, but		

		potential for subsurface remains, two on W side of Mill Stream, one SW of New No. 1 shaft (general locations in CP, Figure 75)		
WGCL /DOC	Machinery	In situ machinery: (1) at New No. 1 Shaft (see right, above); (2) on Battery foundations; (3) cast iron tub on E bank of Mill Stream to S of Cascades, 1.4m x 0.64m x 0.25m deep, bolted to concrete foundation (CP, Figures 75, 78) Displaced machinery including: (1) ore lift cage immediately SE of battery foundations below middle vehicle track (see right, below); (2) two sections of cast iron pump pipes c.40+m N of New No. 1 shaft, 3.15m x 0.4m int. diam and 2.75m x 0.33 int. diam. (CP, Figures 75, 77).	 	(2004 photos)

MANAGEMENT GUIDELINES

Introduction

This section sets out management objectives and guidelines, linked to policies in the conservation plan, under the following headings:

WGCL Operations: this sets out the procedures to be followed and actions undertaken by WGCL to ensure that the operation of its Trio underground mine and management of its land do not adversely affect the heritage remains on Union Hill, and that statutory requirements relating to heritage are complied with.

Maintenance: this recommends regular maintenance measures to protect and maintain the heritage remains in their current condition.

Remedial Work: this recommends additional remedial work to address threats to the structural integrity of significant heritage structures and to repair damaged elements.

Vegetation: this sets out guidelines for future vegetation management in relation to the heritage remains.

Visitors and Local Community: this addresses visitor experience, visitor impact and safety issues in relation to the heritage remains, and opportunities for community involvement.

Research: this makes recommendations regarding future archaeological and historical research to increase existing information relating to the heritage remains and their history.

The overall objectives are to preserve and protect the heritage values of Union Hill, to enhance understanding of their significance and to provide appropriate public access to them.

Continued on next page

WGCL Operations

Objectives

1. To take all reasonable measures to ensure that WGCL's operations do not adversely affect the heritage remains on Union Hill.
2. To ensure that all statutory requirements are complied with.

Implementation

WGCL's main responsibility is to ensure that its mining operations avoid or minimise any adverse effects on the heritage remains. The following procedures should be followed to ensure the protection of the remains:

- The stability of the scheduled cyanide tanks, ore kilns, open cut mine area and the masonry wall of the battery must be monitored for the duration of the Trio underground mining operation, in accordance with the approved monitoring plan and resource consent conditions.
- If the stability of the cyanide tanks, ore kilns or masonry wall of the battery is determined to be adversely affected as a result of the Trio underground mining operation, blasting will if necessary be halted until engineering advice has been obtained, a qualified archaeologist and conservation architect consulted, and appropriate remedial action taken to ensure the protection and preservation of the heritage remains.
- WGCL must consult Heritage NZ and (with the exception of minor works as defined in the Hauraki District Plan) obtain resource consent for any remedial work carried out on the cyanide tanks (excluding any propping and support of the structures that might be required as an urgent temporary measure to prevent collapse while consent is being obtained).
- WGCL must obtain an archaeological authority from Heritage NZ for all remedial work and a resource consent for any major remedial work carried out on the ore kilns or battery structures (excluding any propping and support of the structures that might be required as an urgent temporary measure to prevent collapse while consent is being obtained).
- Any remedial work carried out should be supervised by a qualified archaeologist or conservation architect, as appropriate.
- An assessment by a qualified archaeologist should be obtained for any planned surface works involving ground disturbance (including tree planting) to determine whether the proposed activity will affect any archaeological features or deposits (this does not apply to resurfacing of existing tracks where no excavation is involved).

Continued on next page

WGCL Operations, *continued*

- If it is determined that the proposed work has the potential to impact on pre-1900 archaeological remains, Heritage NZ must be consulted and an archaeological authority obtained prior to the start of works.
- If suspected archaeological remains relating to either early European or Maori settlement are exposed by WGCL's activities, and no archaeological authority has been obtained, work must be halted in the immediate vicinity and the appropriate organisations notified in accordance with WGCL's 'Archaeological Find' standard operating procedure.
- If the proposed activity is within the scheduled Union Hill (Waihi Battery) Historic Area and involves construction of a building or structure (including network utility structures), new tracks or roadways, fences (except for safety or heritage protection purposes), or earthworks, prospecting and exploration, a resource consent must be obtained. The construction of new buildings should be avoided.
- WGCL must ensure that all the conditions of resource consents currently issued to it (RC15774 Trio Mine Consents and RC 202.2012.00000109.001 Walkway and Signage Consents) and any future consents obtained are complied with. When work is carried out by other parties under resource consents issued to WGCL, WGCL is responsible for ensuring that the conditions are complied with. (See Statutory Requirements, above).
- WGCL must ensure that all the conditions of archaeological authorities issued to it are complied with. When work is carried out by other parties under authorities issued to WGCL, WGCL is responsible for ensuring that the conditions are complied with. (See Statutory Requirements, above).

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Maintenance

Objective

1. To protect and maintain the heritage remains in their current condition.

Relevant Conservation Plan policy

Policy 1: Ensure the cultural heritage value of the place is maintained

Policy 2: Protect and preserve historic features as far as possible in their present condition, with minimal intervention

Policy 5: Ensure the protection and preservation of the battery site

Implementation

The heritage structures are gradually deteriorating as a result of natural processes of erosion and vegetation encroachment. The battery site, for example, is particularly at risk from vegetation growing between the blocks of the stone walls and on the exposed western face of the tube mill floor, and many of the concrete structures at the battery and elsewhere are at risk both of vegetation growth on the structures and deep rooting and/or potentially unstable trees growing too close to them. While the process of deterioration cannot be completely arrested, the life of the structures can be prolonged through regular maintenance, and in particular keeping the structures clear of vegetation (both native and exotic) which will otherwise gradually break them down. Priority should be given to the maintenance of the more significant features (battery, ore kilns, cyanide tanks).

The removal of large well established trees is outside the scope of the recommended cyclical maintenance programme, and is addressed under Remedial Work, below.

The following maintenance measures are recommended (and see Table 3):

- The identified heritage structures should be kept free of encroaching vegetation through an annual vegetation control programme.
- Vegetation (exotic and native) growing on the structures should be removed by spraying with an appropriate biocide and cutting – it should not be pulled from the structure.
- Large deep rooting tree species (exotic or native) should not be allowed to establish in the immediate surrounds (within c.5m) of any heritage structures, shafts and adits, and any immature specimens should be removed. Tree ferns are not potentially damaging and can be left in situ.
- The life of metal elements, such as the bolts on the machine foundations and in situ and displaced machinery, should be prolonged by treatment with an appropriate corrosion protection coating such as POR® 15 Rust Preventive Paint.

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Maintenance, *continued*

- Displaced machinery such as the ore lifting cage should be moved (unless it is too fragile) and placed in appropriate locations within or near the structures to which it relates, where it can be protected, is more accessible for regular treatment and can be viewed by (but is not accessible to) the public (see Visitors and Local Community). If an appropriate location cannot be found consideration should be given to placing it in the Waihi Museum.
- The life of in situ timber elements should be prolonged by treatment with a timber preservative such as zinc napthenate.
- Safety fencing around shafts and hazardous structures should be regularly monitored and kept in good repair (see Visitors and Local Community).
- Lockable gate access should be provided for maintenance purposes to the fenced off Old No. 1 Shaft and concrete tanks at the battery site, and to other fenced off shafts.
- Annual condition inspections of all structures listed in Table 3 should be made, and a photographic record kept. This would require the assistance of an archaeologist or other heritage professional.
- Any threats to/increased deterioration of the structure should be identified so that stabilisation/repair work can be undertaken if necessary (see Remedial Work). Any significant repairs will require resource consent and, if repairs are to pre-1900 structures, an archaeological authority).

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Table 3. Recommended maintenance programme. Note: asterisks indicate work that WCGL has agreed to undertake as part of an annual maintenance programme

Feature	Maintenance Task	Frequency
Battery foundations	Control exotic and native vegetation growth on all structures (including those fenced off) through spraying and cutting (not pulling), in particular on S masonry wall of stamper battery	Annually (6 monthly if required)*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of heritage structures	Annually*
	Apply corrosion protection coating to in situ metal elements and displaced machine parts	As recommended for product used
	Apply timber preservative to in situ timber elements	As recommended for product used
Kilns	Control exotic and native vegetation growth on kiln structures through spraying and cutting (where accessible), not pulling.	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of heritage structures	Annually*
	Apply corrosion protection coating to in situ metal elements (tram rails) and displaced machine parts (bogey wheels)	As recommended for product used
	Apply timber preservative to in situ timber elements	As recommended for product used
Cyanide tanks	Control exotic and native vegetation growth within tanks structures through spraying	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of heritage structures	Annually*
	Apply corrosion protection coating to in situ metal elements (including exposed reinforcing)	As recommended for product used
Structure 1 and associated structures	Control exotic and native vegetation growth on all structures, in particular on roof of Structure 1, through spraying and cutting (not pulling)	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of heritage structures	Annually*
	Apply corrosion protection coating to in situ metal elements (in particular within Structure 1)	As recommended for product used
	Apply timber preservative to in situ timber elements (in particular within Structure 1)	As recommended for product used
Structure 2	Remove soil build-up and vegetation within structure	Annually
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
	Apply corrosion protection coating to in situ metal elements/lining	As recommended for product used
Strongroom	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
	Apply corrosion protection coating to in situ metal elements (including exposed reinforcing)	As recommended for product used

Feature	Maintenance Task	Frequency
Melt house safe	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
Smoke chamber	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
	Apply corrosion protection coating to in situ metal elements	As recommended for product used
Displaced strongroom	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
Refinery safe	Cut up and remove tree that has fallen onto the structure	n/a*
	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
	Apply corrosion protection coating to in situ metal elements	As recommended for product used
	Apply timber preservative to in situ timber elements	As recommended for product used
Mineral Resources crusher foundations	Control exotic and native vegetation growth on structure through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
Old No. 1 shaft	Control exotic and native vegetation growth through spraying and cutting (where accessible), not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m	Annually*
	Apply timber preservative to in situ timber elements (using spray where access is unsafe)	As recommended for product used
New No. 1 shaft	Control exotic and native vegetation growth on concrete structures through spraying and cutting, not pulling	Annually*
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of concrete structures or shaft	Annually*
	Apply corrosion protection coating to in situ and displaced metal elements	As recommended for product used
Fenced off shafts and adits	Inspect safety fences and repair if necessary	Annually
	Remove any immature deep rooting tree species (exotic or native) growing within c.5m of shafts and adit entrances	As recommended for product used
	Apply timber preservative to in situ timber elements	As recommended for product used
Displaced machinery	Apply corrosion protection coating	As recommended for product used
All listed structures	Inspect condition, keep photographic record, identify any threats to/increased deterioration of structure. Identify any necessary stabilisation/remedial work.	Annually

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Remedial Work

Objective

1. To preserve significant heritage remains that are structurally unsound or under threat.

Relevant Conservation Plan policy

Policy 2: Protect and preserve historic features as far as possible in their present condition, with minimal intervention

Policy 4: Ensure the protection and preservation of historic features by the removal or mitigation of identified threats

Policy 5: Ensure the protection and preservation of the battery site

Implementation

More extensive remedial work (in addition to regular maintenance) is required to ensure the structural integrity of some of the heritage structures, notably the battery and ore kilns. This includes the removal of large well established trees whose root systems are causing damage to structures, or which could fall onto significant heritage structures in the future. It is recognised that the costs of much of this work will be high, and beyond the available resources of WGCL or a future management committee, and it is recommended that funding is sought from appropriate grant-giving organizations on behalf of the Waihi community.

The following remedial work is recommended:

<u>The battery foundations</u>

- The large trees growing on the foundations should be carefully removed by a qualified arborist or logging contractor using methods that cause no further damage to the structures.
- A remedial work specification should be commissioned from a conservation architect, with input from a qualified archaeologist, an engineer if necessary, and consultation with Heritage NZ, HDC and the local community. The specification should include provision for:
  - Reassembly/reinstatement/repair of the collapsed southern section of the tube mill floor.
  - Reassembly/reinstatement of the collapsed sections of the engine house foundations/walls.
  - Stabilisation of the concrete shute and other unstable elements, including timber bracing where necessary.

Continued on next page

Remedial Work, ***continued***

- Removal of bulldozed rubble and soil build up on and around the battery foundations under the direction of a qualified archaeologist to expose, investigate and protect areas that are currently obscured or inaccessible for protective treatment, recover any significant displaced machinery or other elements, and add to information about the battery remains.

- Funding to undertake the remedial work should be sought and the work carried out as soon as possible.
- Resource consent and an archaeological authority will be required before the work can be carried out.
- The structural repairs should be carried out by appropriately qualified tradespeople with experience of similar heritage projects, under the direction of the conservation architect.

Ore kilns

- The large trees growing on the kilns should be carefully removed by a qualified arborist using methods that cause no further damage to the fragile structures, and the root systems should be left undisturbed. Helicopter assistance may be required.
- Consideration should be given to installing timber bracing within the tunnels for support, and possible viewing access (see Visitors and Local Community).

Cyanide tanks

- A number of tall pine trees (c.5) located to the east of the cyanide tank should be carefully removed by a qualified arborist using methods that avoid damaging the tanks and other heritage structures in the vicinity, as they have the potential to fall and damage the tanks.
- Solutions to the issue of water accumulating within the tanks and gradually seeping through the concrete should be investigated and implemented, subject to consultation with and the approval of Heritage NZ and Council. Solutions could include restoring function to existing valves, inserting new valves or installing covers.

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Remedial Work, *continued*

Smoke chamber

- In the short term bracing/props should be installed inside the structure to stabilise it and prevent collapse.
- The large pine tree immediately adjacent to the structure should be carefully removed by a qualified arborist using methods that cause no further damage to the structure.
- A remedial work specification should be commissioned from a conservation architect, with input from an engineer.
- The cracks and the internal supporting wall (largely removed) should be repaired to preserve the integrity of the structure.

Displaced strongroom

- Consideration should be given to restoring the structure to its original position, assessing the condition of the interior and applying any necessary preservation treatment.

General

- Any necessary stabilisation work identified through regular monitoring of the heritage structures should be addressed promptly to ensure their preservation. If necessary temporary propping or bracing should be installed to support structures until advice from the relevant heritage professionals can be obtained and a longer term remedial work specification developed.
- Any large trees growing in the vicinity of heritage structures which have the potential to fall and damage the structures or which are destabilising them should be progressively removed.
- All remedial work undertaken should be consistent with the principles of the ICOMOS New Zealand Charter for the Conservation of Places of Cultural Heritage Value (2010).
- Structural repairs should be carried out by appropriately qualified tradespeople with experience of similar heritage projects, under the direction of the conservation architect.

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Table 4. Remedial work priorities

Structure	Remedial Work	Priority Level
Battery foundations	Removal of trees growing on structure	Urgent
	Repairs to tube mill floor	Moderately urgent
	Repairs to engine house foundations	Moderately urgent
	Stabilisation of chute and other unstable elements	Moderately urgent
	Archaeological investigations	Desirable
Ore Kilns	Removal of trees growing on structure	Urgent
	Installation of bracing within tunnels	Desirable
Cyanide tanks	Removal of pines with potential to fall on structure	Moderately urgent
	Investigate ways to prevent water accumulating within tanks	Desirable
Smoke Chamber	Installation of internal bracing/props	Moderately urgent
	Removal of large pine adjacent to structure	Moderately urgent
	Repair cracks and internal wall	Moderately urgent
Displaced strongroom	Restore to original position to assess and address condition of interior	Desirable
General	Bracing/supporting of any structures identified through annual condition monitoring as being at risk, as a temporary measure	Urgent
	Removal of large trees in the vicinity of structures which have the potential to fall and damage them	Moderately urgent
	Removal of large trees whose root systems are destabilising structures	Urgent

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Vegetation

Objective

1. To ensure that management of the ecological values of Union Hill is appropriate to the management of its heritage values.

Relevant Conservation Plan policy

Policy 7: Promote the establishment of native vegetation and the removal of plant pests.

Implementation

Rather than blanket removal of exotic species from all areas of Union Hill, an approach which recognises the contribution that the established exotic trees make to the atmosphere and setting of the heritage remains is recommended. The draft concept plan developed for Vision Waihi Trust ('Union Hill Visitor Experience, Waihi') envisaged an ecological zone largely within LINZ land and a heritage zone on WGCL land, and it is recommended that the main focus of ecological restoration is outside the primary heritage zone.

Native and exotic vegetation both provide an aesthetically pleasing context for the heritage structures and enhance the experience of visitors to the heritage remains. However, vegetation should not be allowed to encroach on the structures themselves, and large deep rooting tree species, whether exotic or native, should be removed from and not allowed to establish in the immediate vicinity of the heritage structures, as they have the potential to damage them.

Any new planting of native tree species carried out for enhancement or ecological restoration purposes should take into account the potential for disturbing archaeological deposits and minor heritage landscape features, to ensure that damage is avoided.

The removal of plant pests such as Chinese privet, tree privet, woolly nightshade, black wattle, convolvulus, honeysuckle and tradescantia would generally be desirable throughout the WGCL land to prevent them acting as a seed source for surrounding areas. However, this would need to be part of a plant pest control programme for the wider area, including the LINZ and DOC land, to be effective.

The following recommendations are made:

- Weed control and tree removal carried out on or in the vicinity of heritage structures should be undertaken using methods that do not damage the structures (as outlined under Maintenance, above).
- Deep rooting native tree species should be prevented from establishing themselves on heritage structures or within c.5m of heritage structures (see Maintenance, above).

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Vegetation, *continued*

- Some native vegetation may need to be removed to maintain access to and visibility of heritage structures (see Visitors and Local Community).
- Advice should be sought from a qualified archaeologist before planting trees within the Union Hill (Waihi Battery) Historic Area or in the vicinity of other heritage features identified in Figure 3 to ensure that archaeological and other heritage features and deposits are not adversely affected.
- No deep rooting tree species should be planted so close to heritage structures that the dripline of the mature tree would extend over the structure (to ensure that the root system does not eventually destabilise the structure).

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Visitors and Local Community

Objectives

1. To provide public access to and information about the heritage structures, as part of a Union Hill visitor experience and in order to increase public awareness of and support for the protection and preservation of the remains.
2. To ensure the safety of visitors to the heritage remains
3. To ensure that the heritage remains are not adversely affected by visitors.
4. To provide opportunities for community involvement in the protection and management of the remains.

Relevant Conservation Plan policy

Policy 3: Ensure that the future use of Union Hill is compatible with its heritage value and the status of its historic remains.

Policy 6: Provide opportunities for involvement of the local community in conservation of the historic heritage, and education and research.

Implementation

The purpose of conserving heritage remains is recognised as being to maintain and reveal their intrinsic values, to provide for their appreciation and recreational enjoyment by the public, and to preserve them in the interests of present and future generations (Conservation Act 1987; ICOMOS Charter 2010). It is also recognised that the conservation of heritage places is facilitated by their serving a useful purpose (ICOMOS Charter 2010). Creating a visitor experience at Union Hill by providing public access to and interpretation of the heritage remains, as currently planned, is eminently compatible with their heritage significance, and will improve public awareness of the significance of the remains and the need to conserve them.

Resource consent for stage 1 of the proposed walkway and signage work has been granted and the works have been partly completed. The route of the stage 1 walkway is shown in Figure 5. The track runs from the Barry Road entrance along the lower vehicle track and continues on to Clarke Street, with a loop track through the cyanide tanks and past associated structures, into the area of the former vathouse and mill, running between the tube mill foundations and the concrete tanks and Old No. 1 Shaft, before rejoining the lower walking track. Archaeological monitoring and investigations were carried out during the installation of the loop track to ensure that there were no impacts on in situ heritage features.

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Visitors and Local Community, *continued*

In future another loop track may be created, taking visitors from the lower vehicle track to above the battery foundations and ore kilns, past the refinery safe to rejoin the main vehicle entrance road near the conveyor, strongroom and nearby structures. Other tracks are planned from the upper vehicle track into LINZ land, the southern one running close to the New No. 1 Shaft. (The future proposed tracks are referred to here as the stage 2 walkways).

The walkway routes are well planned and appropriate in terms of allowing visitors to visit or view most of the significant remains on Union Hill (excluding the mineshafts, for safety reasons) and avoiding impacts on heritage remains.

Visitor Safety

WGCL's primary responsibility as a landowner in allowing access to the heritage remains is to ensure public safety. There are various risks to public safety associated with the mining and industrial landscape including fall hazards (down mine shafts, pits, ore kilns, and from tall structures) and injuries from exposed metal elements and uneven surfaces.

Safety issues have so far been addressed by fencing off shafts and dangerous structures, and by commissioning a safety assessment of the proposed walkway system. The safety assessment (attached as Appendix B) makes a number of recommendations relating to additional or improved safety fencing and avoidance of specific identified hazards along the walking track. Some additional recommendations are also made below relating to visitor safety.

Visitor Impacts

It is important to ensure that the remains are protected from damage by visitors. Some of the remains are too fragile to allow them to be walked on by members of the public (notably the ore kilns).

The completion of the stage 2 walkways, with appropriate viewing points down onto the upper battery foundations and ore kilns, is strongly recommended to discourage visitors from climbing on these structures.

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Visitors and Local Community, *continued*

Community Involvement:

The Union Hill remains have heritage and amenity value and tourism potential and are an asset for the Waihi community. The walkway concept was developed by the Vision Waihi Trust (VWT) and the local community, and will be implemented by the VWT on behalf of the community. The continued involvement of the VWT and other community groups in both visitor management and protection and preservation of the heritage remains through a management committee made up of WGCL and the key stakeholders (see Introduction) is highly recommended. It should be noted that priority is often given to community-generated heritage projects by grant giving bodies.

The following recommendations are made:

- The heritage structures should be kept as visible and accessible as possible, taking public safety and heritage protection requirements into account.
- When constructing new walkways and viewing points and installing signage, damage to heritage structures and archaeological deposits should be avoided.
- Hazards to visitors identified in the safety assessment (Appendix B) should be addressed.
- All mineshafts should be kept fenced off with appropriate warning signage.
- Entry to adits with a risk of tunnel collapse should be prevented and appropriate warning signage installed. Adit entrances, however, should be kept visible, with any existing portal timbers maintained, and where possible gates or grilles installed within the entrance.
- Existing non-specific safety signage (e.g. 'multiple hazards') should be replaced with more informative signs identifying the specific hazard(s) in each case.
- Vehicle tracks and walkways should be well maintained and signposted.
- Interpretation signage should be provided at entrance and exit points and at all key structures, to explain the function, history and significance of the remains.
- The design of interpretation, information and directional signage should be relatively unobtrusive, complement rather than compete with the heritage remains and be consistent across Union Hill, while safety and heritage protection signage should be clearly visible at all locations where hazards are present and remains are vulnerable to damage by visitors.

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Visitors and Local Community, *continued*

- The stage 2 walkways should be completed as soon as possible, and controlled public viewing access should be provided to as many of the heritage structures as possible, both to improve the visitor experience and to reduce the potential for visitors to leave the walkways and access features informally, causing damage to structures and putting themselves at risk. In addition to the stage 1 walkway consideration should be given to providing controlled access to and interpretation of the following heritage features:
  - No access to the ore kilns is currently provided, and while there is a safe viewpoint from the northern end of the kilns it is difficult to gain a view of the kilns themselves without walking among them and viewing them from above. This is unsafe for the public in view of the fall height of the kilns and should not be permitted for heritage reasons as the kilns are too fragile. Ideally a viewing platform with interpretation (and warning) signage should be provided along the future walking track above and east of the kilns, or if that is not possible from a raised platform at the northern end of the structures. Consideration should be given to installing a safety fence with warning signage at the northern end of the kilns, with lockable gate access for maintenance.
  - Consideration should also be given to providing viewing access through the tunnel to kiln 7 on the lower western side, accessed from the loop track near the battery foundations. This would require the installation of protective timber bracing within the tunnel and a grille at the end, through which kiln 7 and kiln 4 beyond could be viewed (by one person at a time).
  - The upper levels of the battery foundations cannot be viewed from the proposed stage 1 walkway, which may encourage visitors to leave the walkway and climb on the structures. A viewing point (or points) along the stage 2 walking track from above the battery foundations which gives a good view of the engine room floor and tube mill floor is recommended, with appropriate interpretation and warning signage.
  - The concrete tanks at the battery site near the Old No. 1 Shaft are currently fenced off and difficult to view. Consideration should be given to removing the fencing from around the concrete tanks (retaining it around the mine shaft) and installing safety grilles across them instead.

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Visitor s and Local Community, *continued*

- Access to the refinery safe is not currently provided for and it is overgrown and difficult to find. Access from the stage 2 walkway should be provided, with a minor path around the structure allowing access to the southern (lower) end with the arch, and to the upper northern end allowing a view into the interior. An interpretation sign should be installed near the structure.
- The machine foundations beside the New No. 1 shaft are not currently accessible and are partially fenced off. However, this area is of considerable interest, with in situ machinery and good potential for interpretation. The shaft itself is and should continue to be fenced off, but access to the foundations should be provided by creating a minor path from the upper vehicle track and stage 2 walkway and the unnecessary fencing to the west of the remains should be removed. An interpretation sign should be installed near the access point to the foundations.
- Consideration should be given to providing viewing access to and interpretation of the smoke chamber on the northern side of the conveyor, though the structure itself should be kept fenced off until it can be made structurally safe.

- Displaced machine parts such as the ore lifting cage should be moved (unless they are too fragile) and placed in locations within or near the structures to which they relate, where they can be viewed by visitors but are not accessible to them (and are more accessible for protective maintenance – see Maintenance).
- As part of the annual condition monitoring of the heritage structures, any adverse effects on heritage structures from visitor use (e.g. vandalism or damage from informal access) should be identified and addressed.
- Unsightly intrusive elements such as the orange mesh near the strongroom should be removed and if necessary replaced with a tidier fence or barrier, and aesthetic improvements to existing safety fencing around heritage structures should also be considered.
- A management committee made up of WGCL and relevant stakeholders, as recommended in the conservation plan, should be established, with collective responsibility for the management of the heritage remains and visitor facilities throughout Union Hill (subject to the statutory obligations of WGCL and other landowners).

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Visitors and Local Community, *continued*

- Members of the local community should be encouraged to become involved in caring for the remains through:
  - informal monitoring of visitor activities and the condition of the heritage remains and reporting any issues to WGCL and VWT;
  - providing input into maintenance of the remains (where appropriate from a safety perspective);
  - providing input into and/or being kept informed of conservation projects and archaeological investigation carried out on Union Hill;
  - providing assistance and support for funding applications to appropriate grant-giving bodies for conservation projects on Union Hill.

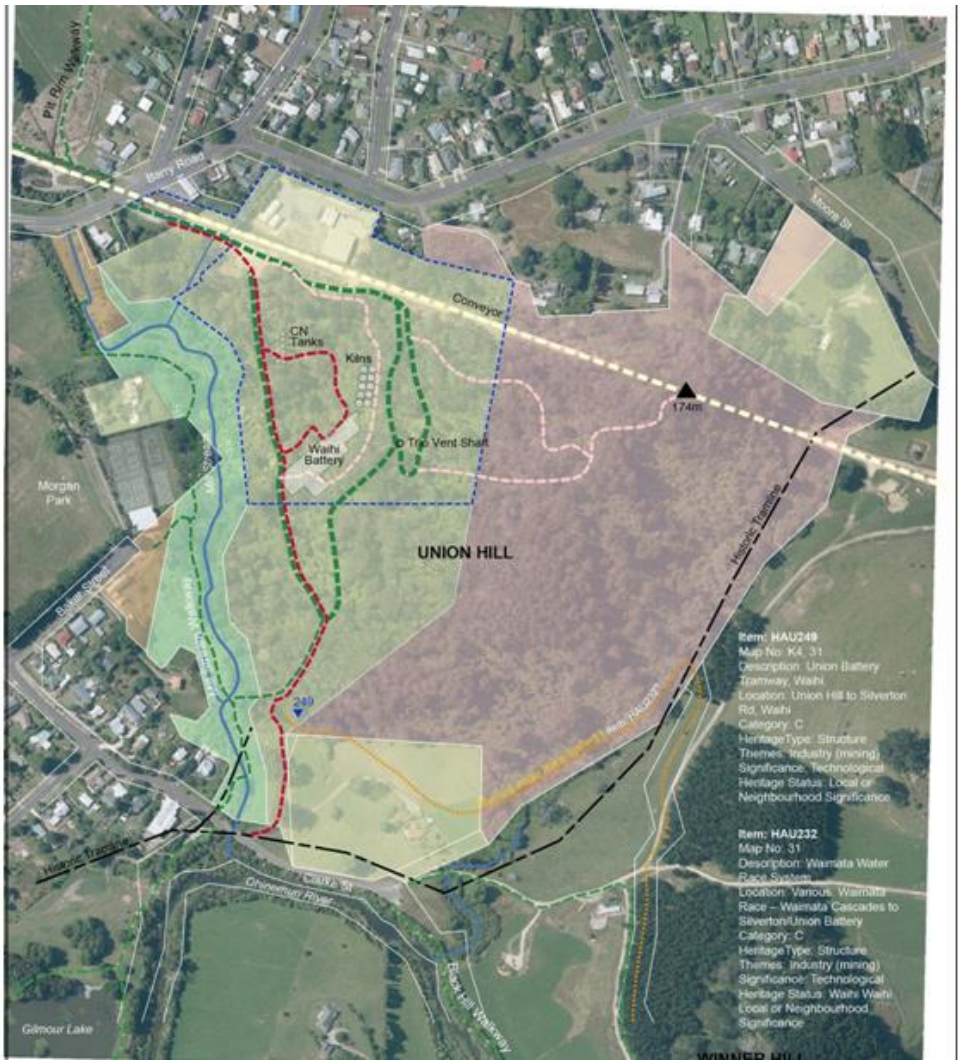

Figure 5. Completed stage 1 walkway (red dashed line) and stage 2 walkways (pink dashed lines) (from the AEE accompanying the resource consent application). Green dashed lines are existing vehicle access tracks

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Research

Objective:

1. To improve knowledge and appreciation of the Union Hill heritage remains.

Relevant Conservation Plan policy

Policy 6: Provide opportunities for involvement of the local community in conservation of the historic heritage, and education and research

Implementation

While a great deal is known of the history of Union Hill and its surviving industrial remains, as set out in the Heritage Assessment (Clough, Best & Hooker 2004) and the Conservation Plan (Moore, Lens & Ordish 2010), the full extent of the surviving remains has not been confirmed. Bulldozing by Mineral Resources in the 1970s-1980s has destroyed many of the original remains, but some elements are likely to remain buried under rubble, tailings and soil, and concealed by vegetation growth. Archaeological investigation should be carried out where the opportunity arises, and should be focused primarily on exposing/recovering and mapping any buried or obscured remains, adding to knowledge of the heritage structures and industrial processes, and providing information to assist in their future protection and management.

Any investigations that may affect pre-1900 features or deposits require an archaeological authority from Heritage NZ.

Archaeological monitoring of the installation of the Trio vent shaft has already been undertaken, and archaeological monitoring and investigation as part of the development of the walkways under Authority No. 2012/542 have been completed. An additional authority for the stage 2 walkway works is likely to be required.

The following recommendations are made:

- The effects of the proposed stage 2 walkway works on archaeological values should be assessed by an archaeologist.
- If it is established that proposed works (operational, or related to walkway construction) have the potential to disturb or expose pre-1900 archaeological remains, an archaeological authority must be obtained from Heritage NZ and the opportunity should be taken to investigate, record and protect the remains.

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Research, ***continued***

- Information recovered from these investigations should be used to inform future management, conservation and interpretation of the heritage remains.
- Further archaeological investigation at the battery site should be part of any future conservation project in this area (see Remedial Work).
- Plans of the heritage remains (see Appendix A) should be amended in the light of any new information recovered through archaeological investigation.
- Additional historic research by local historians should be encouraged and supported to add to existing knowledge of the heritage remains and industrial processes carried out on Union Hill, and their wider historical context.
- WGCL should maintain an archive containing all records relating to heritage assessment and recording, conservation planning, archaeological investigations, historical research, condition monitoring and remedial work undertaken on its land at Union Hill.
- Copies of all archaeological and historical reports relating to the Union Hill remains should be deposited in the Waihi museum and library and the HDC Paeroa office for public reference.
- The local community should be kept informed of any archaeological investigations carried out and where possible given the opportunity to participate.

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APPENDIX A: PLANS OF HERITAGE FEATURES

The following plans are those included in the Conservation Plan. The majority were compiled by Clough & Associates as part of the 2004 Heritage Assessment (Clough, Best & Hooker), but have been updated and amended with further information. They are presented in the order listed in Table 2 (inventory of heritage remains).

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APPENDIX A: PLANS OF HERITAGE FEATURES, CONTINUED

Figure A. Plan of battery foundations and associated structures

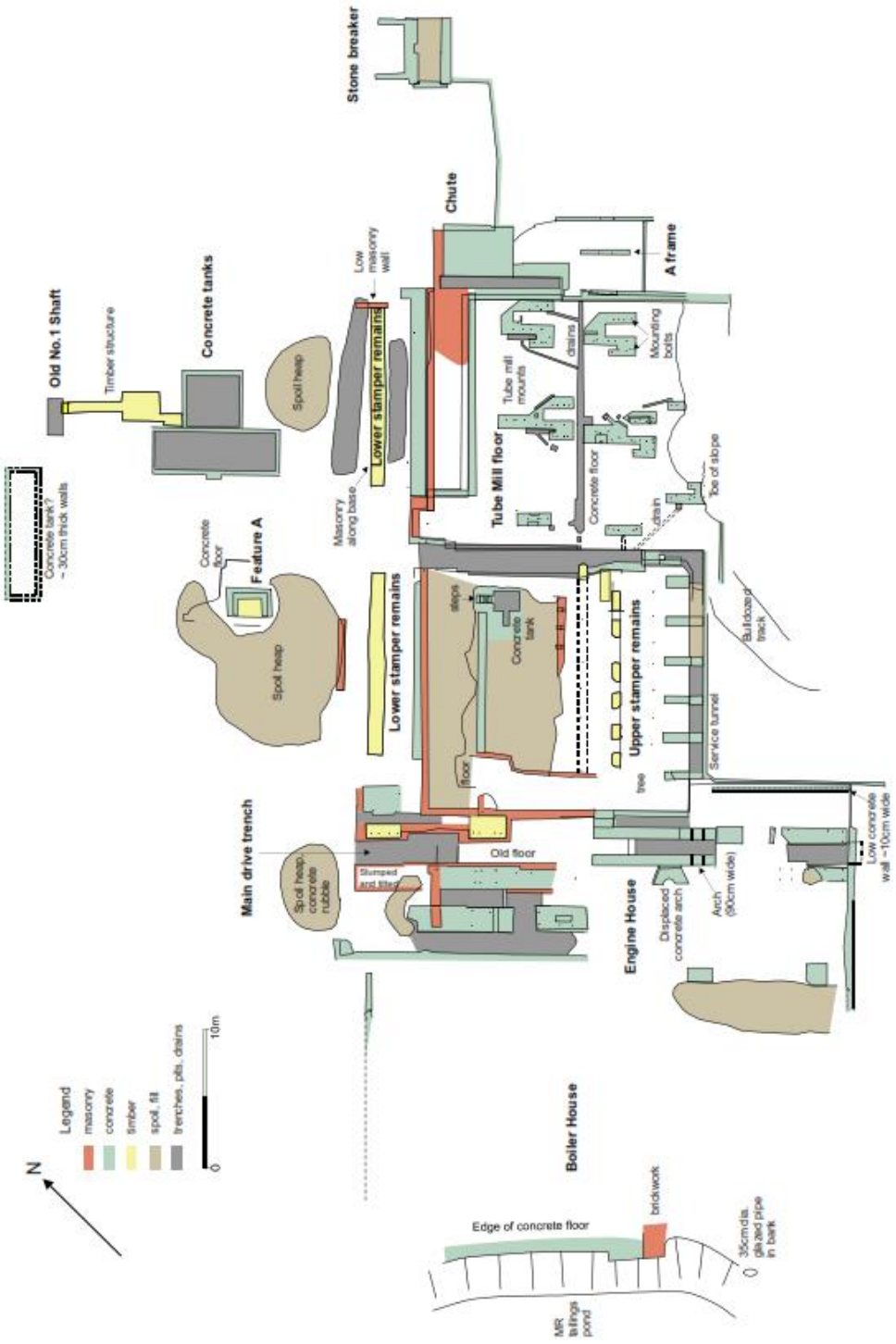

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Figure B. Elevations of A-frame structure at northeastern end of battery foundations

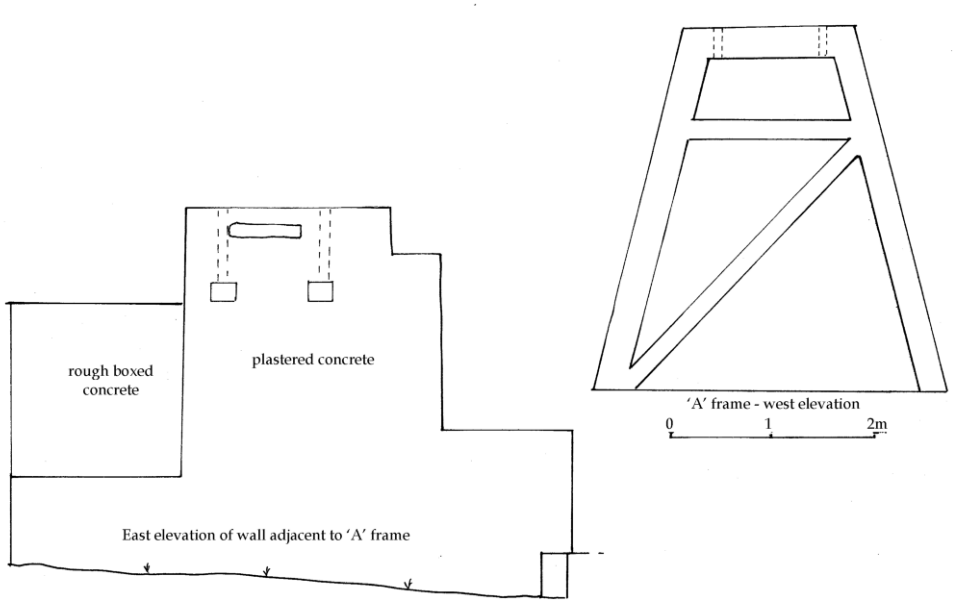

Figure C. Plan and profile of stone breaker to northeast of battery foundations

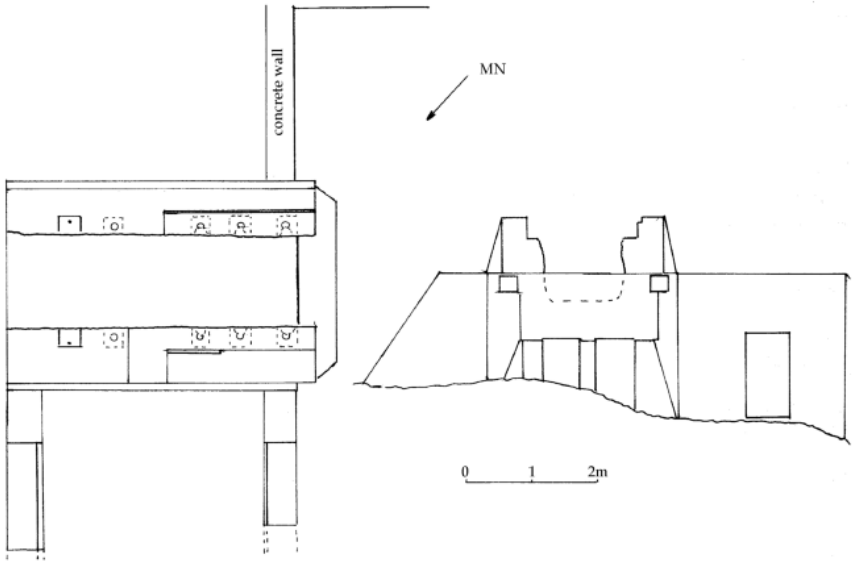

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Figure D. Plan and section of ore kilns

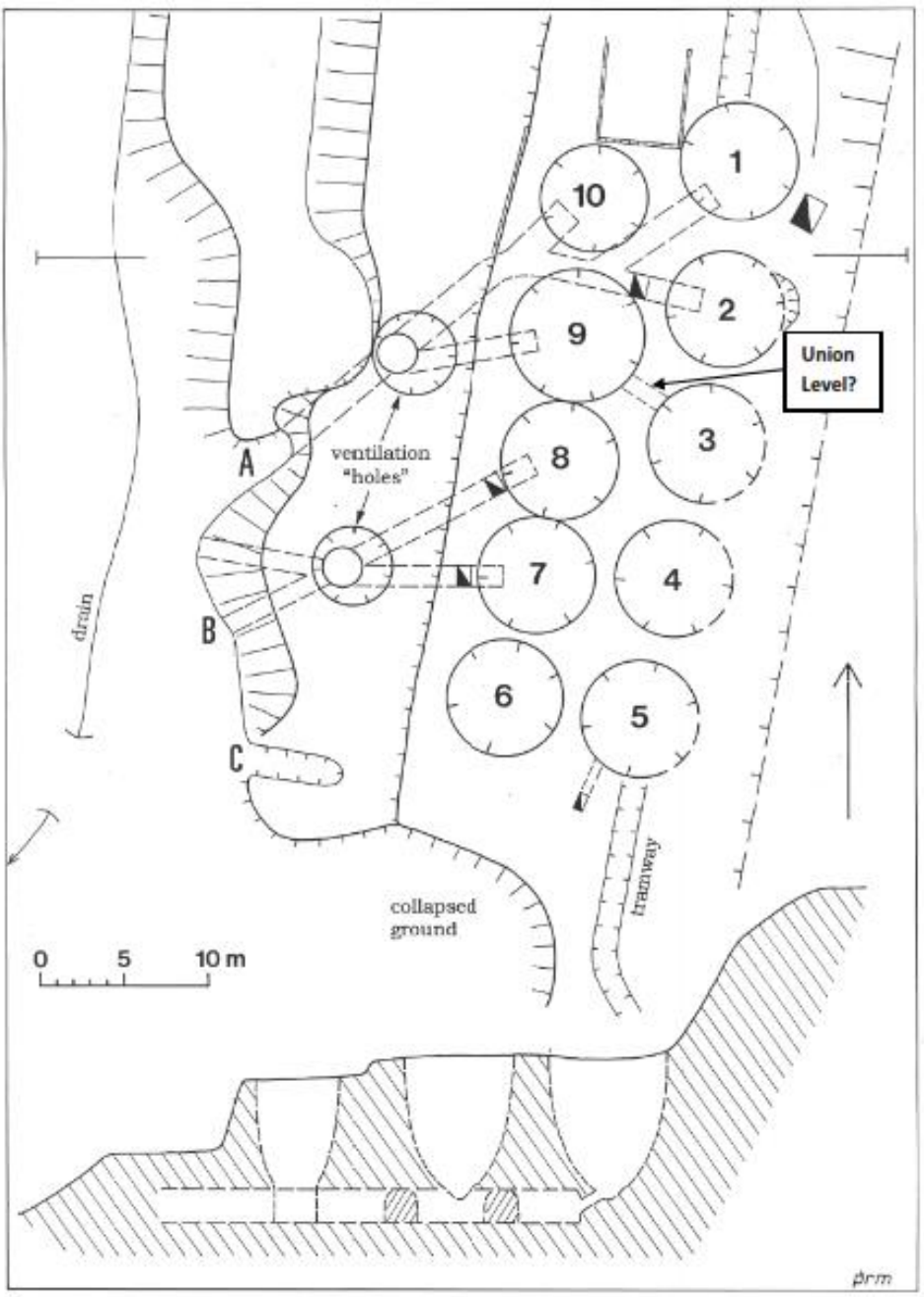

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Figure E. Plan of cyanide tanks and Structure 2

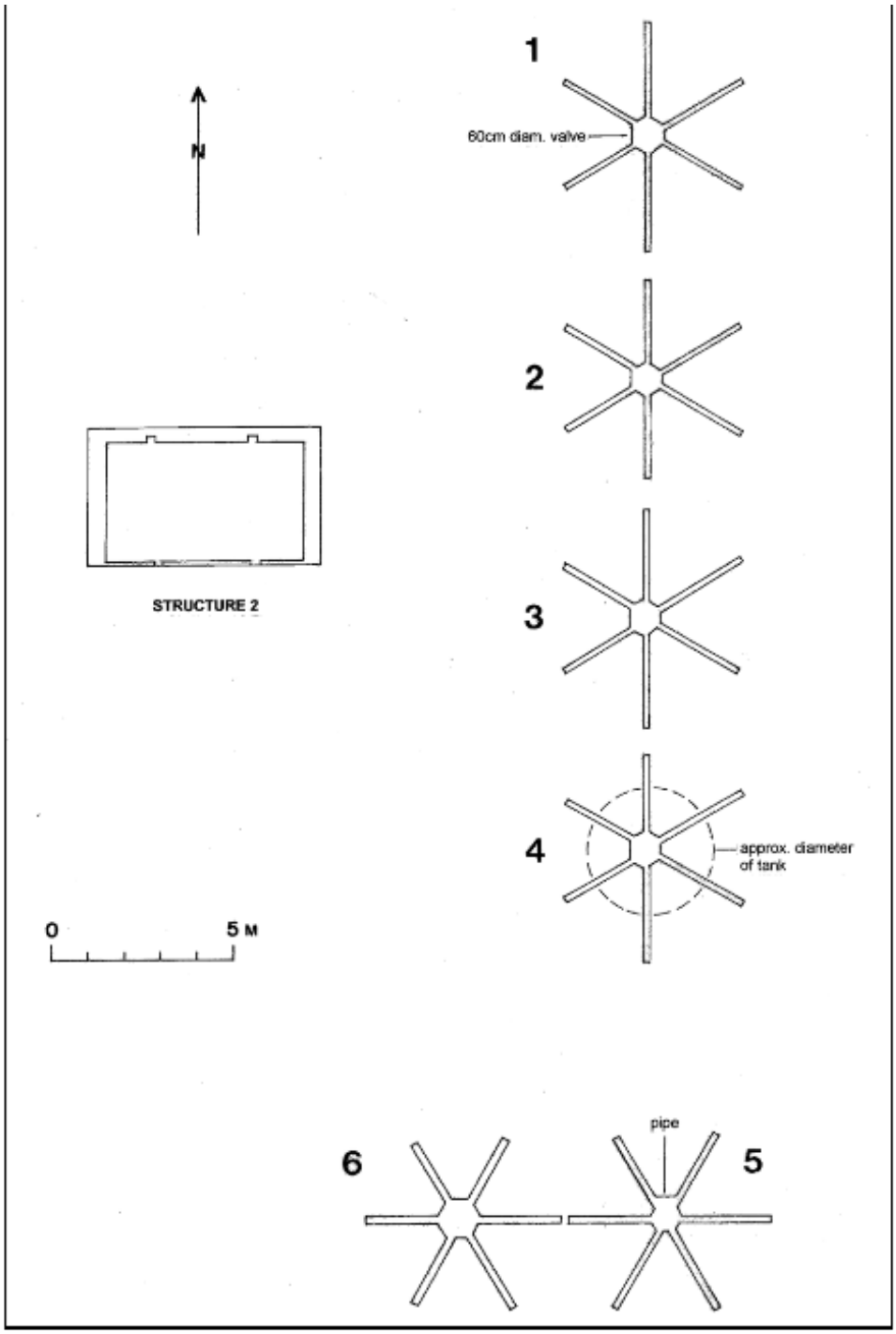

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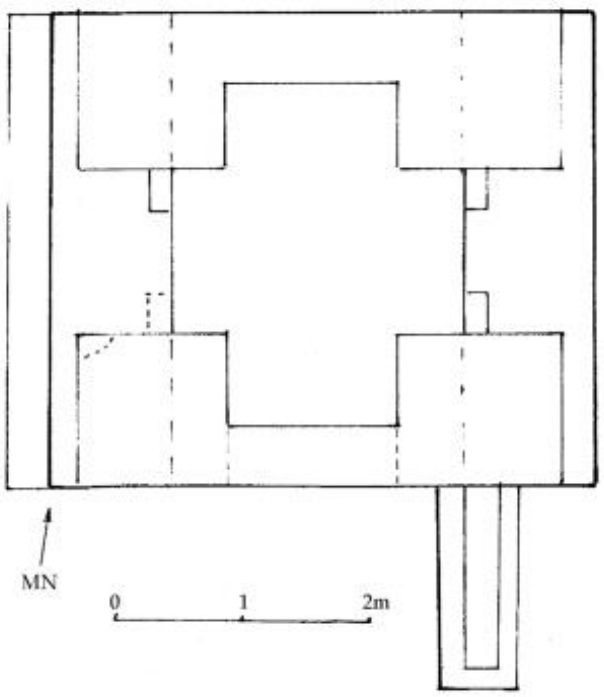
Figure F. Plan and section of Structure 1 near cyanide tanks



Plan and section - concrete building

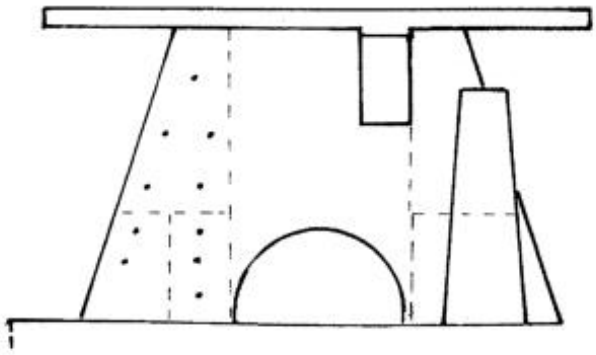


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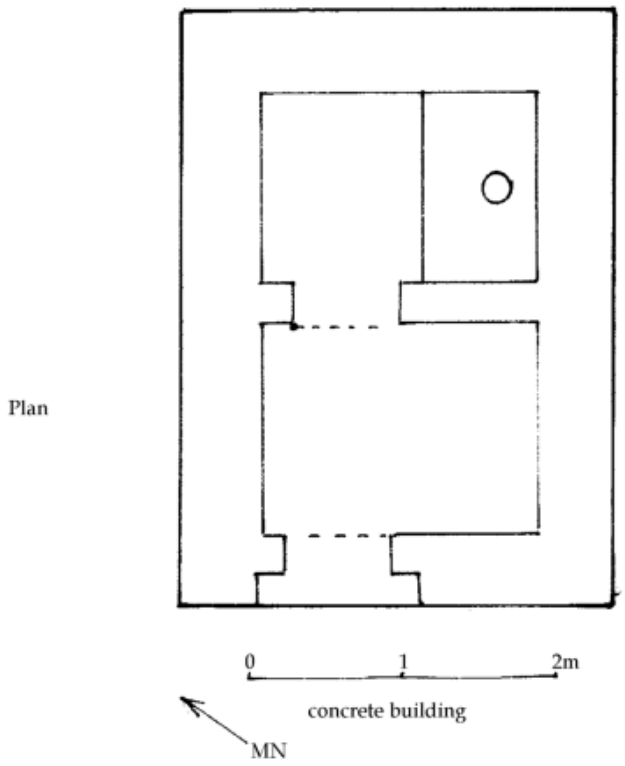
Figure G. Plan and section of strongroom



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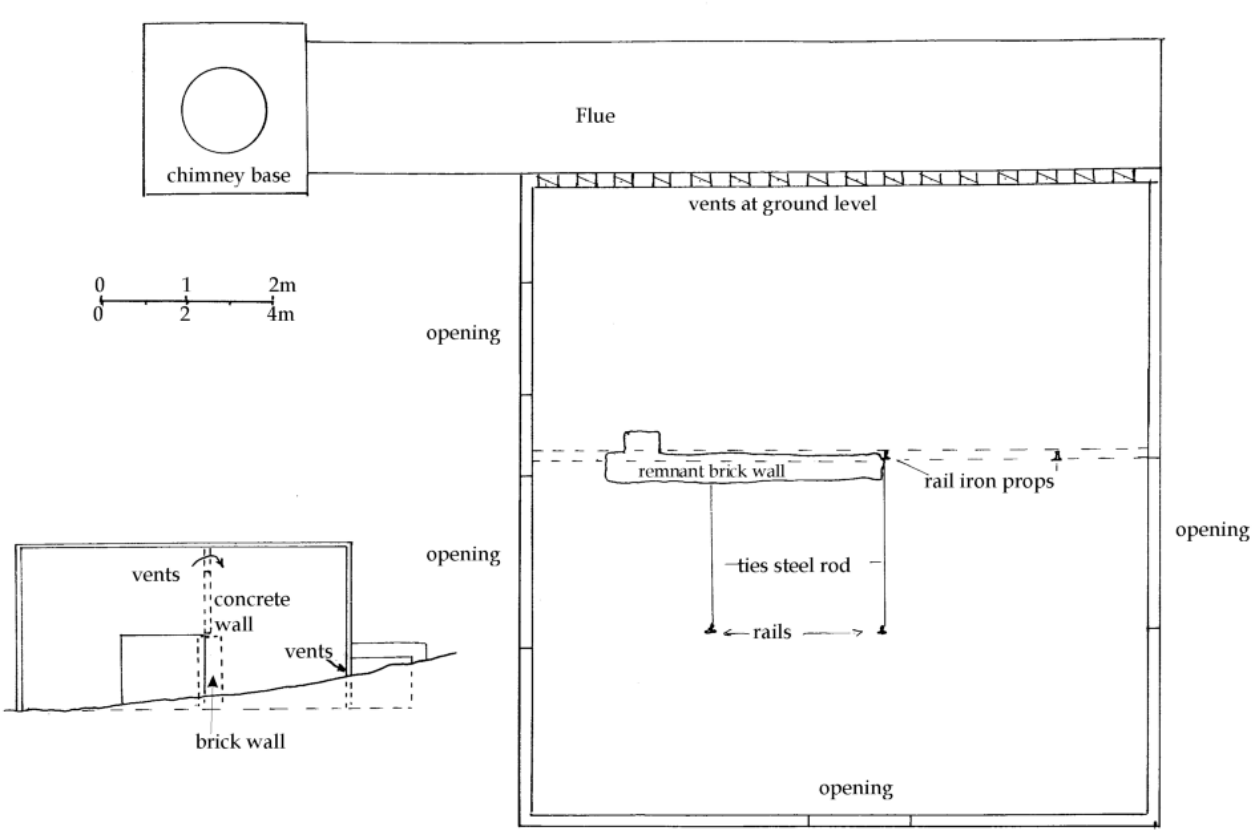

Figure H. Plan and section of smoke chamber north of conveyor

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Figure I. Plan of the Mineral Resources crusher foundations and displaced strongroom

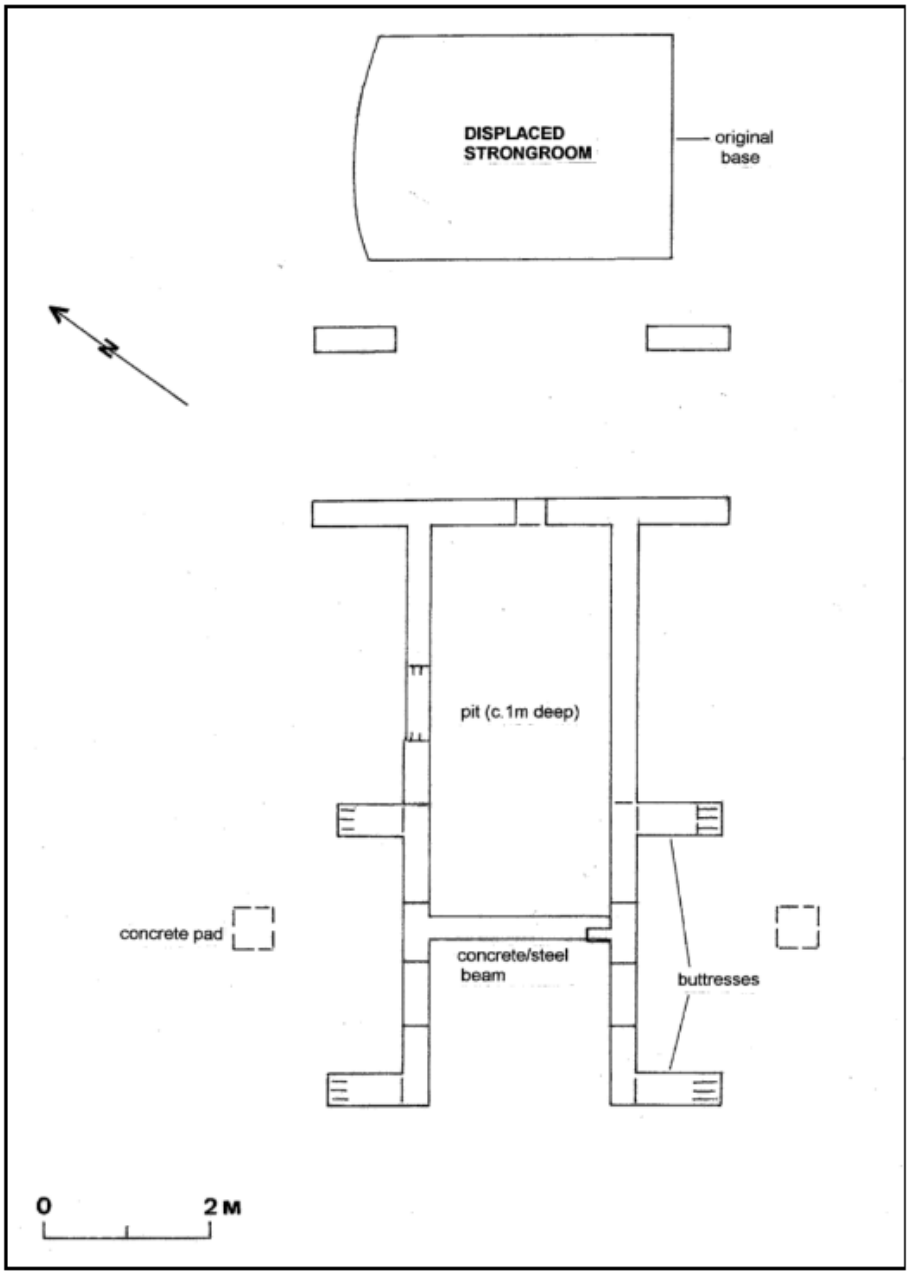

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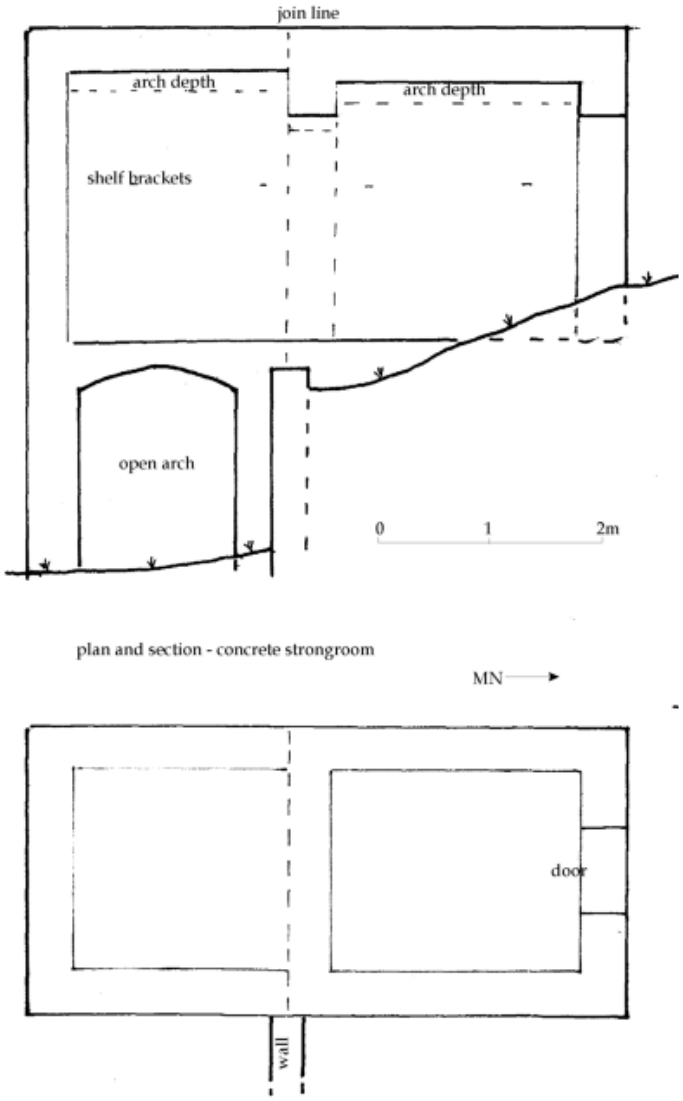
Figure J. Plan and section of refinery safe



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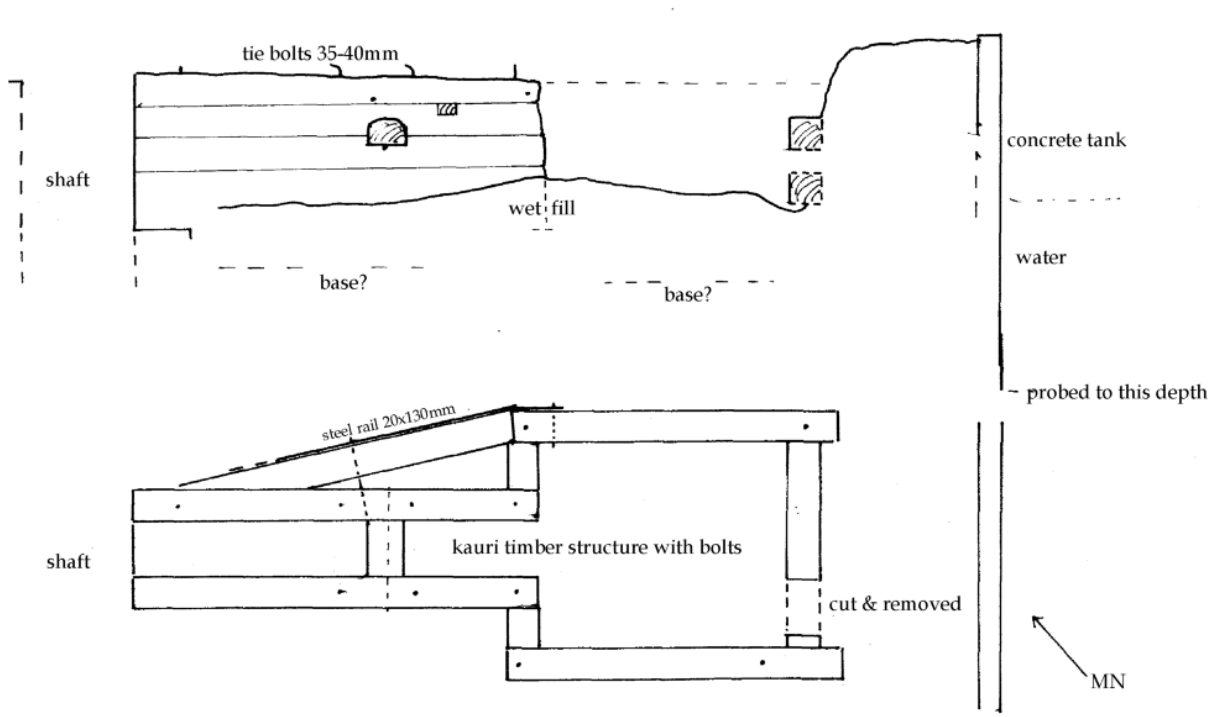

Figure K. Plan and section of the Old Union No. 1 Shaft

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Figure L. Plan of the New Union No. 1 Shaft and associated remains

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Figure M. Plan of the Mascotte Shaft area

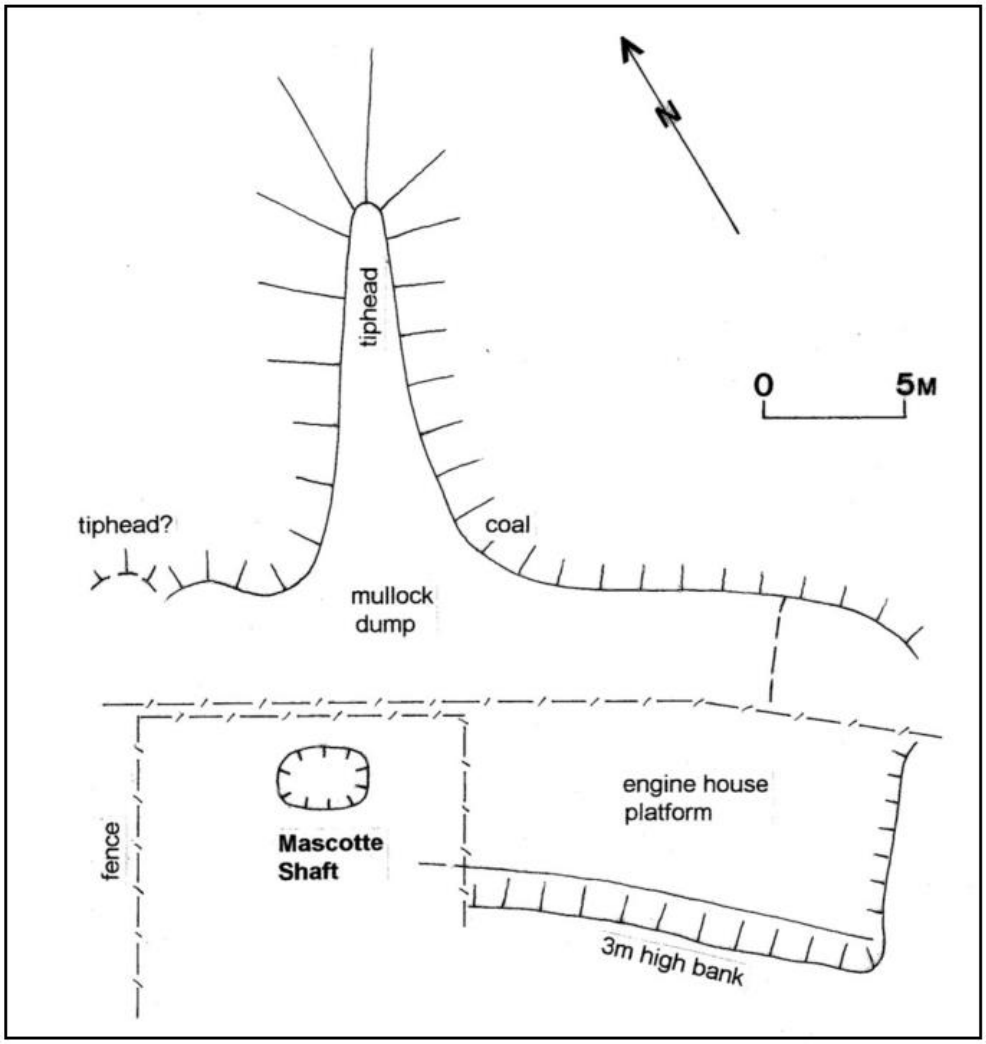

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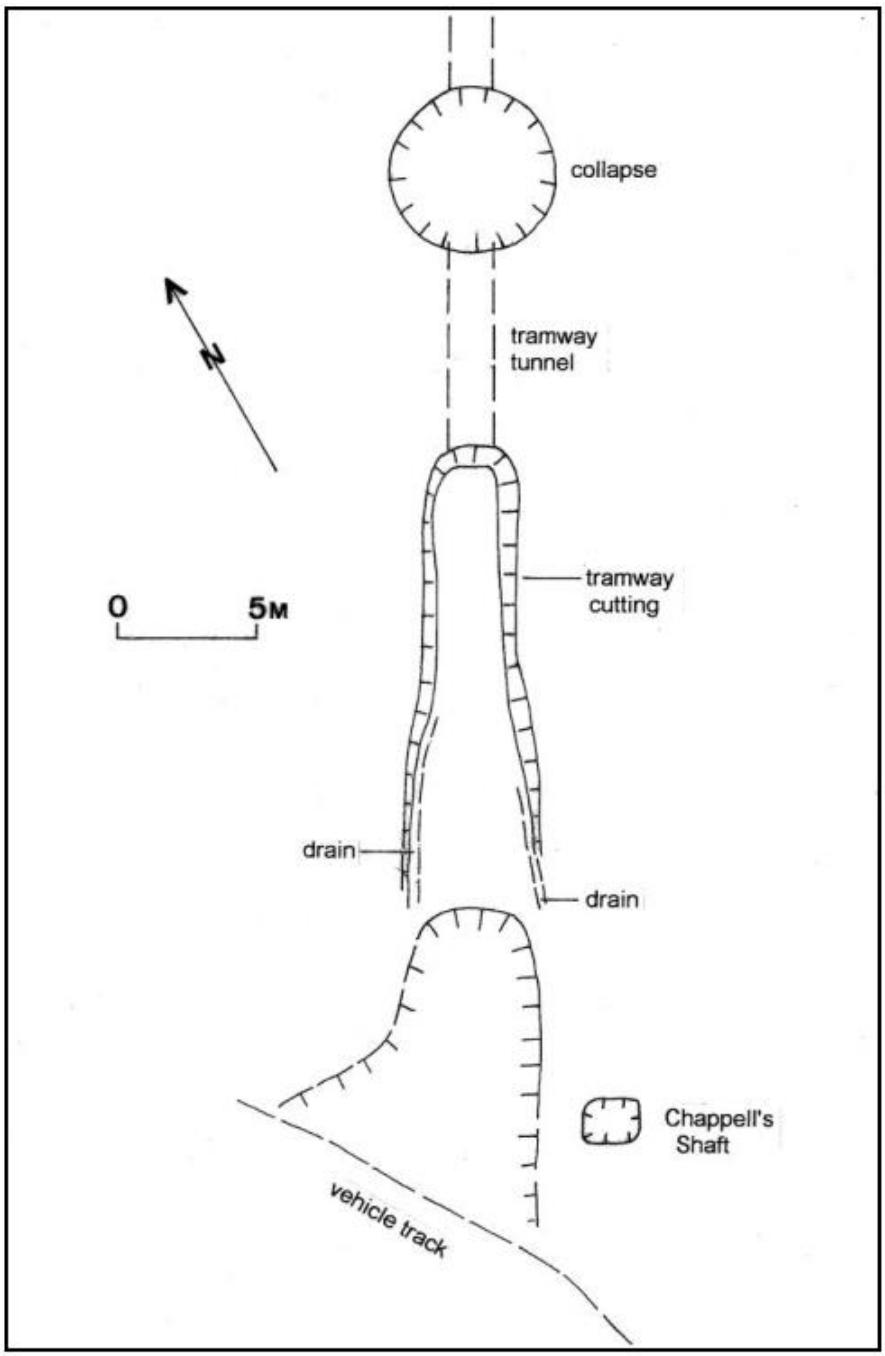
Figure N. Plan of the incline tramway portal area



APPENDIX B: SAFETY REPORT

Report on Proposed Union Hill, Waihi, Walkway.

By E. T. Coppard.
28th November 2012.

Ferro-concrete Cyanide tanks. Union Hill 2012. Photo: E.T.Coppard.

Introduction:

This section is not meant to be a history of Union Hill as that has been covered in other reports. It is to be used as an introduction to the mining and ore processing that took place on the hill as a means of establishing what can be seen to-day and how suitably placed walkway tracks and signage can be utilized to have these features interpreted for the public.

Present Day Features.

There are two main reefs on Union Hill, i. e., the Union Reef and the Amaranth Reef. The Union Reef had two shafts sunk to access the ore body which was extensively worked; in an area fenced off in the Battery foundations is what appears to be the remains of the original No 1 Union shaft.

The Amaranth Reef was accessed by several adits, the main one is to be found at the bottom of Clarke Street.

There is a small open cut to be found near the present exhaust fan for the Trio Mine.

Prior to the development of the cyanide process the Martha Company used pan amalgamation for treating ore. Following experimentation by the Cassel Company they converted to the cyanide process.

The Cassel Company established their plant to process tailings which were stored in tailings dams at the bottom of Clarke Street.

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A battery comprising 30 stampers was constructed with eventually a total of 90 stampers being used for dry stamping. The ore was dried in several in-ground kilns and was then processed in the Battery. These kilns are accessible by tunnels and are surprisingly in reasonable condition. The top of the kilns are open and at least two of them are still brick lined.

The Martha Company built its own Bullion Refinery not far from the Battery and also had its own sawmill to supply timber for building and mining purposes.
The Refinery floor is at present buried by filling from the conveyor belt. There is a vault protruding out of the ground which marks the location.
There are several “vaults” to be found with one having cast into it “Built A. D. 1898.

The most noticeable feature of the site is the Ferro-concrete B & M tanks (also known as Pachucca tanks)

This site was heavily modified by Mineral Resources during their gold recovery programme in the 1970’s. Today there is little to be seen of their processing plant’s foundations.

To-wards the bottom of Union Hill is the remains of the water race which brought water to the plant from various sources.

Several adits and rises can be found scattered over the hill along with what was known as the New Union shaft. (No 2 shaft).

Towards the bottom of the hill there is a large steel tank which is out of context. This tank was originally used by Mineral Resources as a settling tank when they were washing clay-laden ore from Martha Hill. It was shifted to its present position due to it being sited on the route of the conveyor belt.

With these features reasonably accessible walking tracks can be established which would give the public access to the historic features of Union Hill.

Some tracks already exist and there are one or two road-ways for Newmont Waihi vehicles to access their plant on the Hill. With a little modification, tracks of a good standard could be placed with signage both interpretative and warning the public of what is to be seen.

Site of the Waihi Company's Battery, Union Hill. 2012. Photo E. T. Coppard.

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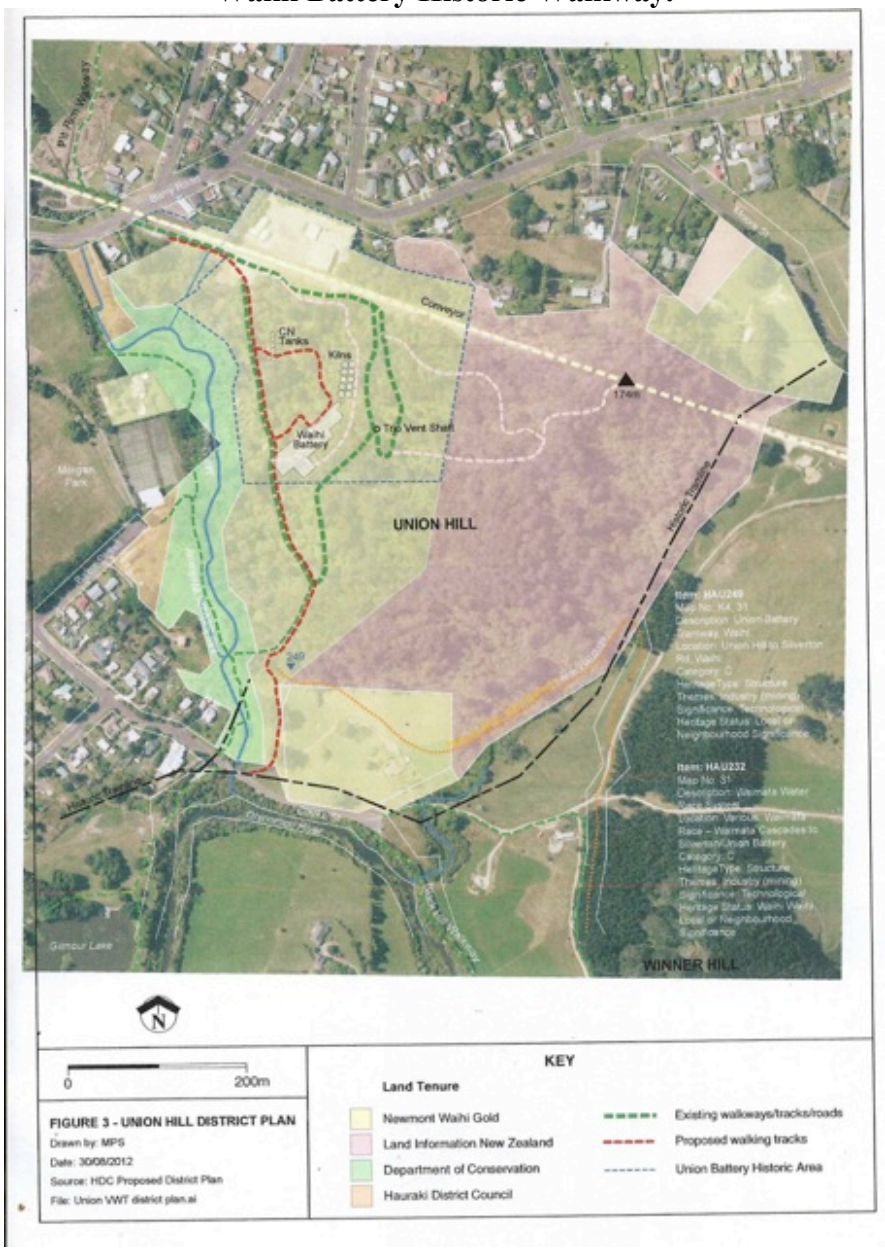
Existing Tracks.

Several well used tracks at present exist on Union Hill with perhaps the ones used being those that give access to the Ferro-concrete tanks and the Waihi Company's Battery site. To a lesser degree some more adventurous people have found their way to the top of the kilns as well as the access tunnels.

At present it is proposed that a good walking track be formed from Barry Road through the site exiting at Clarke Street. There would be a side walk branching from this track at the Ferro tanks leading to the old Battery foundations and then looping back to join the main track which will allow the walker to either return to Barry Road or continue down to Clark Street.

Union Hill Project.
Waihi Battery Historic Walkway.



Hazards identified on the site.

While walking along the above proposed tracks the following hazards have been observed.

1. **Water** ponding at the base of the Ferro-concrete tanks.
2. **Old pipes** falling from the top of the Ferro concrete tanks.
3. **A large slab** of concrete protruding from out of the rough formed track near the unidentified concrete building by the Ferro concrete tanks.
4. **Both tree stumps** and roots protruding out of the proposed track.
5. **Large drops** from the Battery foundations.
6. **Old trees** near or overhanging the track.
7. **Long grass** beside the tracks.
8. **At the far end** of the Battery site access to the higher view point is a steep bank with a roughly formed track which has to be climbed
9. **Large heaps** of broken rock/concrete around the Battery foundations due to the site being modified
10. **Mining**. Ground subsidence's from present day and historical activity and open workings**.** The section where both the conveyer belt and walkway are next to each other.

Water around base of Ferro concrete tanks.

Pipes (old) on tanks.

Concrete slab in rough track by unknown building.

Tree stump and roots in track approaching Battery ruins.

Readily accessible foundations with drop offs.

Stones/rocks in track.

Short but steep and when wet slippery slope.

Broken foundations due to site modifying.

Recommendations.

1. **Water.** Suitable drainage installed to drain water away from the track.

2. **Falling pipe(s).** Keep the public back from the potentially danger area by placing signage and fencing if necessary.

3. **Trip hazards**. Where possible remove or re route track. In the case of rocks they could be dug out. Some will be covered by gravel from forming the track. Stumps can be dug out. Tree roots provided they are not large can be covered thus preventing die back of the tree.

4. **Drops around banks/foundations**. Fencing to prevent close access to the drop off. Fence Battery site due to heaps of broken rock/concrete.

5. **Long grass**. Fire hazard especially during the summer months. Cut and keep short.

6. **Old Trees**. Cut back.

7. **Short steep section of track.** Either re route track or build steps with a hand rail.

8. **Mining.** At present all mining is confined to deep underground activity and presents very little problems. One exception is that of the conveyer belt which can start at any time. Warning signs should be placed along where the

walkway and belt run parallel to each other.
It may be sometime before any surface alterations could or would be noticed. Any surface movement of plant or machinery would however require the walks to be temporarily closed while this is undertaken.
Historical mining on Union Hill is such that does present problems which range from open shafts, rises to surface and tunnelling as well as the Kilns which are accessible both from the surface and underground. All openings require to be signed and wherever possible grilled to prevent access.
Not far from the present vent fan is both the Chappell Shaft as well as the twin portals of the (old) Trio Mine. Both are beside the access road and are open and accessible to the public. These should be fenced off and warning signage placed

Signage.

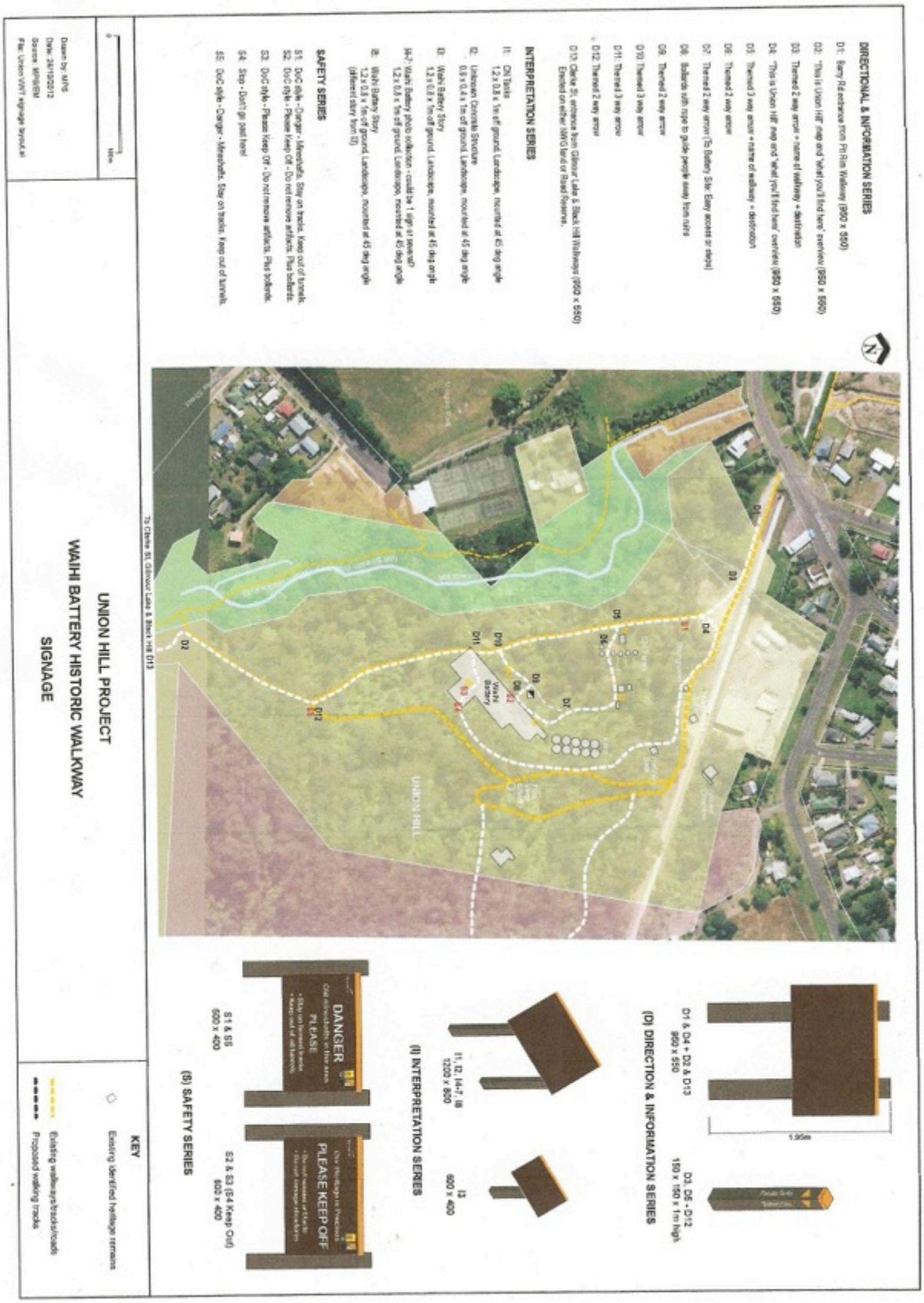
The proposed signage is good provided that when they are installed they are visible. They will give the public both an interpretation of the features as well as safety warnings.

These will unfortunately at some time suffer vandalism like most signs in the public arena; Either by graffiti or being taken to by any object that can cause damage.

This will require regular inspections as to their condition. It is noted that even on the Old Mill Stream walk one of their signs has been damaged already.
The Department of Conservation signs at the Victoria Battery from time to time become either defaced or completely removed and at Karangahake the same destructive forces are at work.

An example of a D.o.C. sign at Karangahake showing complete removal of information

Signage and location of signs for proposed walkways on Union Hill.



Signs as used by the Department of Conservation on their walkways in the district for comparison.

Examples of the Department of Conservation signs.

Fencing.

For the protection of the public as well as the protection from vandalism or removal of artefacts, fencing should be placed around several locations. For example, the Battery site due to the height of the concrete structures and the heaps of broken rock/concrete plied up which people/children would just love to climb over. Also the top of the kilns even though the public would not have (?) access to at present.

The following photos illustrate some of the types of fences that can be found around the district including some from Newmont Waihi Gold.

Walkway along the river edge Karangahake.

Fence at drop off point in School Lane, Waihi.

Fence around the truck Martha Hill.

Examples of areas requiring fencing.

The old Battery site showing broken foundations and areas from which people can fall from at present.

Looking down on one of the Kilns from roadway from vent shaft.

Portals of the Old Trio workings next to the walkway.

The Walking Track 1

Where a metalled track is required, such as around the Ferro-concrete tanks and then on to the Waihi Company's Battery site a firm metalled walking track is required. I would suggest that it be about 1 metre to 1.2 metres wide.

There is available from Bunnings a plastic Paving Base Sheet. It has 40 mm cells and The Department of Conservation has installed it in the walkway tunnel at Golden Hills, Tairua. It is unfortunately expensive but where it has been installed is standing up to the wear..

Plastic Paving in the Collins Drive, Tairua.

The track could have either a wooden edge to retain the metal or just be allowed to taper off to the edge.

Walking track at the Battery site Karangahake, showing wooden edging.

At the far end of the old Battery foundation as previously mentioned is a short steep section of the track. This should have either a set of steps or if possible an easer section of track should be cut..

Example of steps. Battery site, Karangahake.
The Walking Track. 2

On entering the site from the car park, as suggested at Barry Road the visitor will walk parallel to the conveyor belt. (Park Here signage, Warning sign as to the danger of old mines and shafts on the property as well as Please keep to the marked tracks and do not wander off them.)

A **suggested parking site off Barry Road.**

Looking along the conveyor belt and the site of Mineral Resources Plant.

By following the conveyor along to the site of Mineral Resources plant where the road veers to the right and heads down towards the Ferro-concrete tanks (sign

interpretating the site, and directions to the Tanks). Assuming that the walker will be walking in a anti-clockwise direction they will head down the rough road. This road is at present in a reasonable condition but will at times require some maintenance mainly due to rain scouring it.

Road leading down to the Ferro-concrete tanks.

At the Ferro-concrete tanks the walker will leave this road and turning left head towards the tanks. Here there the walker will see a sign telling/explaining what the tanks were used for. Also there will be a sign warning them to keep back due to the possibility of falling pipes.

Ferro-concrete tanks.

By passing around the base of the twin tanks the walker will follow the signed track into the regenerating native plants.

The present walkway track after leaving the Tanks.

Interesting but what is it?

They will pass the concrete building of unknown use (unknown at present) and follow along a metalled pathway. This path will bring the walker out at the foundations of the Waihi Company's Battery site.

Waihi Company's Battery site.
Just in front of the people is a 2 metre approx drop. This would need to be fenced.

Another area that will require fencing.

This site due to the piles of heaped and broken concrete resulting from site modification would need to be fenced off as will the concrete tank on the right hand side. Highly visible warning signage will be placed as well as explanatory signage.

Site of No.1 Union Shaft?

Site of possible steps or re routed track.

At the far end of where the stampers were they will climb either a set of steps or a re routed section of track taking them up to a higher vantage point which will be fenced due to a vertical drop.

Following the pathway they will walk further down the now road until it divides and takes a sharp left hand turn. This will bring the walker past the old Trio mine on their right as well as the Chappell Shaft Both of which will be signed.

Twin Portals of the Old Trio Mine.

Continuing along this road they will come up to the vent fan/shaft for the trio underground mine. Here will be placed suitable warning/explanation signs.

Vent fan for the present mining activities.

Air vent from one of the Kilns.

Following the road up towards the conveyor belt they will find on their left hand side a sign warning of the kilns and open air vent shafts.

Exiting at the conveyor belt the walker will walk down to wards the car park passing the site of the Waihi Company's refinery site. Here on the right will be a sign locating the site as well as the ¾ buried vault to explain what they are looking at.

Site of the Waihi Company's Refinery.

A little further down on the left there they will see a vault with Made in 1898 stamped into it. This is also the site of Mineral Resources Smelt house.

The 1898 vault. Also the site of Mineral Resources Smelt house.

Mineral Resources crusher foundations.

On the right hand side almost opposite is another lot of foundations which as will be explained are the foundations of Mineral Resources Crushing plant.

Just a short distance further and the visitor will come back to where they commenced their walk, and of course by following the conveyor belt will arrive back at the car park.

Acknowledgments.

My thanks to Newmont Waihi Gold for the use and access to their site plan.

To the help given to me from staff members of Newmont Waihi Gold and permission to walk over the proposed walk way site in the making this report.

To the Department of Conservation to be able to use photos illustrating their signage and fencing.

E. T. Coppard.
Mine Manager 2nd Class.
A grade Tunnel Manager
A grade Quarry Manager.