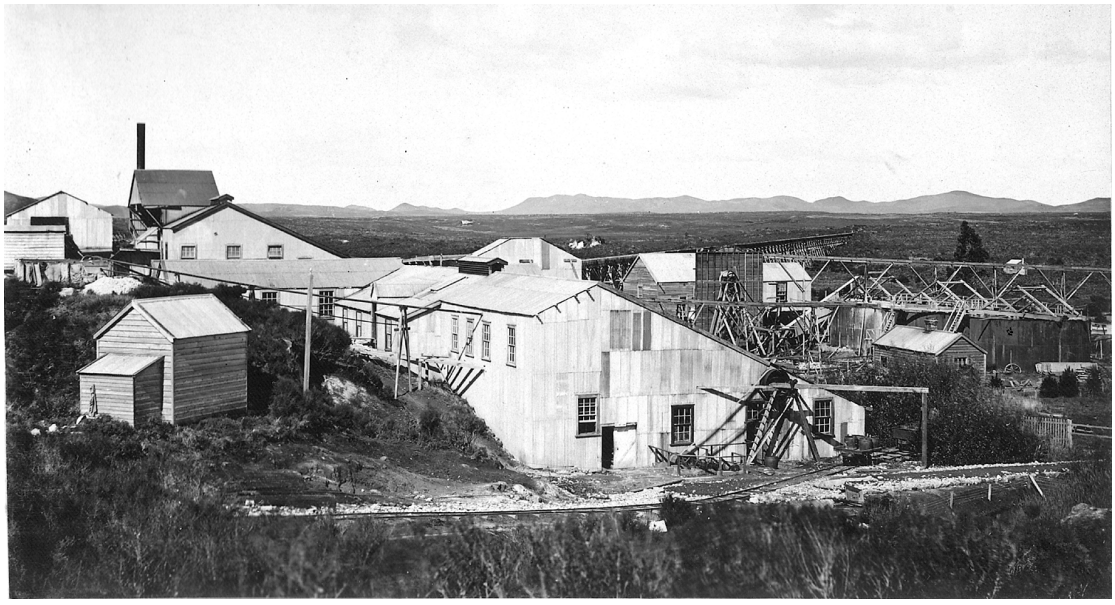
A History of the

Waihi/Martha/Silverton/Union Battery

Waihi

1882 – 1915



Union Battery 1904-11

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Waihi/Martha/Silverton/Union Battery

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Executive Summary

The site on the Ohinemuri River generally known as the Silverton Battery hosted several gold saving batteries, belonging to separate companies, over a period of 32, or so, years (1882-1914). Several prominent companies and mining men were involved with this battery over these many years. One such with a strong connection with it was H.H. Adams. He built the battery in 1882, reconstructed and managed it in 1896-97, purchased it in 1911, and dismantled and removed it in 1914-15.

The battery machinery was modified and replaced repeatedly, crushing first wet, then dry, then finally wet again. The battery was frequently praised after an upgrade, and in 1896 was enthusiastically described as "unquestionably one of the finest batteries in the southern hemisphere".[1] Some of the remains at the site will be the oldest building remains in Waihi.

Although expectations were always high, results were often disappointing. Gold recovery was really only successful after 1901.

First built in 1882 as the Waihi Gold Mining Company's battery, it was opened only weeks after the Martha Company's battery on Martha Hill (the first battery built in Waihi). It crushed ore brought on wooden tramway from Martha Hill, using water power from a water race from Cabbage Tree Creek (Waimata Stream).

After the amalgamation of most of the claims on Martha Hill in early 1883, it replaced the Martha Company's battery, becoming the Martha Extended Company's Martha Battery. Until 1888 it was the only battery operating at Waihi. During this period, considerably less bullion was saved than was consigned to the Ohinemuri River. Wet crushing and plate amalgamation proved ineffective with the refractory Waihi ore.

The Martha Extended Company barely covered costs, and readily sold mine and battery to Thomas Henry Russell in 1890. Russell on-sold the mine to the new Waihi Goldmining Company who had their Waihi Battery at the base of Union Hill. The Martha battery he sold to Edward Mann Corbett who transferred it to the Silverton Company in June 1891.

As the Silverton Battery, pan amalgamation was adopted with little success. The Mangakiri and Mangatoetoe water races date from this time. By April 1893 the Silverton Company adopted the Cassel cyanide process, the first to do so in Waihi. Still wet crushing.

In 1895 the Silverton mine was sold; it became the Waihi-Silverton Gold-mining Company (Limited), Glasgow. The battery was refurbished; 40 stamps dry crushing; cyanide process; H.H. Adams in charge. The power supply was upgraded. A dam was built on the Ohinemuri River, a little upstream from the battery at what we now think of as Coffey's creek. A tramway was constructed, connecting mine with battery, complete with locomotive. Three in-ground ore roasting kilns were excavated at the mine. Dust was produced, but little gold.

In 1895 the Union-Waihi Gold-mining Company was split off from the Waihi Gold Mining Company for tax or other business reasons, and/or to retain possession of ground that they were not working. The Union-Waihi were mining Union Hill, but had no battery (perversely, they were unable to use the Waihi Battery at Union Hill).

In mid 1899 the Silverton mine was incorporated into the Union-Waihi Gold-mining Company and the Silverton Battery became the Union Battery. It was once again refurbished, converted to wet crushing and was under way by September 25 1900. Despite the improvements to the battery, and the cyanide

[1] New Zealand Herald, Volume XXXIII, Issue 10098, 6 April 1896

process, these mines and battery were still troubled. By the end of 1901 the Waihi Gold Mining Company had reacquired the Waihi-Union Company's properties, including the battery.

During 1902 the battery (still called the Union) was “thoroughly overhauled and modified” and tramway links were created. Martha ore would again be crushed by this battery. A steam engine was installed during the year, for use when water power was insufficient, as it increasingly was.

During the years under the management of the Waihi Gold Mining Company, ore was crushed more and more finely, and bullion recovery rates were at last satisfactory. A tube mill was installed in 1909 for even finer grinding.

1910 saw the first reduction in ore output from the Martha Mine, and the Waihi Gold Mining Company closed the Union Battery February 1911. It is purchased by Henry Hopper Adams.

After treating a quantity of tailings from the Gladstone mine and its small battery, Adams oversaw the last days and finally the demolition of the Union Battery in 1915. Adams built the original battery, and was involved with its destruction 33 years later.

Introduction

There is some confusion in the literature regarding the early history of mining in Waihi. Matters are further complicated because both Nicholl and McCombie, during their lifetimes, wrote several different versions of early events (Philip Hart attempts to sort them out).

Two batteries were built more or less concurrently in 1882. The "Martha" (15 stamps) was on the eastern side of Martha Hill, for the Martha Company. The other ("Manukau" Jones') was on the Ohinemuri River upstream of the present Victoria Street Bridge (20 stamps) for the Waihi Gold Mining Company. This Ohinemuri River battery was briefly called the "**Waihi Battery**", but soon took over the name of the defective Martha Battery.

So, the battery at the Ohinemuri became known as the "**Martha Battery**" (30 stamps), and processed ore from Martha Hill for the Martha Extended Gold Mining Company (an amalgamation of the Martha and Waihi Companies). It was the only battery operating in the Waihi district until 1888 when the new Waihi Gold and Silver Mining Company, formed to work claims on Union Hill, started to build their Waihi Battery at the base of Union Hill.

In 1890 Thomas H. Russell purchased the Martha Company's mine and battery, and ownership was transferred to the new Waihi Gold Mining Company. The battery was surplus to requirements, and sold to the Silverton Company, who remodelled it, and renamed it the **"Silverton Battery"** (40 stamps). Ore was transported by tram from their mine at Silverton Hill.

In due course (1899), the Silverton Company (and battery) was bought by the Union-Waihi Company, who renamed the battery: **"Union Battery".** The Union-Waihi Company sent ore to this battery from 1899 to 1901 (from Union Hill and Silverton).

The battery on this site was progressively enlarged and modified during its life. As the Silverton Battery (initially 10 or 15 stamps) it was converted to the cyanide process (1893, before the Waihi Battery), and as the Union Battery it was expanded to 40 stamps.

Water power was obtained by dams, water races and long trestled flume from the Waimata and Mangakiri Streams, damming the Ohinemuri at what is now known as Coffey's Creek, and a dam and water race on the Mangatoetoe Stream.

The Waihi Gold Mining Company took over the Union-Waihi Company and battery in 1901 (sending ore from Martha), and closed the "**Union Battery**" in 1911. It was demolished in 1915.

Some of the foundations still present at this site will be the oldest (1882) building foundations still in Waihi.

Despite latter day confusion, the battery built in 1888 on Union Hill was never called the "Union Battery", but always the "Waihi Battery", or "Waihi Mill"**.** There was no battery on Union Hill prior to the Waihi Battery. It was built by the Waihi Gold-and Silver-Mining Company, or Waihi Gold Mining Company, as it was known, to treat their ore from the Union Hill area (Union, Rosemont, Amaranth and the smaller Trio, Nelson, and Winner claims). This company acquired the Martha mine in 1890. (The Waihi Gold Mining Company was established in December 1887, and became the Martha Gold Mining Company (Waihi) Ltd. in 1935.)

The Victoria Battery at Waikino commenced crushing in 1898, and by 1902 the Waihi Gold Mining Company had 330 head of stamps crushing Martha ore (Waihi: 90, Union: 40, Victoria: 200).

The Waihi Battery was closed in 1913, though the Melthouse and Refinery at this site (Union Hill) continued in use until closure in 1953.

A timeline may be viewed at page 76

Prospecting Waihi

Early Prospectors

It is clear from the literature that many prospectors visited the Waihi area well before the opening of the Ohinemuri Goldfield in 1875. How many saw the reef(s) that became known as Martha Hill is not clear. These visits were illegal, and strongly discouraged (eg by Commissioner Mackay). Early visits appear to have been initially tolerated by the Maori owners, but later vigorously opposed.

"In 1869 Te Hira and others decisively blocked any extension of the goldfield to the Ohinemuri region, and the authorities sent the diggers downriver from their camp to Thames."[2] These miners had been camped at Thorp's farm at Opukeko, near the site of the future township of Paeroa.

Philip Hart has explored the early history of gold discovery in Waihi, in particular his papers on William Nicholl, Daniel Leahy and John Walker. Here he is quoting, and commenting on, Nicholl's 1935 writings (also available in Pukewa Waihi, 2003, Lockwood; see Silverton Biographies)

> 'Three men started out to prospect the country through to [the] East Coast instead of joining the mad rush to stake out ground on the Karangahake side of the river. They first struck a trace of gold in the Waitekauri Creek'. The first of these men was recorded by Nicholl as being 'Mick Mariman, better known as Mickey Teherey'. He was Michael Marriman (or Marrinan), a prominent prospector who later participated in the Te Aroha rush. The others were Thomas Corbett, who would prospect at Te Aroha in 1880 and was later associated with Nicholl at Waihi, and James Atkinson, of whom nothing is known. Did Nicholl mean Joseph Atkinson, who lived at Tararu during the mid and late 1870s? Atkinson was 'grub-staked' by Nicholl to the extent of £25, meaning that Nicholl provided food and possibly tools up to that amount.
>
> 'They first found a trace of gold in the Waitekauri Creek. After they had struck the open fern plains they found a grown-over track leading to Mataora [on the coast to the south of Whiritoa] and followed it till they found the Waihi reef system, and spend a few days on them, and although finding gold in them, but not in payable [quantities] to induce them to stay with it and try it, and they reported them as bucks.'
>
> Buck reefs are barren ones. Corbett and Marriman had explored what became the Union-Silverton Hill. In 1876 four prospectors tested what would become the Rosemont-Silverton hills, but they did not test the future Martha hill, half a mile to the northwest. After John McCombie and Robert Lee reported their discovery in May 1879 they were referred to as 'two of the Waihi Plains' prospectors'.
>
> 'The next man that had a go at it was Dan Leahy. He sank a hole on the top of the reef and he didn't get enough gold to stay with it. He thought it a buck. Many others knocked on the outcrop and all were satisfied that it was a buck reef.'[3]

Leahy had pegged an area of the reef, but never registered the claim.

> Nicholl may have got the date wrong, for in 1881 Leahy informed the warden that in March 1878 he had pegged out two claims, the Mataura, named after a bay on the coast near Waihi, and Tauranga No. 1. 'The reason he had not worked the claims was because he could not get

[2] Notes From Contemporary Newspaper Records Bearing On Waihi Plain And Mines On And Around Martha Hill For Period 1868-94: As Early Background To J.B. McAra's Magnificent Work: By A.M. Isdale B.A. p (1). Shortened to 'Isdale, 1978' in subsequent foot notes

[3] William Sharman Crawford (Billy) Nicholl, The Prospector Who Discovered The Martha Lode At Waihi: His Life, Told Largely In His Own Words. Philip Hart. 2016. p 38-40. Shortened to 'Hart on William Nicholl, 2016' in subsequent foot notes

> any capitalists to go in with him', and only a little prospecting was done. It was rumoured that he had prospected Waihi in 1879 with his brother-in-law, John McCombie, when they were both living at Waitekauri.[4]

Daniel Leahy married Mary Ann McCombie in October 1876 in Thames. Aged 26, she was 11 years his junior. She was the younger sister of John McCombie.[5]

Opening of the Ohinemuri Goldfield

The Ohinemuri Goldfield was opened 3 March 1875[6]. Early activity was centred at Karangahake, Owharoa and Waitekauri. The first battery in Ohinemuri was established at Owharoa, the Morning Light Battery (two stamp) 5 June 1876[7]. Then:

- August 3 1876. Karangahake Gold Mining Company's battery with 12 head of stampers started
- August 16 1876. Wick's battery of nine stamps on Mangakara Creek
- August 30 1876. Waitekauri Battery
- January 9 1877. Perry's battery of 20 stamps at Owharoa

50-acre agricultural leases were being taken up, especially in Waitekauri and Waitawheta valleys.[8] At Waihi, Compston and Walmsley were first.

> George Compston, an American ... had been granted his first 50-acre agricultural lease in Ohinemuri in September 1876. With his wife Martha and their three daughters, he took up 200 acres of land in the Huaia Block in 1878, making them the first settlers on the Waihi Plains. 'Mrs Compston was, for two years, the only lady resident in the district'.[9]

Horatio Agars Walmsley

> was the second settler in the district, having acquired an agricultural lease on the north-eastern side of the future Waihi township in 1879, and apart from the Compston family was the only Pakeha there when Nicholl arrived. In 1881 his brother, Sheriff Benjamin Frederick, joined him; they bred cattle and later were timber contractors for many years. They leased a large section of bush-covered land at the end of the present-day Walmsley Road, from which in later years Nicholl would obtain timber for a contract with the Waihi Gold Mining Company.[10]

By February 1877, the Waihi Plains had

> 17 50-acre sections taken up, with so far 4 residents (plus families, not enumerated), and (perhaps considered more important) 50 cattle and 6 horses, and 175 acres in grass. 'This district is a good deal scattered.' This survey was made for the new Thames County Council.[11]

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[4] Daniel Leahy: A Prominent Hauraki Prospector And Miner. Philip Hart. 2016. p19-20

[5] Daniel Leahy: A Prominent Hauraki Prospector And Miner. Philip Hart. 2016. p 25

[6] Many texts describe this event, eg: The Opening Of The Goldfield, Ohinemuri Regional History Journal 19, June 1975

[7] See: OWHAROA, By Alistair M. Isdale B.A. October, 1996

[8] Isdale, 1978 p (2)

[9] Hart on William Nicholl, 2016. p 30

[10] Hart on William Nicholl, 2016. p 31-32; see also Harry Armour, 'Early Waihi Bushland Settlers', Ohinemuri Regional History Journal, vol. 5 no. 2 (October 1968)

[11] Isdale, 1978 p (3)

Late 1878 saw John McCombie and Robert Lee testing a large reef on Pukewhau[12] spur.[13]

Isdale quotes John McCombie:

> Within four months of the time of our starting, we had driven the crosscut up to and through the foot-wall branch of the lode, which proved to be 17 feet in thickness, and good prospects of gold and silver ... . We took out a trial lot of two tons, upon which the Thames County Council paid the cost of transit to Owharoa, where it was treated in the Smile of Fortune battery for a return of ... £1-11-0 per ton, which did not represent more than 35% of the intrinsic value of the ore samples assayed ... value per ton £4-14-0.[14]

Hart gives an excellent analysis of these events in his Nicholl paper.[15]

The prospectors were unable to raise finance. In Waihi Borough Council Diamond Jubilee Booklet 1902-1962: The Waihi Mine, McCombie says:

> Armed with the bank results, Lee and I did not anticipate much difficulty in obtaining the needful to exploit the mine; but unfortunately for us, we reckoned without our hosts — the mining experts. The whole concern was reported upon unfavourably by almost everyone who paid the place a visit, and who considered themselves authorities on anything appertaining to gold and silver mining.
>
> In short, we were laughed at by all knowing ones of the day whenever we made an attempt to talk about the Waihi reefs. One authority of the first water, to whom I showed the assay certificate, scoffed at the idea of ascertaining the value of ore by assay. He said assaying was a metallurgical 'fad' dangled before the eyes of the mining community by men who wanted to make money anyhow, but no practical man believed in it.[16]

McCombie reported as a newspaper correspondent in 1881:

> During the past week a good deal has been said and written respecting the large reef on the Waihi Plains. Now, it so happens that I formed one of a party who spent six months in prospecting the reef alluded to, and consequently am able to throw some light on the subject. It is situate on a bald spur named Pukewhau, midway between Compston and Walmsley's farms, and is distant about 5 miles from the Owharoa mining district. It has a general north and south course, with an easterly underlie, and would strike the Aroha mountain on the eastern or Katikati side. It will average 25 feet in thickness, and outcrops for a distance of ten chains along the cone of the spur. We cut it in many places along the line of the outcrop, and proved it to be auriferous at every point of intersection. Having satisfied ourselves beyond the shadow of a doubt that at least 8 feet of the hanging wall side of the reef was payable, we then proceeded to drive a tunnel – which, I believe is still intact – so as to cut the lode 50 feet beneath the surface. This work necessitated 150 feet of driving, which two of us accomplished in the short space of six weeks. We cut into the reef a distance of 8 feet, at which we were obliged to suspend operations, owing chiefly to the want of shooting material. We now determined on sending a trial crushing to the Owharoa battery, but not being possessed of the

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[12] Correct spelling as given by Hart: Hart on William Nicholl, 2016. p 35. This is now spelt Pukewa, and soon became known as Martha Hill.

[13] They may have arrived "about February", but it is clear that they did not have their ore tested at Owharoa until May 1879.

[14] Isdale, 1978 p (6)

[15] Hart on William Nicholl, 2016. p 40-54. There are also versions of McCombie's writings in the Waihi Borough Council Diamond Jubilee Booklet 1902-1962: The Waihi Mine, and The New Zealand Mines Record, Vol 1 August 1897. No.1 - A Retrospect Of Ohinemuri Goldfield p (4-9).

[16] Waihi Borough Council Diamond Jubilee Booklet 1902-1962: The Waihi Mine

> means necessary to meet the cost of transit, we appealed to the Thames County Council, which body, ever ready to assist the mining industry, voted the amount necessary to defray the cost of conveying 12 sacks of lumpy quartz – about one ton and three quarters (35cwt) – which, after treatment at the battery, yielded one ounce of melted gold, value £2 10s 6d. At the same time it must be borne in mind that we did not retort the silver, nor did we crush the headings, so that the above return was obtained from the plates, tables, and stamper boxes only. We endeavoured to enlist capital with a view to further prospecting the reef, so as to develop it sufficiently to warrant going to the expense of erecting a suitable crushing plant, there being an abundance of timber and water for battery purposes close at hand, but unfortunately we failed to raise a single cent, and were reluctantly obliged to give it best.
>
> The Auckland capitalists, unlike their Australian cousins, would rather drop thousands in scrip speculations than invest one solitary copper in legitimate mining enterprise.[17]

Frustrated and disappointed, McCombie left for the newly opened Te Aroha field.[18]

Nicholl and Majurey

Nicholl and Majurey[19] left the Te Aroha goldfield late 1880, and ventured to the Waihi Plains.

Nicholl:

> I started with my pick and dish to explore the country and fetched up on the Waihi hills where I found reef outcrops. They were rooted about here and there by the early diggers who abandoned them. The quartz had a hungry watery look and some of it was as white as a hound's tooth. I tested the rubble on these outcrops in various places and never failed to obtain a trace of gold but not sufficient to be of any value.
>
> It was a considerable distance to carry my samples to water to test them so I decided to cut up a sack into nine sample bags and sew and number them so that I could get along quicker. I spent a fortnight combing the western flank of Pukewa still and found rich sheds of gold in two places - one on the north end of the spur (richest), about 200 feet from McCombie and Lee's drive, and the other about 400 feet south. I cut the reef where it was shedding the best and obtained prospects that I estimated to be worth 4 ozs to the ton, so I staked out a claim of 5 acres and proceeded to the Thames on foot to report my find and secure the ground. I went to the Newspaper Office and told them the reef was 40 ft. wide where I cut it. I applied for a lease of 5 acres as a mining claim on the northern end of Pukewa Hill and named it "Martha."[20]

Nicholl travelled from Thames to Coromandel (on foot) to inform his mates. Various versions of Nicholl's writings make piecing together the subsequent events a challenge. Hart states:

> On the following day, Thomas Gilmour, a miner who in 1891 became mine manager of the Waihi mine, John Patton, who appears to have been a bushman living at Hikutaia, Robert Potter ('Bert' to Nicholl), a miner who had been present at the Te Aroha rush, 'and Jack Nicks (my brother in law) appeared on the field. They were the first I told of my find and they staked a claim on my north boundary and called it the "Dulcie," and then left for Thames' [Hart is

[17] Own Correspondent [John McCombie], New Zealand Herald, 25 January 1881, p. 6, quoted in Hart on William Nicholl, 2016 p 43-44.

[18] Te Aroha Goldfield opened 25 November 1880

[19] William Sharman Crawford (Billy) Nicholl, and Robert Henry Majurey (sometimes Majury; the "Henry" was never used)

[20] The Discovery That Led To The Development Of Waihi Gold Field, Ohinemuri Regional History Journal 11, May 1969

> quoting Nicholl here]. In fact they named it the Dulcible; everyone had trouble spelling Dulcibel's name. In his last memoirs, Nicholl wrote that 'I found when I got back to the claim that a good lot of people had been there and the fern was burned and that they had found my tools. But there were no claims staked out, because I had the good reef buried with sandy loam. My mate arrived two days later and we started to unearth what I had buried'. 'The cap of the reef had been rooted about a bit' by the visitors.
>
> His 1901 article gave a different account, stating that, after returning to Thames from Coromandel, he brought the above-named men to Waihi to mark out claims. They pegged out what in this version was the 'Duncible' claim, a name that in whatever spelling confirmed that it was indeed his niece who was being immortalised. 'This was the only claim pegged out for two months after the discovery. Further developments were effected when we discovered a seam in the footwall of the reef containing visible gold worth about 8oz to the ton, if saved by itself. The discovery caused a bit of a rush, which resulted in the pegging out of several claims'. He recorded the shareholders in these as being Hugh Roberts Jones, nicknamed 'Manukau' because he had been mine manager of this profitable Thames mine, William Hollis, a prominent miner, especially at Waitekauri, James Smith, correctly Smyth, another prominent Ohinemuri prospector, John Leydon, John McCombie, and Alexander Mackay.[21]

In an attempt to clarify the sequence of events Hart continues:

> These early developments were imprecisely dated in his memoirs, but the sequence can be determined from newspaper reports. Early in January 1881, his party briefly became tributers in part of the Radical mine at nearby Owharoa, no doubt to raise funds to meet expenses whilst prospecting at Waihi. On 17 January, Nicholl made the first public announcement of his find. On 16 February, he applied for three acres, one rood, and 26 perches as the Martha claim at Waitete, as Waihi was then known after the stream near what from 1881 onwards was known as Martha Hill. At the warden's court hearing on 24 March he was granted the claim, in his name alone. At that hearing the Dulcibel claim was granted to his brother-in-law John Nicks, who soon transferred some of his interest to Potter, Patton, and John Costello. The latter was not a stepbrother of Nicholl but a publican who was a friend of John and Mary Ann Nicks. Between 28 March and 27 May 1881, nine other claims were registered; Nicholl had no interests in any of them.[22]

John Nicks married Mary Ann, sister of Billy Nicholl, in 1872. Their daughter Martha Dulcibel had been born in December 1877.[23]

William Street, on the northern side of Martha Hill, may have been named after William Nicholl.

Who was Martha?

Hart:

> in his newspaper article of 1901 he wrote that the prospecting claim 'was christened after my niece, Miss Martha Dulcible Nicks'. As he had met his then almost three-year-old niece when resting with his sister while passing through Thames on his way to the Te Aroha rush in 1880, this was an obvious choice."[24]

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[21] Hart on William Nicholl, 2016. p 60-61

[22] Hart on William Nicholl, 2016. p 62-63

[23] Hart on William Nicholl, 2016. p 28

[24] Hart on William Nicholl, 2016.p 57-58. See also: Tale Of Two Families - (Brodie And Nicks), Ohinemuri Regional History Journal 9, May 1968.

Hart:

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Where was the Martha claim?

The Martha claim appears to have been at the "northern" end of the spur (Martha Hill), and McCombie's workings more to the south, on the western side. The spur does (did) run more or less north south (particularly if viewed in terms of magnetic north), but Martha reef is orientated northeast southwest. The trig point on Martha Hill was at the top of Martha Street (555ft, or 169m), but the highest point was 631ft (192m, above the Martha lode).[26]

There was considerable debate amongst the "experts" as to whether the reef(s) contained payable gold or not.

McCombie, after a visit in late February 1881, wrote in the New Zealand Herald:

> The bald spur, which comprises the principal feature in the scene of mining operations at Waihi, is about 300 feet in height, and is strewn from base to cone with quartz boulders, being the debris of the immense reef running through it.
>
> The first claim met with on the northern end of the spur was the Martha, ten men's ground, Nicholl and party proprietors. This party have driven several surface levels, ranging from 10 to 30 feet in length. In one of these the reef has been cut into for a distance of 13 feet, and upon examination I found strong blotches of gold showing in many places along both walls in the present face of the tunnel.[27]

McCombie hadn't registered his claim?

Hart:

> When licensed holdings were granted for ground that included their claim, McCombie, considering his title worthless because it had not been registered, took 'no steps to regain the ground'. In July 1881, in response to a ruling by Warden Kenrick creating uncertainty in the minds of owners of licensed holdings about the security of their titles, Adam Porter, a prominent miner, on their behalf laid a plaint against McCombie and Lee who pegged out all or most of the ground 'over two years since, but whose pegging has not been abandoned. Nicholl, on behalf of the Martha claim, was one of the plaintiffs. At the hearing in August, McCombie
>
> > deposed that he and Lee were prospecting at Waihi in December 1878 and January 1879, and during the latter month pegged out two claims. (Witness indicated their position on a plan produced.) After marking out, they stayed on the ground for six months, doing work on what was now the Dulcibel.... When the Martha and other claims were pegged out, he made no objection; as he did not consider his pegging entitled him to any right on the ground. He did not now claim the ground.... He

[25] Hart on William Nicholl, 2016. p 62-63

[26] Map of Waihi Goldfield, 1923

[27] Hart on William Nicholl, 2016. p 67

> offered a gentleman connected with some of the present claims to give a notice of abandonment, but it was declined, as it was not considered requisite. – Robert Lee, the other defendant, also signified his willingness to give up the ground.
>
> After discussion, the 'defendants signified their assurance that they had abandoned the ground', and agreed 'to have it recorded that they had abandoned the ground in August, 1879, and therefore as they had no interest in the ground since that date, there was now nothing to forfeit. The companies were now in legal possession'.[28]

Regulations for Ohinemuri Gold Fields Under The Gold Fields Act, 1866.

The framework and constraints under which miners operated was dictated by the mining regulations current at the time. To help understand the actions and decisions made, let's summarise some of the regulations in force at the opening of the Ohinemuri Goldfield (1875). See a fuller summary in the Appendices (p 95). The regulations were changed from time to time over the years.

- A Miners' Right for the Ohinemuri Gold Field was required, issued by the Warden on payment of a fee of one pound (£1).
- The area of land which may be occupied for mining by one miner shall not exceed 15,000 square feet [1394 sq m or 0.344 acre] in each claim taken up by him, but any party of miners, not exceeding ten in number, each being actually present and engaged in the marking out of any land for may mark out an aggregate area of land equal in extent to 15,000 square feet for each miner in such party.
- Working. Every claim shall be bona fide and continuously worked from day to day, and there shall be employed therein or thereon at least one miner for every man's ground comprised in such claim.
- Forfeiture of Mining Claim. Any claim not worked in accordance with the provisions of these Regulations shall be deemed forfeited, unless under protection, or circumstances be proved sufficient, in the opinion of the Warden, to excuse any default in such working.
- Permission to retain a claim or interest therein unworked may be granted by the Warden, and the same shall be thereon protected for such time as the Warden shall think fit. There are a set of conditions to be met.
- All protected claims or interests must be marked by a notice, with "protected" and the owner's name, address, and particulars of the claim or interest, posted on the ground.
- The area of a machine site shall not exceed half an acre.
- The area of a residence site shall be thirty-three (33) feet frontage by sixty-six (66) feet [2178 sq ft or 202 sq m or 0.05 acre].
- Any miner may use timber (other than kauri) for building or mining purposes, or for firewood.
- Any person requiring kauri timber must apply to the Warden, who will give permission to cut the same on payment to him of the sum of one pound five shillings (£1 5s.) for each tree required by the applicant.

[28] Hart on William Nicholl, 2016. p 52-53

- Every miner taking up a claim or other authorised holding shall within ten days thereafter cause his title to the same to be registered in a book kept for that purpose by the Mining Registrar, and if he shall make default in so doing his title to such claim shall be deemed to be forfeited.[29]

So the size of a claim was effectively determined by the number of miners that could "man the ground", ie keep it worked, forestalling the possibility of forfeiture. This (in theory) prevented claims being taken up, and held for speculative purposes instead of being worked. This "shepherding" of ground was at times a considerable problem. See Water Race Shepherding? (Page 41)

Nicholl's Attempts at Company Formation

Back to the story then, with Nicholl on Pukewhau spur (Martha Hill).

At the end of January 1881 Nicholl had a trial parcel of five bags (a little less than a ton) crushed at the Smile of Fortune Battery at Owharoa. The Thames Advertiser reported the result: "The yield, 1oz 1dwt, is an excellent one, when the size of the reef is taken into consideration".[30]

On 16 February, he applied for three acres, one rood, and 26 perches as the Martha claim.

Isdale:

> A reporter went to see the new Waihi goldfield early in March, 1881, and found that to the junction of the Waitekauri and Kati Kati roads the way was wide enough for four horsemen. After that it was only a track, going on past Compston's place for four miles in all[31]. It was hoped that the interrupted roadmaking would soon be recommenced, before the winter rains.
>
> 'The scene of the operations is on a long fern spur running out into the plains, and the visitor at once perceives, from the burrows in its side, that goldmining is being carried on there. This spur, although of some length, is only a few hundred feed across ... work had ceased for the day, and most of the men had gone to Owharoa to spend the evening.' Mr Robert Potter was living in a whare at the foot of the hill, and with Mr Compston showed the reporter round.
>
> Said reporter learned that the prospectors' claim was called the Martha, and was told about the other men with Nicholls, and about McCombie and Lee, but got most of the names either given to him wrongly or more likely misheard. Thus Majurey came out as McGoray.
>
> He was told that McCombie and Lee had driven between 120 and 140 feet. Nicholl and party, since coming over from Te Aroha three months before, had driven an upper tunnel 45 feet, going 25 feet into the reef, and a lower tunnel of shorter length. The reporter also saw four or five other tunnels, all of which had exposed reef. He said gold could be seen in the tunnel faces.
>
> 'The lode has a different appearance to any yet discovered on this peninsula, and a person looking at stone taken from it could hardly believe that it was auriferous, let alone payable. The colour is white, and portions of it are very soft, resembling pipe clay.' It was easy to break out. The reef had so far been traced for 2000 feet, but it was considered it no doubt went the length of the spur 'and into the surrounding bush'.

[29] Extracted from: AJHR_1875_I_H-15 Mining Regulations

[30] Hart on William Nicholl, 2016. p 64, quoting the Thames Advertiser, 31 January, 1881.

[31] If said junction was at Old Tauranga Rd and Campbell Rd, then the straight-line distance is 4km (2.5mi). A straight line distance of 6.3km (3.9mi) suggests the intersection of Waitekauri Rd and SH2 (by present Waikino Railway Station).

Nicks and party had taken over McCombie and Lee's tunnel in the adjoining Dulcibel. They had taken out and stacked 25 tons of quartz, being the only claim that had so far taken out any quantity, and had erected a forge, which everybody found very handy.

Next was the Waitete, 'the Maori name of the place where operations were being carried on.' Waihi was originally the name of a Maori coast settlement, but inland having been spoken of as the Waihi Plains, the name 'the Waihi' was now being applied to the new goldfield. The Waitete claim had been taken out by a Grahamstown (north Thames) speculator and forfeited, and then taken up by H.T. Rowe, James Smyth, M Vaughan, W Liddell, R Wingate and W Tregoweth, all apparently of Thames.

'Manukau' Jones had taken up about 20 acres. One area was 'on a small round hill a couple of hundred feet away from the spur.' [A hand-written comment says here, Rosemont?] Campbell the Owharoa tributer had taken up ground to the east next to the prospectors' claim. Mr James Smith had the Old Colonial claim. On the Paeroa side the Dulcibel was adjoined by the Evelina, held by a Paeroa group headed by James Liddell. H.T. Rowe surveyed 'all the claims at Waitete'. He himself took up the Emily under the prospectors' low level. It was considered there was always enough water in the nearby creek to drive a large battery.

The reporter noted the prosperous state of the farms at Waitekauri and Waitawheta valleys, and on the Waihi Plains. There only three agricultural leases had been taken up, by Compston, Walmsley and Thorpe. These had by now erected substantial homes, and 'cultivated the greater portion of their holdings.'[32]

The First Company

Hart gives details:

Nicholl wrote that 'after the news got around Thames, mining magnates appeared on the scene. These gentry were Adam Porter, Jimmy Darrow, and Evan Baillie Fraser'. In the 1930s he used the word 'prigs' to describe them, meaning, in the slang terms of his youth, cheats and swindlers.

Nicholl clearly feared that those who provided the capital would take control of his find and receive most of the profits. In 1927, he added another name to the party of investors, John Watson Walker, a leading mine manager whom he always referred to as Long Drive Walker because of his management of a famous early Thames mine.

Because the reef looked so encouraging, the prospectors refused an offer of £3,000 for an interest in the claim. At the beginning of May [1881], Nicholl's party and the investors formed the first mining company at Waihi, the Martha Gold Mining and Quartz Crushing Company. The prospectors were required to provide most of the capital: Nicholl held 7,000 of the 18,000 shares, his brother Robert had 1,000, and Majurey had 4,000. Three other shareholders inaccurately gave their occupations as miners and their place of residence as Thames: Fraser, who had 2,000 shares, Darrow, with 2,000, and Porter, with 1,000. John Frater, a Thames sharebroker, had 1,000. The directors included William and Robert Nicholl, Majurey and Fraser. Being 'anxious to have the mine tested as soon as possible', the syndicate's first decision was to re-erect the Karangahake battery [not being used at Karangahake, and for sale, or already bought by Darrow and Fraser] near their claim.[33]

[32] Isdale, 1978 p (9-10)

[33] Hart on William Nicholl, 2016. p 71-73

Part of this deal was that the prospectors "put a tunnel in through the reef at a depth of 50 feet below the surface. For this they [the investors] were willing to advance £50."[34] The rest of the deal is described here by E. B. Fraser: "should the prospects satisfy us [as shown in the tunnel], the mine owners to enter into an agreement with us for the erection of a 16-stamper battery, we to receive one third of the shares in the mine, and 25 per cent of net profits until the cost of the battery was paid."[35]

It appears that the results of the tunnel were disappointing, and the investors abandoned their intentions to erect a battery.[36]

Nicholl was apparently pleased that the deal fell through. He had already had misgivings. After he and Majurey had signed the agreement at Mrs Read's hotel at Owharoa, he had uttered the much-quoted line: "Well, they have us licked".[37]

In early July 1881 Nicholl determined to send a second test parcel of ore to Owharoa.

> I could see there was nothing for it but to get our 5 tons of quartz dragged or packed to Owharoa. I saw the Farmer boys and they agreed to crush it for me, and I also went to see Mr Marsh, a farmer at Turner's Hill, and he agreed to drag it if it was possible. On my way back I bought 30 sacks from [James] Hosie at Owharoa, made a pack of them and started for Waihi next day. We filled and tied them and Marsh came next day with two horses, a sledge and a trolley. He broke a trail through the fern with dragging his sledge along the old Maori track and finished getting the 30 sacks of quartz in to Owharoa in five days. Mr William attended to the treatment of the quartz and the result of the crushing was 5 ounces to the ton. We had 25 ounces of gold valued at £3.16.6 per ounce, this being the richest value bullion found in any reef in the northern goldfields. People doubted the truth of it and sent a yarn round Thames that I salted my crushings with sovereigns. I heard a group of men talking on Scrip Corner when I was on my way to the bank with my gold, but did not know they were alluding to me.[38]

Hart continues:

> Six years later he wrote that the 30 sacks held only about four tons and that the 24 ounces obtained (according to this account) was not 'a fair trial, it was run through very coarse mesh gratings and I suppose only half of the gold was saved'. Later he wrote that with a 'modern appliance it would have yielded three times as much'. This yield 'enabled us to hang out longer'.[39]

These results would suggest that this sample was of carefully picked stone. The Martha lode in general proved to be of much lower grade.

Kerry Nicholls and the second company

James Henry Kerry Nicholls,[40] FGS,[41] geologist and speculator, approached Nicholl and Majurey with the next proposal to float a company and build a battery. Nicholl:

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[34] Hart on William Nicholl, 2016. p 71, quoting Nicholl

[35] Hart on William Nicholl, 2016. p 77. Fraser was one of the shareholders of the proposed company

[36] It seems that there was considerable argy bargy involved, certainly in the press; see Hart on Nicholl, 2016.

[37] Hart on William Nicholl, 2016. p 71

[38] Hart on William Nicholl, 2016. p 86-87

[39] Hart on William Nicholl, 2016. p 87

[40] Nicholl and Isdale have him as Carey Nicholls

[41] Fellow of the Geological Society

> a man by the name of J.H. Kerry Nicholls came on the scene and proposed to take an option to build a battery for [a] third interest in the mine. I asked him what he was prepared to put down for the right of option. He said he had no money to put down but that he was certain he could have it floated in a fortnight, but he wanted two months to be certain of doing it and that if we gave him a chance we wouldn't regret it. Majury thought it would be better to give him a chance. I consented, but I wasn't too sweet[42] on the business.[43]

Kerry Nicholls had been testing the "dirt" and was apparently quite taken with the prospects of the mine. This was even before the "splendid" results of the trial crushing were known. An agreement was signed with him on 3rd June, and Nicholls was to purchase the Karangahake Battery and have it re-erected at Waihi.

The agreement gave Nicholls two months to raise the capital, but apparently he had failed to do so, and wanted a little extra time. By July 4 he had never-the-less formed the Martha (No. 1) Gold-Mining and Quartz Crushing Company, with published prospectus. The chairman of directors was Kerry Nicholls and the other directors were the Nicholl brothers, Majury, and Nathaniel Gordon Lennox.[44]

Even before this prospectus was published, it seems Nicholl was in talks with FA White[45] in Auckland with regards setting up a (different) company ("Mr F.A. White ... having arranged with several capitalists to erect a sixteen stamper mill without delay"[46]). This a week before the option given to Kerry Nicholls had expired (late June 1881). The Nicholl texts that cover these events all have different versions, but it seems that Kerry Nicholls was being treated very unfairly, and he was not happy.

Nicholl told Kerry Nicholls that his time had expired, and the deal was off: "when his time was up I sent him a letter telling him that his time was up and that we were going to have nothing more to do with him".[47]

New Martha Gold Mining Company (the third company)

The new company, arranged with FA White, was established with directors comprised of the Nicholl brothers, Majurey, Stone, Wilson, and Edward Wayte, an Auckland estate agent.[48] The company was registered as the Martha Gold Mining and Quartz Crushing Company[49]. Surveyor Bayldon[50] was to "select the most suitable site for the battery as well as to take the necessary levels of the water race and ground for the horse-grade tramway" to connect the mine and battery.[51] No mention of where the battery may come from, but read on.

Hart mentions that there was yet another offer for the mine.

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[42] Nicholl was still fearful of being cheated

[43] Hart on William Nicholl, 2016. p 89

[44] Hart on William Nicholl, 2016. p90-91

[45] Francis Angus White was a prominent legal manager, meaning secretary, of many mining companies (Hart on Nicholl, 2016 p 90).

[46] Hart on William Nicholl, 2016. p 92

[47] One of the versions quoted in: Hart on William Nicholl, 2016. p 90

[48] Hart on William Nicholl, 2016. p 92

[49] Adam Porter: A Miner Who Became A 'Self-Made Man'. Philip Hart. 2016. p 42

[50] Daniel Henry Bayldon, the leading mining surveyor at Thames (Hart on Nicholl, 2016 p 93)

[51] One of the versions quoted in: Hart on William Nicholl, 2016. p 93

> The day after the prospectus of the Martha (No. 1) Company was published, it was reported that another 'gentleman from Victoria offered yesterday to a miner intimately connected with Waihi £3000 to be expended on a battery. If the Martha project should fall through the offer will be accepted'. Therefore Nicholl's party could choose between three possible backers.[52]

Kerry Nicholls fights back

Nicholl and Majurey were summonsed to appear at the Magistrate's Court at Thames on a charge of £5000 damages for breach of contract. The case was heard mid August 1881. The short version of the result was that as no extension in time had been given in writing by the defendants, the action failed. "Kerry Nicholls' counsel gave immediate notice of an appeal to the Supreme Court, and the injunction placed on the mine was extended for ten days to enable this to be lodged."[53] This injunction lasted until mid October, holding up work at the mine.

And then

> On 18 October it was reported that the injunction had lapsed, Kerry Nicholls' appeal 'not being brought forward at the appointed time – during the civil sittings of the Supreme Court'. Immediately after these sittings closed, Miller[54] 'registered a deed assigning the claim to the Martha Gold Mining Company, which course of action may effectually put a stop to any litigation'. At a meeting of directors of the company on 26 October, litigation was 'finally arranged', with Kerry Nicholls elected a director in place of Nicholl, 'who resigned in his favour'. As part of this arrangement, Kerry Nicholls gave the company his Karangahake battery.[55]

Obviously some accommodation was made, and the Karangahake Battery was available again (Kerry Nicholls had apparently bought the battery from Darrow and Fraser). Hart is silent here, but he goes on to report:

> In July 1882, the share list for the Martha Gold Mining [and Quartz Crushing] Company included Nicholl with 3,918 of the 15,000 shares, his brother with 348, Majurey with 2,250, and Kerry Nicholls with 232. The latter chaired the luncheon at the opening of the Martha battery in 1882 and proposed the toast to the miners of Waihi, 'eulogizing miners as a class'. This ended his involvement with mining apart from becoming, in the following year, a director of the stillborn Thames Winding Company.[56]

However there are suggestions that the Karangahake Battery stayed in Karangahake after all[57], but this has not been traced.

Waihi settlement was also well under way, including vegetable growing. A report in August 1881:

> As an evidence of settlement, in various directions are to be seen substantial houses erected by the miners. Mr Unthank has started a bakery; Mr May a store; Mr Clotworthy a restaurant and livery and bait stables; and a butcher calls twice a week for orders, supplying the settlers with

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[52] Hart on William Nicholl, 2016. p 92

[53] Hart on William Nicholl, 2016. p 96

[54] James Armstrong Miller, solicitor, Thames. See Hart on William Nicholl, 2016. p 94, and for instance: Thames Advertiser, Volume xiii, Issue 3644, 3 July 1880. Page 2 Advertisements Column 3. http://paperspast.natlib.govt.nz/newspapers/THA18800703.2.9.3

Thames Advertiser, Volume Xiii, Issue 3644, 3 July 1880

[55] Hart on William Nicholl, 2016. p 97

[56] Hart on William Nicholl, 2016. p 97

[57] see Isdale 1978 (p19 and 20)

> meat at five pence a pound all round. Gardening ranks high, and foremost amongst those who are raising vegetables is Mr Potter, who expends much time in this delightful pursuit, his labours being rewarded by an abundant supply of vegetation.[58]

"Potter" may have been Porter, as "in July, Henry Christian Wick, Porter, and their party had 'a little more than an acre ploughed up and planted with vegetables, in order to supply the necessities of the miners'"[59].

Two Companies Would Start to Mine Martha Hill

As we have just seen, the **Martha** Gold Mining and Quartz Crushing Company was created circa July 1881, and they would proceed to build a battery on the eastern slopes of Martha Hill. It would be known as the Martha Battery, and was the first to be operating, in May 1882. This battery was short lived, and its name would soon be transferred to the battery at the Ohinemuri River.

The **Waihi** Gold Mining Company was formed in early August 1881, amalgamating Manukau Jones's claim with the Little Lizzie and the Waitete.[60] 'Manukau' Jones had taken up a claim on the southern end of the spur (Martha). Much fewer contemporary sources of information have been found for this early company and battery.

The Waihi Company would build their battery on the Ohinemuri River, at the confluence of the Mangatoetoe Stream. It would be known, briefly, as the Waihi Battery, and then as the Martha. Are you keeping up?

D.H. Bayldon, the leading mining surveyor at from Grahamstown[61] Thames is engaged by both companies to attend to the required surveying. His expertise would no doubt help in establishing the most suitable locations for the batteries and infrastructure. Bringing in water power was a critical factor.

Thames Advertiser, 30 August 1881:

> Mr Bayldon completed the survey of the Martha company's water race and battery site yesterday. This race will be two (2) miles and a quarter in length, giving a fall of seventy (70) feet; and the pressure will be equal to the work of driving 30 head of stampers. Mr Bayldon starts to-day with the survey of the Waihi company's race, and tenders for the construction of both will be invited immediately after the plans and specifications are completed.[62]

An article in the New Zealand Herald, 18 August 1881, mentions the Waihi Goldmining Company in this regard:

> Mr. D. H. Bayldon is engaged surveying a water-race, tramway, and battery site for the Waihi Gold-mining Company, which it is expected will be completed in time to allow of the plans and specifications being prepared before Saturday next, when tenders will be called for the construction of the tramway and water-race and the erection of the battery. I believe it is intended to remove the Flora McDonald battery and re-erect it for this company.[63]

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[58].Thames Advertiser, Volume xiv, Issue 4016, 10 September 188. A Visit To Waihi

[59] Adam Porter: A Miner Who Became A 'Self-Made Man'. Philip Hart. 2016. p 42

[60] Isdale, 1978 p (12)

[61] Hart on William Nicholl, 2016. p 93

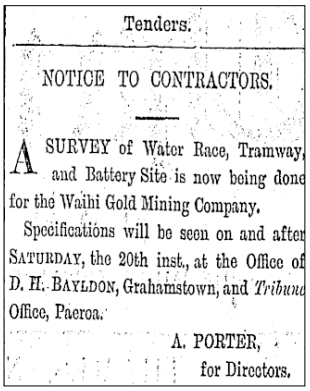
[62] Thames Advertiser, Volume xiv, Issue 4006, 30 August 1881. Mining Matters At Waihi.

[63] New Zealand Herald, Volume xviii, Issue 6163, 18 August 1881. The Goldfields

Flora McDonald Battery? This was a battery at Tararu Creek, Thames[64]; presumably for sale. However, the Thames Star, in July 1884, reports that this battery was being used as a polling place, so it looks like it never came to Waihi.[65]

Tenders were called for the construction of the water race, tramway and erection of the battery for the Waihi Gold-mining Company with this advertisement appearing in the Thames Advertiser, 17 August 1881:

> Tenders. NOTICE TO CONTRACTORS.
>
> A SURVEY of Water Race, Tramway and Battery Site is now being done for the Waihi Gold Mining Company. Specifications will be seen on and after Saturday, the 20th inst, at the Office of D. H. Bayldon, Grahamstown, and Tribune Office, Paeroa.
>
> A. PORTER, for Directors.[66]



Tenders.

NOTICE TO CONTRACTORS.

A SURVEY of Water Race, Tramway, and Battery Site is now being done for the Waihi Gold Mining Company.

Specifications will be seen on and after SATURDAY, the 20th inst., at the Office of D. H. BAYLDON, Grahamstown, and *Tribune* Office, Paeroa.

A. PORTER,
for Directors.

H.H. Adams was successful with his tenders for both companies, and he would build both batteries more or less concurrently.

Water races

Of interest is the various water race licenses applied for at this time. Already on the 16th February 1881, Adam Porter had applied for a water race.

> APPLICATION has been made by Adam Pouter for a License to construct a Water Race for Mining purposes near Waitete, Ohinemuri, commencing at a point on a branch of the said river, near the road to Mataora, and terminating at a point on the said river, as shown on plan to be lodged here within fourteen days. The length of such race is about one mile and a quarter; and its intended course is south-east and north-west. The race will be capable of carrying eight sluice heads of water...[67]

Hart reports that "in late May Nicholl was granted a water race to provide motive power for a small battery"[68]. Hugh Roberts (Manukau) Jones applied for a race on the Waitete stream in August 1881, presumably for the Waihi Battery.

> Warden's Office, Thames, 16th August, 1881.
>
> APPLICATION has been made by Hugh Roberts Jones for a license to Construct a Water Race at Waitete, in the Hauraki Gold Mining District, commencing at a point (marked A on sketch plan lodged with the application) on the Waitete Creek and terminating at a point on the said creek (marked B on said plan). The length of such race is one mile and a-half, and its intended course is northerly and easterly; the mean breadth and depth of such race is two feet six inches by two feet six inches; it is capable of carrying two sluice-heads of water...[69]

If "Waitete Creek" was not a mistake, then it appears this race was never built. Had they planned to build the battery on the lower Waitete Stream? Two sluice-heads is not much (a sluice-head is usually

[64] Thames Star, Volume xii, Issue 4010, 4 November 1881. Page 3 Advertisements Column 3

[65] Thames Star, Volume xv, Issue 4842, 16 July 1884

[66] Thames Advertiser, Volume xiv, Issue 3995, 17 August 1881. Page 2 Advertisements Column 5

[67] Thames Advertiser, Volume xiv, Issue 3820, 18 February 1881. Page 2 Advertisements Column 5

[68] Hart on William Nicholl, 2016. p 79

[69] Thames Advertiser, Volume xiv, Issue 3995, 17 August 1881. Page 2 Advertisements Column 5

given as one cubic foot of water per second). But the description of northerly course suggests that the stream in question was the Cabbage Tree Creek (Waimata Stream), which they did in fact use. No mention of applying for a Cabbage Tree Creek water race has been traced.

Joshua Cuff applied for a rather odd water race license on 5th October; an extension to the water race already surveyed for the Martha Company.

> Warden's Office, Thames, 5th October, 1881. No. 7.
>
> APPLICATION has been made to me by Joshua Cuff for a license to construct a Water Race for mining purposes, commencing at a point at the termination of the Water Race surveyed for the Martha Company at Waihi, and terminating at a point in a southerly direction, to be shown on plan. The length of such race is about twenty chains, and its intended course is southerly. The mean breadth and depth of such race is three feet by eighteen inches. It is capable of carrying five sluice heads of water, and the number of sluice heads of forty inches each, which it is intended to appropriate, is five.[70]

Had the proposed location of the Martha Battery changed, requiring a longer water race? And who is Joshua Cuff? The New Zealand Herald sheds some light:

> Mr. Joshua Cuff, solicitor, from Poverty Bay, has commenced the practice of his profession at the Thames. Mr. Cuff is a sound sensible lawyer, and was much esteemed in Gisborne, where he resided many years, for his integrity and gentlemanly behaviour.[71]

He was "personally interested in two of the claims"[72] at Waihi. He had applied, with two others, for the Little Tommy Claim on Martha Hill in April 1881.[73] His other "interest" has not been traced.

On 22 November a new application was made for the now combined water race.

> APPLICATION has been-made by Joshua Cuff for permission to construct a water race for mining purposes commencing at a point on Walmsley's creek, Waihi, where Messrs. Bayldon and Crump commenced their survey for the Martha company, thence running along the surveyed water race to the Martha battery site, at the commencement of his other application for a water race, and terminating at the last mentioned point as shown on plan to be deposited. The length of such race is about two miles and sixty chains, and its intended course is southerly. The mean breadth and depth of such race is three feet by one foot six inches; it is capable of carrying six sluice heads of water...[74]

In the meantime, on the 5th October, 1881, both Adam Porter and J. H. Nicholls apply.

> Warden's Office, Thames, 5th October, 1881. No. 7.
>
> APPLICATION has been made to me by Adam Porter for a License to Construct a Water Race for Mining purposes, commencing at a point on the Ohinemuri river, and terminating at the Waihi battery site, as shown on plan lodged with application. The length of such race is five miles or thereabouts, and its intended course is north and south. The mean breadth and

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[70] Thames Star, Volume xii, Issue 3986, 7 October 1881. Page 3 Advertisements Column 3.

http://paperspast.natlib.govt.nz/newspapers/THS18811007.2.18.3

[71] New Zealand Herald, Volume xviii, Issue 5970, 5 January 1881. News In Brief.

[72] Thames Star, Volume xii, Issue 3885, 11 June 1881. The Waihi Versus "Argus."

[73] Thames Advertiser, Volume xiv, Issue 3857, 2 April 1881. Page 2 Advertisements Column 5

[74] Thames Advertiser, Volume xiv, Issue 4084, 25 November 1881. Page 2 Advertisements Column 5

> depth of such race is three feet by two feet. It is capable of carrying five sluice heads of water...[75]

This is another, larger and much longer, water race intended for the Waihi Company battery. It is not constructed either. A similar race is applied for (and forfeited) by the Martha Extended Company in 1887.

> Warden's Office, Thames, 5th October 1881. No. 9
>
> APPLICATION has been made by J. H. Nicholls for a license to construct a Water Race for Goldmining purposes commencing at a point on the Mungatoitoi [Mangatoetoe] Creek (marked XXX on sketch plan lodged with application) and terminating at the junction of the Mungatoitoi Creek with the Ohinemuri River, as shown on said plan. The length of such race is about one and a-half to two miles, and its intended course is down the side of the said creek. The mean breadth and depth of such race is three feet by two feet, and it is capable of carrying five sluice-beads of water...[76]

Surely this is Kerry Nicholls. What is he up to? The "junction of the Mungatoitoi [Mangatoetoe] Creek with the Ohinemuri River" is where the Waihi Battery is to be built.

There is more on water races, and possible "shepherding" later. So back to our story...

The Martha Battery start operating in May 1882, the Waihi Battery in June 1882.

Thus two companies are actively mining the Pukewhau spur, what we now call Martha Hill. Our modern tendency to think of the Martha Hill as the Martha Mine can mislead us.

The First Martha Battery (started May 1882)

Martha Battery Water Race

Bayldon completed his survey on 26 August, the race to be two miles long with a fall of 70 feet.[77] Later in this same document Isdale says 2.5 miles to the Walmsley's Creek. So where was this water race? According to Nicholl the battery was near Gilmour's house. Let's assume this is somewhere near No. 1 Shaft on Martha. The Waihi Gold Mining Company (established Dec. 1887) put in their Walmsley water race (1891), and this has been mapped by GIS from old maps. This race passes close to where the Martha Battery would have been, and was just over 5.5km to the battery, or nearly 3.5 miles long. Despite the length discrepancy, I suggest this is more or less the same water race.

> The race for the Martha battery may be seen winding round the spurs from near the building to Mr Walmsley's house, and is formed much farther along the hills than even there.[78]

In October 1881, the Martha Company accepted the tender of H.H. Adams to construct a battery and water race for £1,238. Already in September his tender of £2,740 to erect a battery and water race had been accepted by the Waihi Gold Mining Company.

H.H. Adams[79]

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[75] Thames Star, Volume xii, Issue 3986, 7 October 1881. Page 3 Advertisements Column 3

[76] Thames Star, Volume xii, Issue 3986, 7 October 1881. Page 3 Advertisements Column 3

[77] Isdale, 1978 p (12)

[78] 13 February 1882 Thames Advertiser, Volume XIV, Issue 4157

[79] For a comprehensive biography see: Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016.

Henry Hopper Adams had built the battery for the Te Aroha Quartz Crushing Company earlier that year (it was built in what was to become Boundary Street in Te Aroha, and opened in April 1881).[80] He "was still in charge of this battery in June, if not later"[81]. Adams was then a leading figure in Te Aroha mining, and "in September 1882, was working day and night to complete his water race contract for the Waiorongomai battery. By the following February, he was both engineer and manager for the Battery Company (Waiorongomai), having won the contract to erect its battery. In February 1883, when both water races were completed, his skilful construction was universally praised."[82] Adams went on to construct the Waiorongomai tramway.

So Adams was a busy and well thought of contractor, juggling multiple commitments.

Timber for the Waihi batteries would be cut locally. Already in July sawyers were eyeing the kauri trees of the Waitete. A report in the Thames Advertiser, July 1881:

> Mr. Alexander Unthank is busily engaged with the erection of a baker's oven and general store. This gentleman has started two pairs of sawyers, who will soon make their mark on the magnificent kauri forest which clothes the banks and valley of the Waitete stream.[83]

Adams brought in his own portable steam engine to mill the kauri for the batteries, quite an undertaking.

> About five o'clock yesterday afternoon interest was manifested in the transit of a 16-h.p. steam engine through Albert and Pollen-streets, on route for Waihi. The new engine was supplied to the order of Mr H. H. Adams by Messrs Price Bros, of the Thames, and is intended to drive a sawmill at Waihi. It was shipped on board the Patiki, and after reaching the landing-place--so intricate will be the way—it is believed nothing less than a team of sixteen horses will be able to take it to its destination.[84]

It appears that the Adams sawmill would become known as the Waihi sawmill. It was extensively advertised for sale from March 1883 and finally auctioned in October 1883, where the final bid of £250 was insufficient to secure.[85]

There was also a Webb's sawmill, where William Savage died after a fall in July 1882. This may have been the same sawmill, as Adams mentioned "his man Webb" during a court case.[86]

> Mr H.H. Adams, the contractor for the Waihi battery, is cutting a road through the bush to a sawmill site and has machinery in progress for cutting and preparing timbers for the company's battery. The sawyers are also at work felling the timber in readiness, and also for the bridge across the township creek."[87]

The road through the bush may well be the present Waitete Road, and the township creek meaning the first Waihi bridge over the Ohinemuri (completed December 1882).

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[80] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 18 and The Te Aroha Battery, Erected In 1881. Philip Hart. 2016. p 1

[81] The Te Aroha Battery, Erected In 1881. Philip Hart. 2016. p 22

[82] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 23

[83] 30 July 1881 Thames Advertiser, Volume XIV, Issue 3980

[84] Thames Advertiser, Volume xiv, Issue 4033, 30 September 1881

[85] Thames Advertiser, Volume xiv, Issue 4673, 9 October 1883

[86] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 19

[87] Isdale, 1978 p (14)

> The timber for the bridges is being cut at the Waihi saw-mill, and the order is all but completed, and during this week a start will be made to draw down the timber from the mill to the Ohinemuri river, a distance of about two miles. The timber is to be all of the best description, and the long stringers that will be used are already all cut to the desired dimensions, and to a length of seventy-two feet. These great lengths have been turned out in the most satisfactory manner, and are a credit to the mill and its enterprising proprietor.[88]

Again in the Thames Advertiser, February 1882: "Mr Adams's sawmill, which has been built in the bush at the back of Savage's agricultural lease."[89]

"The man, William Savage, was a worker at what had been Adams and was now Burton's [Thames] sawmill."[90] Savage Rd, named after the Savage family, follows the Mangatoetoe Stream, but the "Savages Freehold" is to the west of Waitete Road (and the Waihi College).

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As an aside, in June 1884 William Nicholl, late miner and now sawmill owner, filed for bankruptcy.[91] In August, during his public examination, he "stated he was a timber miller at Waihi, and had been a miner. Had been a contractor for the supply of sleepers."[92] His jumbled remarks included having paid £240 for the sawmill. Had Nicholl purchased the Waihi sawmill that had been passed in at the auction?

Of further interest may be the fact that Nicholl leased farming land at the Ohinemuri River, near its confluence with the Waitete Stream. In 1885 he asked the county council for 'assistance in constructing a suspension bridge over the Ohinemuri River at Waihi'[93]. This bridge may have been located at his farm, in which case it still existed in 1942 (visible on aerial photograph). This is beside the new cycleway (see GIS).

Hart elaborates:

> Nicholl followed the example of many miners by having a small farm. He had first applied for an agricultural lease of 50 acres in 1883, but this was not granted. In 1891 he applied for a larger area, using, like others, family members as 'dummies'. The first application was made in January, when his wife, describing herself as married to a farmer, applied for 50 acres bordered on the south by the road to Tauranga and on the north and west by the Ohinemuri River. It was granted. Nicholl applied in late February for 50 acres of 'pastoral & agricultural land' bordered on the north by the river; the sketch map he enclosed showed this land as being on both sides of it, with the western boundary being Waitete Creek. It was two miles 'below' Waihi. On 26 March, William Nicholl, junior, miner, of Waihi, son of William Nicholl, miner, applied for another 50 acres, also on the edge of the Ohinemuri river and adjoining Mary Jane Nicholl's occupation license. This applicant can only have been Nicholl's youngest son, aged three. This license was not granted, but his father's was, in August.[94]

This area includes the dredging site, the modern Council sewage ponds, and the peninsula of land bordered by the Ohinemuri River across which the Waihi Goldmining Company's water race traversed in 1897 (part of the McKinney farm, now Orchard). The suspension bridge would have allowed foot

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[88] 1 June 1882 Bay Of Plenty Times, Volume XI, Issue 1285

[89] 13 February 1882 Thames Advertiser, Volume XIV, Issue 4157

[90] Isdale, 1978 p (18)

[91] Thames Advertiser, Volume xv, Issue 4892, 18 June 1884. Page 2 Advertisements Column 3

[92] Thames Star, Volume xv, Issue 4859, 6 August 1884. District Court-This Day.

[93] Thames Star, Volume xvi, Issue 5111, 4 June 1885. County Council.

[94] Hart on William Nicholl, 2016. p 126. He includes maps at end of the document

access from the Waihi Paeroa road. A ford still exists on the Ohinemuri River just downstream of the bridge, date unknown. Remains of at least an early cowshed can be seen. This could be the area that Nicholl called "Nicholl's Flat". It is indeed an area of flat land.

> In 1900, Nicholl's residence was given in the electoral roll as 'Nicholl's Flat, Waihi', and his occupation as settler.1024 Presumably he was living on his small farm. On 22 January 1901, he obtained a new lease of the same land, now surveyed precisely as 49 acres three roods and 28 perches, the map showing it being bisected by the Waihi Company's water race.[95]

****

The Martha Battery was completed first, and on May 24, 1882, was officially opened with a gala event.

> The battery was situated 200 yards from the mouth of the low level tunnel at the base of the eastern slope of the hill. Although there had been grumbling over the long time Adams had taken to build both battery and water race, there was also much praise for the machinery he had invented.
>
> The battery is situated in the centre of the Juno claim, on the eastern side of the Young Colonial and Little Tommy claims. The water for the turbine is brought in from Walmsley's Creek, a distance of two and a half miles, on a substantially-constructed race, giving a fall of 70 feet, and is connected with the turbine by nine-inch iron pipes. The turbine is on a different principle to the ordinary ones, being an idea of Mr H. Adams, the contractor, and appears to work in a very satisfactory manner, the pressure being about 35lb to the inch. The battery building itself is of heart of kauri, and is exceedingly well fitted up. Only 15 head of stampers have been erected at present, but the bed-log is laid for 15 more head, which will be fitted up as soon as required. Upwards of 100 persons were present at the opening, and after the battery had worked for a few minutes, the guests sat down to a sumptuous luncheon.[96]
>
> There was a "recherche[97] luncheon" according to the newspaper reporter, and a "spread ... with turkey and other good things" according to Bill Nicholl, who was there with his mate Majurey, and both were toasted. Mr J.H. [Kerry] Nicholls, F.G.S., Mr George Vesey Stewart (chairman and vice-chairman respectively) and the ubiquitous Adam Porter made speeches. Mr Adams, being toasted, said he had used 136,000 feet of timber on battery and water races. Mr Gribble was toasted as mine manager.[98]

Hart quotes Nicholl that "the battery was christened by Miss Mary Jane Compston, of Waihi". Nicholl was to marry her three years later[99] (on 7 January 1885, when she was 22 years old)[100].

The battery did not perform well, the stampers operating too slowly. Adams designed the turbine and A.&G. Price were the makers[101]. It was ineffective and/or inefficient. Dry weather made the situation worse; "the water dried up in the creek and came down the race half way only."[102]

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[95] Hart on William Nicholl, 2016. p 178

[96] Hart on William Nicholl, 2016. p 103-104

[97] rare, refined, unusual

[98] Isdale, 1978 p (17)

[99] Hart on William Nicholl, 2016. p 104

[100] Hart on William Nicholl, 2016. p 114

[101] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 21

[102] Nicholl quoted in Hart on William Nicholl, 2016. p 107

The same turbines were installed at the Martha and Waihi batteries, and both proved inadequate. It appears that they required a large volume of water to be effective, and performed well at other installations (eg Owharoa[103]). It appears that the Martha water race lost water, ie it was leaky. A water race required careful puddling[104] to make it watertight. Time and costs pressure may have compromised this work, dry weather compounding the problem.

A water race was generally given a gradient, or fall, of 1:2000 (ie 1m for every 2km). Less, and the water would not run, more, and the channel could scour (and of course water head would be needlessly lost). However, water races built by Adams at Waiorongomai were reported as built with a fall of 1in 400.[105] If this is not an error in reporting, it is very steep. For the interesting description of this water race, see the Appendices (page 92).

The Waihi Company's battery was doing better than the Martha Battery, but their water race also had issues (to be discussed below).

Nicholl was appointed Martha mine and battery manager.

The Waihi Gold Mining Company

Hugh Roberts Jones, nicknamed 'Manukau' because he had been mine manager of this profitable Thames mine[106], had taken up a claim on the southern end of the spur (Martha).

The Waihi Gold Mining Company was formed in early August 1881, amalgamating Manukau Jones's claim with the Little Lizzie and the Waitete.[107] "'Manukau' Jones had brought in a good deal of Auckland capital, which he was using to vigorously develop his section of the Martha reef system".[108] And money to spend on the new battery.

Waihi Battery (started June 1882)

The Waihi Company Battery

H.H. Adams completed the Waihi Company battery 23 June 1882[109]. Contract price £2,740.

> The machinery and building are really a credit to the contractor, Mr H.H. Adams, who may well be proud of the splendid job he has made of it. The tramway and water race are grand pieces of work of their kind, the former over one mile long, and the latter two miles, and on trestle work up to 50 feet high, no timber being used but the best heart of kauri.... Everything in connection with the battery worked as smoothly as if going for years, there not being the slightest vibration, which is not to be wondered at, when one knows that the foundation for the bed log was blasted out of solid blue-rock. Mr Adams put the battery through its paces up to 100 blows per minute to make sure that there was no scarcity of water. In fact, there was a

[103] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 23

[104] The process of working clay, loam, pulverized ore, etc., with water, to render it compact, or impervious to liquids. The act of lining a canal with puddle to make it watertight (canal engineering). https://en.wiktionary.org/wiki/puddling

[105] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 6

[106] Hart on William Nicholl, 2016. p 61

[107] Isdale, 1978 p (12)

[108] Isdale, 1978 p (14)

[109] Bay of Plenty Times, Volume XI, Issue 1305, 24 June 1882

> large overflow there, plenty, I believe, to drive another 20 stampers.... Leaving the battery going steadily at 70, all hands adjourned to the Waihi Hotel.[110]

This battery of 20 stamps for the Waihi Company was built beside a small hill and stony outcrop on the banks of the Ohinemuri River, immediately upstream of the confluence with the Mangatoetoe Stream (this stream was moved later to join the Ohinemuri much further downstream). Why here?

The ideal battery site requires a slope to build into (allowing gravity to assist moving ore through the various processes), proximity or easy access to the mine, and convenient access to a suitable water supply for powering the battery. Ease of access for bringing in heavy machinery, and simple tailings discharge would be bonuses. Subsequent versions of this battery would remain on this site.

The water supply chosen was not the Ohinemuri (that would come much later), but from Cabbage Tree Stream or Creek[111] (now known as the Waimata Stream), just above the cascade downstream from modern Ford Road. Sufficient water could be relatively easily obtained here, and apparently more reliably than the Martha's Walmsley race (the Waimata is a larger catchment?). Part of this water race was a ground channel, but as the ground fell away approaching the Ohinemuri, a raised timber flume was required to bring the water to the battery, crossing the Ohinemuri at the same time. This race was 1.16km (0.72 mile) long, half of it timber flume. Yes, this is at odds with the "two miles" in the press report; the reporter may have confused his notes with the Martha race of two miles. A Bay of Plenty Times reporter said "The battery is supplied with water by means of a water-race about three-quarters of a mile in length about six chains of which is a fluming of elevated tresselling. The race carries about eight sluice heads of water".[112] The head of water (pressure over the turbine) was 28ft, or 8.5m.[113]

This race remained in use until the battery site was closed in 1911-14.

The wooden ore tramway was 1.33km (0.83 mile) long, on a gentle downhill slope, and roughly straight line, from the southwestern end of Martha Hill to the battery.[114] Another press report gave its length as "half a mile" (0.8km). A Bay of Plenty Times Special Reporter, making his way north from Katikati observed: "the Waihi tramway stretches in a long straight line from the mine to the battery"[115] This tramway route lasted until the closing of the Martha mine in 1952. "A tramway, part of which is still in use, constructed from the west side of the Martha Hill to the battery."[116] Moresby Avenue and Silverton Road both make use of part of the tramway route.

The small hill already mentioned provided at least some gravitational forces for the battery processes. This was the best "hill" down-slope from Martha Hill that they could find.

A little upstream from the battery, the Ohinemuri is shallow, with a hard bed allowing for a natural fording place. This is where travellers crossed the Ohinemuri until the first Waihi (Tauranga) bridge was built (December 1882), and then again for many years after it washed away (February 1883). The first "road" to this ford from the top of the Hikurangi Gorge (Athenree Gorge) was completed mid

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[110] Own Correspondent, Thames Advertiser, 23 June 1882, p. 2: in Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 22

[111] Waihi Topo Plan 1900. See GIS. Also New Zealand Herald, Volume XXVIII, Issue 8757, 23 December 1891

[112] Bay Of Plenty Times ,Page 2. 7 August 1883

[113] 19 March 1887 Te Aroha News

[114] see GIS

[115] Bay Of Plenty Times, Volume XI, Issue 1285. 1 June 1882.

[116] The Geology And Mines Of The Waihi District, Hauraki Goldfield, New Zealand. Morgan, P.G. Bulletin No 26 NZ Geological Survey. 1924. "A History of Mining in the Waihi Area"

1882. The alternative was the "Ohinemuri Bridge"[117] on what we now call the Old Tauranga Road. It is this ford, the only way of crossing the Ohinemuri in Waihi, that may have contributed to the Ohinemuri water supply dam for this battery not being constructed until after the second Tauranga bridge was completed. The dam would have obliterated the ford.

Only a brief description of the battery has been found.

A New Zealand Herald correspondent provides this description (22 February 1882):

> The shell of the building is almost completed. It is a fine substantial structure, built of heart of kauri, and capable of containing 40 head of stamps, although only 20 are to be placed in position at present. The whole of the inside work has yet to be done, but as most of the machinery is on the ground, this will not take long to get through.
>
> The construction of the water race has just been commenced, and judging by the few timbers which are in position, it will be a most substantial one. To connect the battery with the mine, an excellent tramway with an easy grade is being laid down. In the construction of the tramway, the best timber obtainable is being used. The sleepers and rails are all heart of kauri, cut by the contractor, Mr. H. H. Adams, in the bush at the back of Savage's lease.[118]

Beyond this we can speculate.

The first two batteries at Te Aroha may help us.

The Te Aroha Battery of 10 stamps and 5 berdans opened April 1881. It was built by H.H. Adams and cost £1,150, using a 20 horsepower steam engine.[119]

At the other end of the grandeur spectrum was the Firth and Clark Battery at Waiorongomai opened in early 1883. It boasted 40 stamps in a building of "85ft by 82ft, and the walls 18ft high"[120], 12 berdans, water races constructed by H.H. Adams. "No expense had been spared 'to make it as complete as possible'"[121]. The total spent by 1884 was £22,000.[122] See the Appendices (page 93) for an interesting description of this battery.

So a battery and water race costing £2,740 would be a modest affair at best.

A wooden building, weatherboard, on the downstream side of the small hill. Maybe corrugated iron was used? Adequate to house four stamper mortars (20 stamps, wet crushing; though the building was designed to accommodate 40 stamps) and amalgamated plates. The Martha Battery building to house 15 stamps was 52 by 46 feet (16 x 14m) so the Waihi Battery must have been bigger. Tramway supplying ore to the hopper at the top of the building via the top of the hill. Probably no stone breaker to start with. Substantial trestled water race, culminating in a vertical pipe, turbine at bottom. Various driving shafts and belts. Retort, assorted sheds, perhaps one or more dwellings. There may have been berdans; there were four by early 1884. Tailings discharged into the Mangatoetoe Stream, or directly into the Ohinemuri River (later some were saved).

Timber from the kauri forests north and west of Waihi, all other materials transported from Paeroa (Hart on Nicholl) by horse and cart via very basic roads; Mackaytown, Rahu, Owharoa.

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[117] Bay Of Plenty Times, Volume XI, Issue 1285. 1 June 1882.

[118] New Zealand Herald, Volume xix, Issue 6323, 22 February 1882. The Goldfields.

[119] The Te Aroha Battery, Erected In 1881. Philip Hart. 2016. p 20

[120] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 2

[121] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 4

[122] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 5

The Young Colonial claim/company shared the use of the mill and a tramway connection was completed by February 1883.[123]

Battery Blues

Despite the initial optimism, matters quickly turned to custard. The Thames Star reported on 24 August 1882:

> WAIHI.
>
> The Martha battery stopped working yesterday, the cause arising from insufficiency of water through the race having sunk in several places across the swamps. It will be two or three days before they commence crushing again, as it will take that time to put the race in repair.
>
> The Waihi battery also stopped crushing on account of the race having sunk in several place, and something being wrong with the turbine. I believe the turbine is to be sent to the Thames to be repaired, so it will be a long time before the battery will start work again.
>
> All hands, both at the battery and mine, have been discharged, and are all leaving for the Thames to-morrow. This will be a great drawback to Waihi, as about twenty men are thrown out of employment.[124]

Thames Star, 31 August 1882

> Yesterday. Waihi Gold Mining Company.
>
> According to the most recent reports from the manager, the water-race and battery are in a disgraceful state, the former having settled down considerably. Only about 30 strokes per minute can be obtained from the battery instead of 70, as was expected. We understand it to be the intention of the directors to hold some one responsible for the state of affairs [O-Oh!]. It has been suggested to send to America for a new turbine, and this will probably be done. In the meantime, all expenses will be curtailed.[125]

Thames Advertiser, 25 December 1882

> Martha Extended.—Contracts have been let by the directors of the Martha Extended Gold Mining Company for the fixing of the newly-imported turbine, the strengthening of the battery, and the raising of the water race, also for the completion of the tramway from the Young Colonial to the Waihi section. The total cost of these works will exceed £300. They are to be completed at the end of February.[126]

The New Zealand Herald waded in with this:

> 1 February 1883
>
> To reflect upon the disastrous 'mess' made of battery arrangements at Waihi is not a pleasant occupation, revealing as it does an absence of skill and management by no means creditable to the fifteen years experience this goldfields has passed through. Someone has blundered, and the shareholders have suffered. Three or four weeks ago a bran new turbine was imported all the way from America, but little is heard of its erection, those responsible possibly being of opinion that having waited so long they may as well wait a little longer. Rumour, a month or

[123] Isdale, 1978 (p 18 and 23)

[124] Thames Star, Volume XIII, Issue 4258, 24 August 1882

[125] Thames Star, Volume XIII, Issue 4264, 31 August 1882

[126] Thames Advertiser, Volume Xiv, Issue 4460, 25 December 1882. Mining Matters.

> two ago, had it that as soon as the turbine arrived Mr. E. M. Corbett was to set about rectifying other people's mistakes straight away, and that soon the sound of fifty stamps crushing right merrily would enliven Waihi once more.
>
> A mistake occasionally made in new fields is overestimating the water available. One or two good streams are conjured by the imagination into "sufficient for any quantity of stamps, Sir." But the practical test of compressing the supply into a race for battery use dispels this pleasant vision of the mind, for the amount available proves something exceedingly moderate, to grow beautifully less as the forest of the district becomes thinner. It is just possible that the Waihi miners had a somewhat exaggerated idea of the quantity of water available. Still, I am fortified by the opinion of practical and experienced men, who ought to be able to form a correct judgment, that there is ample water at Waihi, if skilfully utilised, to drive a large number of stampers, and that is what is wanted, for mining in that district will resolve itself into quarrying out immense quantities of low-grade quartz.[127]

Both the Martha and the Waihi batteries had difficulties with their (Adams) turbines, and new "Yankee" turbines were ordered from America. Until they arrived in late January 1883, little ore was crushed. It is not clear whether both batteries installed the new turbines; Martha was considering reverting to the older style of breast wheel[128].

However, changes were afoot.

> At the beginning of December, it was announced that 'the three principal companies owning ground at Waihi', the Martha, Waihi and Young Colonial, had 'agreed upon amalgamation'[129].

The Martha, Waihi and Young Colonial Gold Mining companies, running out of money, faced liquidation[130], and turned to amalgamation. Nicholl "thought it was a mad business, as the other claims were worthless to us, but in the end I chucked in the sponge, seeing the amount of money that had been spent by the shareholders and no return coming in."[131]

The New Zealand Herald reported a meeting held in Auckland on November 24, 1882:

> Martha, Waihi, and Young Colonial.— A public meeting was held yesterday in the offices of Mr. F. A. White, Shortland-street, for the purpose of forming the above three mines into a company. Mr. J. L. Wilson in the chair.
>
> It was resolved to form the above mines into a company of 50,000 shares, to be allotted as follows :—Martha. 15,000; Waihi, 12,000 ; and Young Colonial, 10,000—13,000 shares to be reserved for future operations.—It was agreed to wind-up the three companies; Mr. F. A. White to be liquidator. The title of the new company is to be "The Waihi Extended Gold - mining Company." The following gentlemen were elected directors :—Messrs. J. L. Wilson, C. J. Stone, E. Wayte, M. Vaughan, C. Alexander, H. R. Jones, J. Smythe, W. Hollis, and A. Porter.[132]

On February 9 advertisements appear in the New Zealand Herald:

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[127] Economising Motive Power. New Zealand Herald, Volume XX, Issue 6617, 1 February 1883

[128] Isdale, 1978 (p 20). A type of water wheel

[129] Hart on William Nicholl, 2016. p 109

[130] New Zealand Herald, Volume XX, Issue 6624, 9 February 1883

[131] Hart on William Nicholl, 2016. p 109

[132] New Zealand Herald, Volume XIX, Issue 6560, 25 November 1882

MARTHA GOLD MINING COMPANY (LIMITED). IN LIQUIDATION. All Accounts against the above Company must be rendered (in duplicate) to the undersigned, not later than 17th inst., or they will not be recognised. F. A. WHITE, Liquidator. [133]

Similarly for Waihi Gold Mining Company (Limited), and Young Colonial Gold Mining Company (Limited).

By May 31, a final notice was published:

MARTHA AND WAIHI GOLD MINING COMPANIES, LIMITED (In Liquidation).

Final Notice.

SHAREHOLDERS are hereby notified that LEGAL PROCEEDINGS will be taken against all persons who have not paid their Calls due, on or before 1st June next.

F. A. White, Liquidator. 1602[134]

In the meantime, on February 14 the New Zealand Herald published the application to register the "Martha Extended Gold Mining Company" as a Limited Company.

Mining Notices. I the undersigned, hereby make application to register the "MARTHA EXTENDED GOLD MINING COMPANY" as a Limited Company, under the provisions of "The Mining Companies Act, 1872."

1. The name of the Company is to be “The Martha Extended Gold Mining Company (Limited)”.

2. The place of intended operations is at Waihi, Ohinemuri Gold Mining District.

3. The registered Office of the Company will be situate at Shortland-street, Auckland.

4. The nominal capital of the Company is Fifty Thousand (£50,000) Pounds in Fifty Thousand (50,000) Shares of one pound (£1) each.

5. The number of shares subscribed for is thirtyseven thousand (37,000) being not less than two-thirds of the entire number of shares in the Company.

6. The number of paid up shares is nil.

7. The amount already paid-up is nil.

8. The name of the Manager is Francis Angus White.

9. The names and addresses and occupations of the Shareholders, and the number of Shares held by each at this date, are as follow:-

Name and Address		*No. of. Shares*
Captain James Stone Joseph Liston Wilson Edward Wayte	All of Auckland. In trust for Shareholders in the late Martha Gold Mining Company (Limited)	13,000
Charles Alexander, Auckland Mathew Vaughan, Thames Hugh Robert Jones, Auckland	In trust for Shareholders in the late Waihi Gold Mining Company (Limited)	12,000

[133] New Zealand Herald, Volume XX, Issue 6624, 9 February 1883

[134] Thames Star, Volume XIV, Issue 4494, 31 May 1883

Adam Porter Auckland James Smyth, Waihi William Hollis, jun., Waihi	In trust for Shareholders in the late Young Colonial Gold Mining Company (Limited)	10,000
Francis Angus White, Auckland	In trust for the Martha Extended Gold Mining Company (Limited)	13,000
Total		50,000

Dated this 12th day of February. 1883. F. A. WHITE, Manager.

Witness to signature: A. L. White.

I, Francis Angus White, do solemnly and sincerely declare that—

1. I am the manager of the said intended company.

2. The above statement is, to the best of my belief and knowledge, true in every particular, and I make this solemn declaration, conscientiously believing the same to be true, and by virtue of an Act of the General Assembly of New Zealand, intituled "The Justices of the Peace Act, 1866"

F. A. WHITE

Taken before me, Joseph Newman, J.P. [135]

It is not clear how the financial issues/legal proceedings were resolved.

The Dulcibel shareholders were not included in the amalgamation to start with.

Martha (Extended) Battery March 1883

Thus a new company is formed, and the Waihi Battery at the Ohinemuri River takes over the name of the useless Martha Battery. Although the new company is called the Martha Extended Gold Mining Company (Limited), the battery is referred to as the Martha.

So ends this early Waihi Company, and the name Waihi Battery, until a new Waihi Company is formed in late 1887, and a new Waihi Battery erected at Union Hill in 1888.

The Martha Extended Company

Nicholl:

> A scheme was proposed to amalgamate all the claims on the hill and remove the Martha battery down to Jones' site and make one battery of it, as there was sufficient room in Jones' building to add the Martha's 15 head to his battery. We all agreed, and a tramway was built to bring the quartz from the Martha mine to the battery. Mr J. H. Moore was appointed manager of the new company[136].

Philip Rainer has the new company launched on 31 March 1883.[137] Perhaps this was when the application (shown above) was approved. No launch date has been traced in the newspaper accounts

[135] New Zealand Herald, Volume XX, Issue 6628, 14 February 1883

[136] Hart quoting Nicholl in: Hart on William Nicholl, 2016. p 110

[137] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (11)

searched, though a December 25 1882 report already uses the name Martha Extended.[138] The manager, John Hoey Moore , was recently from the Smile of Fortune, Owharoa.[139] Renewed energy was being applied, with changes being made to the battery (still the original 20 stamps). A tramway was constructed to connect the Young Colonial drive with the main tramway.[140]

Presumably the new turbine was installed at this time. An August 1883 press report mentions a Leffel's improved double turbine water wheel.[141] Had they changed their turbine again? Or was this simply a reporters' error; both the Yankee and Leffel wheels were made in America.

The new name for the new company took some time to bed in (and still sometimes referred to as the "amalgamating claims"), with the Dulcibel remaining independent, but using 10 stamps in the battery for their ore.

> By April 12, 1883, the Waihi Extended's new manager (Moore) had enlarged and re-timbered the Young Colonial drive, and was driving onward with payable prospects. A new level was put in the Martha winze to open up a large block of ground for cheaper working. Dulcibel shareholders had arranged to crush 200 tons. "As soon as the mill starts they will occupy 10 head [stampers[142]]." They were putting in a crosscut to intersect the Waihi main level, "from whence they will forward the quartz to the mill."
>
> It was reported on April 26 that the battery of the Martha Extended at Waihi had commenced crushing on the 25th, "the turbine and all the machinery connected with it working in a highly satisfactory manner," doing 85 to the minute with a 9 inch drop "and used about half the water that was in the race". J.H. Moore, "manager of the amalgamating claims at Waihi", confirmed the satisfactory operation at 85, and said the battery would [soon] make a permanent start.
>
> By May 23 the Waihi battery was working 24 hours a day at 70 strokes per minute, "and as the stuff being treated is soft, a large quantity of dirt [ore] is being got through. The new turbine works well, and at the present speed does not use more than a third of the water available ... credit to the contractor Mr Corbett, as before he altered it the speed was only 35 blows per minute. Ten head of stamps are employed by the Dulcibel claim, and 10 by the amalgamated companies." Expenses were very light, and with no charge for motive power, "it will easily be seen that very low grade still will pay."[143]

"During October-November 1883, the company added 10 stamps to its battery, making 30."[144] These from the old Martha Battery, not used since the amalgamation.[145] In the new year, Dulcibel capitulates, and joins the Martha Extended Company. "By mid January, 1884, with the buying in of the Dulcibel, the Martha at Waihi became 'the only surviving claim in the district.'"[146]

All Martha ore was now being treated by the one battery by the river.

The Inspecting Engineer (to 31 March, 1884) had this to report:

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[138] Thames Advertiser, Volume XIV, Issue 4460, 25 December 1882

[139] Isdale, 1978 (p 21).

[140] Isdale, 1978 (p 20).

[141] Bay Of Plenty Times ,Page 2. 7 August 1883. The Leffel Company still trades. http://leffelcompany.com/

[142] numbers of stamps. 10 head = 10 stamps

[143] Isdale, 1978 (p 21 - 22).

[144] Isdale, 1978 (p 23).

[145] Bay Of Plenty Times ,Page 2. 7 August 1883.

[146] Isdale, 1978 (p 23).

> Crushing battery of 30 head of stamps and 4 berdans are erected, driven by a turbine water-wheel, and the battery is connected with the mines by a horse-tramway. The manager informed me that quartz containing gold to the value of 10s. per ton pays all expenses for getting out and crushing.[147]

And then this in 1885:

> The works in this Company's mine are carried out under the management of Mr. John Moore. The reef is an exceedingly large one, and though not all taken, crushing stuff is taken from it for a width of from 14 to 20ft.
>
> The average return per ton does not exceed 3 or 4dwts., and yet by judicious management, and crushing continuously, the large debt incurred for machinery, battery, tramways, water races, dams, &c., &c., has been cleared off, and now there is a large surplus on hand from which it is expected dividend will soon be paid.[148]

With regard the amalgamation of the companies, Nicholl wrote: "I took the contract to build the tramway to connect the Martha mine with the new battery. The tramway came along the side of the hill under where the number five shaft is and connected with the other tramways where the courthouse is now".[149] It seems most likely that this route was the same as the one used for many many years to transport ore off Martha Hill, despite Nicholl's (faulty?) recollection of the junction location (actually Silverton Road - Johnston Street). These early tramways were horse powered; it was not until 1896 that the Silverton Company brought in a small locomotive for their tramway, the first for Waihi.

The Ordinary Battery Process and Refractory ore

The problems faced by these two early Waihi batteries were much greater than the water power woes they suffered. Ohinemuri ore was not like the Thames ore that many of the miners would have been familiar with.

Ohinemuri ore was refractory. That is the gold was very finely divided throughout the quartz, and combined with sulphides. Silver was prominent in the ore. Gold recovery from this ore by the "Ordinary Battery Process" was low. Very low.

Let's look at the Ordinary Battery Process.

The traditional process for recovering gold from ore was by wet crushing by stamper battery, and then mercury amalgamation.

The ore was mined, and fed through a stonebreaker to reduce it to a size that was suitable for feeding to the stampers. Stampers crushed the ore by alternately lifting and dropping a series of heavy iron stamps onto the rock within a heavy cast iron mortar box (usually 5 stamps to a mortar box). The stamps were raised and dropped by means of cams attached to a horizontal shaft, driven by a convenient power source. There was some considerable noise and vibration generated here ☺.

The ore was crushed to the consistency of fine sand, washing through a mesh screen that controlled the particle size. A screen might be quoted as "60 mesh", which is 3,600 holes per inch—ie. 60 x 60. The crushed ore now passed over an amalgamated plate, which was a sheet of copper or muntz[150] metal that had a film of bright mercury amalgamated to it. The small particles of gold would amalgamate with the

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[147] AJHR 1884

[148] AJHR 1885

[149] Hart quoting Nicholl in: Hart on William Nicholl, 2016. p 111

[150] 60% copper, 40% zinc alloy

mercury, and hence be removed from the stream of the pulp (crushed ore) that was washing over the plate from the stamper.

Variations included amalgamated plates positioned within the stamper mortar box, free mercury within the mortar box, and/or further grinding/amalgamation in a berdan. A berdan is a circular pan or bowl, set at an angle and rotated by a central shaft. Iron balls or blocks inside the pan crushed the ore by grinding it against the sides of the pan as it revolved.

The amalgam (mercury and gold; very little silver was captured) was periodically scraped from the plates and retorted. The mercury was boiled off and condensed for reuse. The remaining spongy brown bullion thus recovered was smelted and sold.

This process, the ordinary battery process, worked adequately for so called “free milling ores”, ie ores in which the gold was in discreet particles, which could easily amalgamate with the mercury. But for the Waihi batteries with their difficult refractory ore, bullion recovery was as low as 25%.

The Waihi batteries used this process. Martha’s low grade ore (though plentiful) meant very lean returns. Improvements in yield were not achieved until c.1890 at the new Waihi Battery (on Union Hill) of the Waihi Gold and Silver Mining Company.

Assaying to determine the value of the ore was not commonly practised at first, and the losses by the ordinary battery process were not understood or even acknowledged (would you wish to advertise that your mill was discharging 60 to 75% of the bullion into the river with the tailings?).

Some years later (1897-1910), the Waihi Dredging Plant would suck up and reprocess amounts of these bullion-rich tailings discharged to the Ohinemuri River (at least 33,000 tons to 1910).[151]

John Hoey Moore[152]

Moore became Nicholl’s brother-in-law in 7 May 1888 when he married Mary Ann Nicks, widowed when her first husband died two years previously. She was again widowed when Moore died in an accident in 1893; three years later she was married, for the third and last time, to Henry Christian Wick (17 March 1896).

1885, Isdale:

> In May, 1885, the Hon. W.J.M. Larnach, Minister of Mines, made a general tour of the whole Hauraki goldfield. He found an impressive stope or "cavern" already at the Martha, the hollow space being 70 feet long, 18 feet wide, and up to 20 feet high. Mr J.H. Moore, with rains, had resumed crushing six weeks before. Water was inadequate to continue crushing through the summer, meaning shortening of hands and loss to the district. An extra water race was needed, and already they had spent £8,000 without return. Larnach would try to get something to help them build the new race.
>
> He was also shown where the Waihi-Tauranga bridge had been washed away by a flood. The ford was dangerous, and he was told a mail boy and two horses had been drowned.
>
> On September 16 the boundaries of the new Ohinemuri County were gazetted. It included the Ohinemuri group of mines.

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[151] See: Heritage notes on the Waihi Dredging Plant 1897 - 1910. Eric Lens 2005, also available at: http://www.ohinemuri.org.nz/research/heritage-on-the-hrt-cycleway/89-waihi-dredging-plant and also see: http://www.heritage.org.nz/the-list/details/7670.

[152] John Hoey Moore. From 1885 to 1889 he was an Ohinemuri County councillor and chairman from 1889 to 1890 (ORHJ 41). Not to be confused with Henry William Moore, or other Moores in the district

> Elections for the new Ohinemuri County were held on November 11, 1885. The Karangahake Riding returned Messrs Humphreys and Walsh, Waitekauri E.M. Corbett and J.H. Moore of the Martha. Paeroa had W.G. Nicholls, F. Cook and Hugh Butler, Waitoa Frederick Strange. (The last-named was made chairman.)
>
> During November, 1885, a visitor to Waihi was shown around the Martha battery, "on the opposite bank beside the crossing", by its "courteous and obliging manager, Mr Moore", who had had the battery "working day and night for a long time past." The number of claims originally pegged on the Martha hill had been absorbed into the Martha which now covered the whole ground. The battery was nearly a mile from the mine. [153]

An application for a water race was made in August 1885:

> Notice Of Application To Form A Water Race.
>
> Warden's Office, Thames, 28th August, 1885. Application has been made by a John H. Moore, for the Martha Extended Gold Mining Company (Limited), for a license to construct a Water Race for mining purposes, commencing at a point near Old Martha dam, on Walmseley's Creek, Waihi, and terminating at a point opposite Rosemont Hill, as shown on the plan. The length of such Race is two miles and a half or thereabouts, and its intended course is north westerly.[154]

A description of the extra water race mentioned above has not been traced, and it appears never to have been built. In 1887 a very similar race is applied for, and then forfeited. When the Cabbage Tree Creek (Waimata) race flume blew down in May 1887, the battery came to a standstill, suggesting this race was still the only water source.[155]

The dam on the Ohinemuri River was not constructed until 1895-6. In late 1891, early 1892, a water race was constructed on the Mangakiri Stream to add water to the Cabbage Tree Creek (Waimata Stream), and a race was constructed to capture the Mangatoetoe Stream. They are shown on various old maps. More on water races later.

> By 31 December 1885, the Company had increased its capital to £50,000. No dividends had been paid, and production to date totalled only £11,401. A total of twenty-four men were employed.[156]

1886

> On April 10, 1886, there was general heavy rain following a drought, and the Martha battery creaked into life again after long disuse and began thudding away at the limitless supplies of low but even grade quartz. The Silverton [mine] across on the next hill continued to produce very rich "specimens". It was more patchy.
>
> So far Mr Moore had taken out 50,000 tons of quartz, giving 3 to 5 pennyweights to the ton, and that had been proving payable.
>
> Martha battery was using 10 of its stamps to crush rich Silverton ore (late 1886). [157]

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[153] Isdale, 1978 (p 25+).

[154] Thames Star, Volume XVII, Issue 5185, 29 August 1885

[155] Se also story in: New Zealand Herald, Volume XXIV, Issue 8032, 20 August 1887

[156] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (11)

[157] Isdale, 1978 (p 32+).

> From the Union mine "a trial of 34 tons of second-class stuff at the Martha Battery gave 54oz. 3dwt. melted gold or bullion".[158]
>
> ******
>
> Very much gold was being lost in treatment all through the goldfield ... Te Aroha ... At Waihi, where special pits were made to save the tailings for 45 tons of stone from the Silverton mine, the quantity thus saved proved to be worth £15 per ton." No steps were taken at either Waihi or Karangahake to prevent such waste.[159]

"Waihi" in the above quote presumably means the Martha Extended Company.

The Silverton Company was using 10 stamps of the Martha Battery, and knew to save their tailings. The earliest photograph of the battery (1898[160]) shows a tailings impoundment, with wooden dam, in the old stream bed of the Mangatoetoe Stream beside the battery. Whether this was being used this early is not known.

The Silverton had "produced the richest stone yet found in Waihi."[161]

> The recent crushing of the Silverton dirt which realised for about 40 tons stuff and 500lbs picked stone a nett. value of £570 in bullion, looks very well, but when one considers that there remains another £700 worth of gold in the tailings which is not lost any more than was the Dutchman's anchor in the bed of the Pacific, it must appear that there is something very rotten in the present system of ore reducing.[162]

What happened to these tailings? Director and part owner of the Silverton Company, J.A. Pond[163], had "superintended 'the reducing of the picked stone'". "By August 1887, as he had 'ascertained by making a series of assays while the battery was in operation, that very little more than 25 per cent of the bullion value of the ore was being saved', he proposed that the tailings be re-processed." By roasting, desulphurising, and panning of ores.[164] It is not clear to what extent this may have happened.

The Firth and Clark Battery at Waiorongomai erected a rotary reverberatory furnace in 1887 in an attempt to improve recovery from Waiorongomai ore[165], and Long Drive Walker determined that ore roasting would be implemented at the Waihi Battery (Union Hill) when that was established in 1888.

1887

Te Aroha News, 8 January 1887, provide this report, which includes part of the Report to the Directors of the Martha Extended Company by Adam Porter, Chairman. Auckland, December 1, 1886.

> The annual meeting of the Company was called for Thursday December 30th, but as there was not a quorum present it was of an informal character, and no resolutions were passed. The following was the directors' report prepared for presentation :— The directors beg to lay

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[158] AJHR. Mines Inspector to 31 March, 1886

[159] Isdale, 1978 (p 35).

[160] by which time it was owned by the Silverton company, and called the Silverton Battery

[161] Isdale, 1978 (p 35).

[162] 1 July 1886 Bay Of Plenty Times, Volume XIV, Issue 2006

[163] This is the same Mr J.A. Pond, Government analyst, who undertook the analysis of water intended for the Waihi municipal water supply to the Waihi Borough Council in February 1904. See: Heritage notes on the Waihi Municipal Water Supply Dams, 1904 –Present. E Lens 2005. Or at: http://www.ohinemuri.org.nz/research/waihi-municipal-water-supply-dams

[164] James Alexander Pond: An Auckland Chemist Involved In Mining. Philip Hart 2016.p 36

[165] The Firth And Clark Battery At Waiorongomai. Philip Hart 2016. p16-20. Te Aroha mines struggled as their ore was also refactory, and worse, contained base metal impurities (copper) that meant that cyaniding was also largely unsuccessful.

> before you their annual report, and regret to state that the prospects held out at the last annual meeting have not been realised, as up to the present time no cheap process has been discovered whereby a larger percentage of bullion can be saved. The directors are aware that several new processes are now offered to mineowners, and they are of opinion it would be advisable for the shareholders to take into consideration the advisability of adopting one of the processes most adapted to our class of stone. The directors also understand that there is a scheme on foot to connect the mines of the Rosemont district with our company's battery [This never happened?]. If such is the case, we think it would be advisable to render some assistance in the matter. Very little crushing has been done for several months past, but the manager is at present engaged in opening up two blocks of ground which he considers payable. Several small portions of the mine have been let on tribute, which are now being worked by tributers, the company deriving a small revenue therefrom.[166]

Gloomy! Isdale suggests that Martha did "talk of a chlorination plant, which could be put up for about £400"[167], but no further mention of this has been found. Isdale goes on to provide production figures:

> Companies actually in operation on 31 December, 1885, with production values and date of commencing operations, included (Ohinemuri):
>
> Martha Extended (Waihi), March 31, 1883 (date of formation of existing coy.), 24 men, production worth £11,401 (to 31.12.85. Silverton (Waihi), Dec. 1885, 6 men, no production given to Dec. 31, 1885. Union (Waihi), Oct. 1885, 8 men, no production to Dec. 31, 1885. Rosemont (Waihi), Sept. 9, 1885, 6 men, no production to Dec. 31, 1885.[168]

Water and Weather Woes

Lack of water to drive the battery was an on-going problem. Then, perversely, floods.

> The heavy rains did not really break the drought, and early in March the Martha mine at Waihi had its hoppers stuffed full with quartz awaiting water for the battery. [169]

A Special Correspondent for the Te Aroha News, on a trip from Auckland to "the Thames and adjacent goldfields" gave a report published 19 March, which included comments on Waihi.

> On visiting the battery I was astonished to find in such an out of the way place such completeness in detail. The mine to which the battery belongs is about a mile and a half away, and the connection is made by a tramway which has cost about £600. The company has constructed a water race for motive power about a mile long at a cost of over £1500, the fall from this race into Leffle turbine is 28ft. The battery has 30 heads of stampers, but owing to want of water they are only using eight heads at present.[170]

It seems the company did indeed install a Leffel wheel, under 28ft (8.5m) of head.

In May 1887, about 100m of fluming blew away:

> Paeroa last night. A deal of damage has been done by gale in Ohinemuri. At Waihi about five chains of the Martha Extended water race [Cabbage Tree Creek or Waimata flume], was

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[166] 8 January 1887 Te Aroha News

[167] Isdale, 1978 (p 38). 18 June 1887 Te Aroha News

[168] Isdale, 1978 (p 35-36).

[169] Isdale, 1978 (p 36).

[170] 19 March 1887 Te Aroha News

> carried away by the wind which will suspend operations for a month and keep upwards of 1000 tons ore awaiting crushing.[171]
>
> ******
>
> Paeroa, Friday.
>
> From Waihi there is a sad state of affairs to chronicle. Early on Tuesday morning when the gale was at its worst the battery, of which 20 head of stampers were then in full operation, suddenly came to a standstill caused by a falling off in the water supply, and upon examining the race at the battery end it was found to be empty. At first it was supposed that a breach had taken place in the breastwork of the dam which is located about half a mile from the mill, but when travelling along in that direction one of the hands was somewhat surprised to find that several chains of the trestle work belonging to the race had been knocked down and it was here that the water had made its escape. This battery has been idle or comparatively so for want of water during the past four months, and it is very much to be regretted that this mishap should have occurred just at a time when there is an abundance of that element available.[172]
>
> ******
>
> More damage than was at first thought has been done by the recent gale it Ohinemuri. The Waihi (Martha Extended) water race had a nasty mishap and some three chains were blown away. Mr D. Farrell is the successful tenderer for repairing it at the low figure of £24 16s, (labour only).[173]

Quickly followed by:

> Another flood came on June 25, 1887, causing extensive damage to dams, water races and fluming at Karangahake, and carrying away fluming at Waihi.[174]

This was also reported in the Te Aroha News with more detail:

> WAIHI The Ohinemuri river rose here to a height which surpasses all previous flood records, and at one time, when the water was at its highest, it was thought that the Martha battery and all its attendant paraphernalia was doomed to destruction. In fact, if it had not been for the care exercised by the manager and some of his employees, the water race and a considerable amount of timber belonging thereto would certainly have come to grief, as it was two legs supporting the water race [Cabbage Tree Creek or Waimata flume], in mid-stream [as it straddled the Ohinemuri River] were snapped off by the force of the current, but not before the manager had secured both by making them fast to ropes prepared for the purpose.[175]

A correspondent of the Thames Advertiser, in August 1887 reported on a two day trip to the Waihi mines.

> To accomplish this journey at present the traveller requires the strength of a horse and the courage of a lion, backed up by a large admixture of 30 O.P. whiskey, so as to render him sufficiently reckless with regard to the risk which he runs of losing himself in one or other of

[171] 12 May 1887 Bay of Plenty Times, Volume XV, Issue 2137

[172] 14 May 1887 Te Aroha News

[173] 21 May 1887 Bay of Plenty Times, Volume XV, Issue 2141

[174] Isdale, 1978 (p 36).

[175] 25 June 1887 Te Aroha News

the "sloughs of despond"[176] that occur at very frequent intervals, by way of relief to the monotonous sea of mud with which the road is covered.....

Here it may not be out of place to say that I visited the Martha battery, where 15 head of stamps are employed as follows:- 10 head on Silverton quartz, and 5 head on stuff from one of the tributers in the Martha mine. By way of illustrating the economical manner in which the affairs of this company are being managed, I may remark that the battery plant, which is running full time, is looked after by two men, who work twelve hour shifts each. They do the feeding, blanket washing, amalgamation, and attend to the berdans, tail race, and tailing pits, which have to be cleaned out very frequently.

The whole of the tailings belonging to the Silverton company are being saved in a series of 6 pits, which are located about 4ft apart, and are each large enough to hold about 10 tons. As the result of previous crushings for this mine there are about 150 tons of tailings stacked on the uphill side of the pits, and the assay value of these is said to be over £12 per ton. The 90 ton parcel which is now going through the battery is shaping for an all round return of fully one ounce per ton, and the clean up which will take place in about 10 day's time should give about 100oz of retorted gold.

The idea of saving the tailings emanated from Mr J.A. Pond, Colonial Analyst, who is one of the shareholders, and who ascertained by making a series of assays while the battery was in operation, that very little more than 25 per cent of the bullion value of the ore was being saved by that process, and therefore he determined upon saving the residue in the manner above described. The next question which presents itself for consideration is how will these tailings be dealt with in order to extract the bullion contained therein.[177]

Are the tailings pits, referred to above, in the old Mangatoetoe Stream bed (as shown in the 1898 photograph)? If so, then the stream has already been diverted, maybe as early as 1896.

AJHR 1887

Martha Mine is still under Mr. John Moore. The battery in connection with this mine consists of thirty stampers and six berdans. The tramway is one and a half miles long, and the quartz can be delivered into the battery at a cost of 9d. per ton. The long summer drought has caused a great scarcity of water, and for some months only sufficient could be obtained to occasionally drive a portion of the stampers.

Silverton.—This mine is also under the charge of Mr. John Moore. At the Martha battery 160 tons have been treated by the ordinary stamper process, which gave a return of 3oz. per ton, the gold being valued at £2 18s. per ounce. Another 100 tons are now in the paddock for transit to the battery as soon as the rain comes and gives sufficient power to drive the stampers.

Union Gold-mining Company.— At the Martha battery 400 tons have been treated for a return of l 1/2oz. to the ton. Of this quartz 50 tons have been selected and exported to England and America for trial.[178]

Inspecting Engineer to 31 March 1887, discussing the Silverton mine and its ore crushed at the Martha Battery:

150 tons of stone have been crushed by the ordinary battery-process, which yielded about 3oz of gold per ton, value £2 18s. per ounce. The loss in crushing this class of ore with the ordinary

[176] a reference to a phrase in Bunyan's "Pilgrim's Progress". Slough meaning quagmire, swamp

[177] Thames Advertiser, Volume XVII, Issue 5853, 5 August 1887

[178] AJHR 1887

> battery-process is something enormous. When the stone is rich in silver not more than 20 per cent of the bullion is saved, the whole of the silver being carried away with the water. It is quite disheartening to the owners of these claims to know that they have a valuable property, and cannot extract the metals from the ore.[179]

Water Race Shepherding?

As we have seen, water power was critical for the early batteries. This was a limited resource, and more so in dry weather. Wood fired boilers used an expensive and rapidly dwindling resource. Coal fired boilers were used once coal became available in Waihi after the railway was completed in 1905.

So it is of interest to note that in 1887 four water races were applied for, all apparently from the same source, what we now think of as the Walmsley Stream.

- J.W. Walker applied on behalf of the Union Company in February, application to be heard in March (and granted? but no evidence found that it was granted)
- E. Kersey Cooper applied for his Winner claim, and was granted in late April. He got protection in October.
- Martha Extended Company forfeited in September the water race granted them in July.
- Pond, on behalf of the Silverton Company, applied August, granted October.

None of these were ever constructed, but their forfeiture has not been further traced. The Waihi Gold Mining Company constructed a very similar water race in 1889.

It appears the Martha Extended Company intended to put in a new water race for the battery (remember it applied also in 1885). It forfeited this one in September 1887. "Water Race, declared forfeited by the Mining Inspector. Water Race No.-, situated at Waihi, held under license dated 22nd of July, Extended Gold Mining Company, Limited; commencing at a point on Walmsley's creek, and terminating at the Waihi Extended battery site."[180]

This would be an ambitious project. Did they intend to reuse part of the old Martha race? Or was this a speculative or manipulative application? It seems possible that the various companies mentioned above were jockeying for water rights.

Of interest is Walker's comment about his water race application in this passage from the Thames Advertiser, February 1887 "Mr Walker said it was an old water race right which he was originally intending to obtain, and which had, as he thought, been abandoned some time ago, but on enquiry he found it was still protected."[181] Was this old race the original Martha race?

Further, it appears that two water race rights (which seem very similar) could exist at the same time. In October 1887 Pond's application was granted, and Cooper's right was granted protection.[182]

Water rights were subject to goldfield regulations. If these regulations could not be complied with, then an application could be made for "protection" from forfeiture.

> 28. The cutting and formation of a race must be commenced within one calendar month from the date of the license, and the occupier shall continue cutting and forming the same, or

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[179] AJHR Inspecting Engineer to 31 March, 1887

[180] 24 September 1887 Te Aroha News

[181] 25 February 1887 Thames Advertiser

[182] 22 October 1887 Te Aroha News

engaged in necessary work connected therewith, until the work is completed, otherwise such license shall be deemed forfeited.[183]

John Moore Leaves

On October 15, 1887, J.H. Moore, manager of the Martha and Silverton mines, who was leaving for his new sphere at Maratoto, was farewelled at Waihi.

It was reported around October 25, 1887, that at Waihi, with Moore gone to Maratoto, five tenders were received for working the Martha Extended on tribute.

Early in November it was noted that the Martha battery at Waihi was being kept going with 20 stampers on the quartz from the various tribute sections. All the tributers were finding their returns payable. A man could at least make wages there.[184]

Tributers had been working sections of the mine since at least 1886[185]. The tributers were the Hollis brothers, William and Fred, and party, and Brown and party[186], and probably others.

William Hollis

Hollis, with his brother, had at Waitekauri

> discovered Butler's Reef, containing a rich patch of gold, some of which yielded over twelve ounces to the ton, and the company took six ounces per ton out of the tailings by the berdan treatment. In one period of three weeks the tributers made as much as £763 per man, after all expenses had been paid. Mr. Hollis afterwards took the Waitekauri mine and battery on tribute, and worked it with success for two years and a half. After a successful career at Waitekauri, he removed to Waihi, and pegged out the Young Colonial, now one of the best parts of the Waihi mine.[187]

William Hollis had married Nicholl's sister-in-law Sarah Margaret Compston in 1882.

Hollis took over from J.H. Moore, working on tribute from October 1887 until the Martha mine was purchased by T.H. Russell and transferred to the Waihi Gold Mining Company Ltd. of London. He remained mine manager until handing over to Thomas Gilmour on 5 February 1891.[188]

The Martha Extended Company and their battery plod on

No mention has been found of any changes made to the battery up to this time. Running repairs and some modifications can be safely assumed. From the years 1883 to 1889 approximately 30,000 tons of ore were crushed for a return of £17,370.[189]

Most of the bullion was being consigned to the river, the company, and later tributers, barely covering costs. It is hard to tell from the literature what attempts were being made to improve recovery rates.

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[183] Regulations for Ohinemuri Gold Fields Under The Gold Fields Act, 1866. See Appendices p 95

[184] Isdale, 1978 (p 39-40).

[185] 8 January 1887 Te Aroha News

[186] 26 February 1887 Te Aroha News

[187] The Cyclopedia of New Zealand [Auckland Provincial District], 1902 Page 508

[188] Gold Mining at Waihi 1878-1952 JB McAra. p 46 (6)

[189] Bulletin No 15 NZ Geological Survey. p 10, 143

Isdale suggests that the battery may have had an assaying plant by 1886.[190] Batteries throughout the Ohinemuri and Te Aroha districts were failing to treat their ore successfully at this time.

Experiments with new methods had been made at Karangahake and Thames; none were useful. The Martha Extended Company presumably felt they had little option but to soldier on. They were making wages, well at least the tributers were. Both the Union and Silverton Companies were able to run parcels of ore through the battery; Silverton taking the precaution of saving the tailings. Parcels of ore from different companies could be processed in the battery concurrently. Each five stamp mortar had its own amalgamated plate and berdan(s), and could have its own ore bin. The mercury amalgam would need to be retorted separately.

Water for the turbines was often inadequate, with crushing ability frequently reduced, or stopped entirely. They sought to boost their water power by the construction of a new water race from Walmsley's Creek (or possibly reuse the old Martha race), but this was never built.

The Martha Extended Company had stayed solvent, paid wages, and helped to create a small township. They also tipped thousands of tons of rich tailings into the Ohinemuri River.

With Moore's leaving, the company may have felt leaderless; he was a popular manager. His departure was celebrated by a "spread [celebration with food] and a very enjoyable evening was spent"[191].

A 11 March 1886 Bay Of Plenty Times article on the Ohinemuri Goldfield seems to sum it all up:

> Martha Extended. — The mill is in full swing. Twenty head of stamps are working on stuff that will give the usual sort of return. The peculiarity of this mine is that it can profitably work on stone that will not give more than 5 or 6 dwts to the ton. It seems strange that other claims on this field are closed up, if within a few months of starting they do not give a big dividend, while this conservative old mine can be kept going year after year on such small returns, while not creating enormous fortunes for individuals, yet employs manager and men, and circulates money. Such mines deserve every success.[192]

But by early 1888: **Mine and Battery 4 Sale**!

> The long drought and internal discords between the battery lessees, and tributers have suspended crushing, and hindered mining operations, but the advent of rain will probably see another handsome return from some of the tributers which may be the last crushing they may have, as the plant and ground of the Martha Company are advertised for sale.[193]

Unprofitable mines may be difficult to sell. At the end of 1888 the company was advertising for tributing tenders, for 12 months from February 1889.[194] That would allow the company to stagger on until early 1890.

That the company eventually lost heart can be seen from the sale of mine and battery to Thomas Henry Russell for £3000 in April 1890[195]. The company was exhausted and saw a handy cash price and exit. Russell saw it differently.

The battery would be surplus to requirements. More on this later.

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[190] Isdale, 1978 (p 31).

[191] 15 October 1887 Te Aroha News

[192] 11 March 1886 Bay Of Plenty Times, Volume XIV, Issue 1960

[193] 15 February 1888 Bay Of Plenty Times, Volume XV, Issue 2244

[194] 28 December 1888 Thames Star, Volume XX, Issue 6154

[195] Waikino And The Victoria Battery. By Alistair M. Isdale, BA. JUNE, 2000 (p 2)

Introducing the Rosemont, Union and Silverton Mines

Whilst the Martha Extended Company was scratching a living from its under-performing battery, activity was occurring on the small hills to the south east of Martha Hill. For extended discussion of Union Hill mining, and the Waihi Battery, see**:** *Historic Features of Union Hill Waihi. Research by Eric Lens 2003 – 2004*; and *Union Hill Early Mining History: Early Events Pertaining to Union Hill Waihi, including Mining Claims, and Prominent People (Eric Lens 2010)*, produced for inclusion in *Conservation Plan For Union Hill, Waihi. Phillip R. Moore 2010*.

The Rosemont, Union and Silverton mines, their ore rich in silver, were seen as more promising and valuable than the Martha. Some incredibly rich specimen samples were obtained.

1885

> Some very rich reefs and leaders have been discovered and opened up in the Silverton, Union, Rosemont, and other claims, the stone obtained being very different from any previously got in the district—it is largely impregnated with silver, and has essayed up to very high figures.[196]
>
> ******
>
> WAIHI. Rosemont. —There can be no two opinions about the value of this ore, of which some has assayed 50ozs of gold and 500 ozs of silver to the ton.[197]

1886

> On Thursday last Mr J.W. Walker took down to Thames a sample of a parcel of stone now on its way to the smelting works, from the Union Claim, Waihi, which being assayed, yielded at the rate of 27ozs 2dwts 6grs of gold and 165ozs 9dwts 3grs of silver. Mr Walker avers that the stone was taken as a fair average sample from the bulk, and that on examination by himself and experts they failed to discover the slightest show of gold in it The above assay shows a value of £141 per ton.[198]

John Watson (Long Drive) Walker, with Thomas Russell (father of T.H. Russell), floated the Waihi Gold Mining Company in December 1887 with English capital. "The mines to be worked were the Union, Rosemont, Amaranth, and the smaller Trio, Nelson, and Winner claims."[199] The Silverton was not included.

The company would establish the Waihi Battery (Union Hill), which was intended to process the difficult ore successfully.

John Watson (Long Drive) Walker and the Union Mine

Walker was one of the party that proposed to establish the first Martha Company in 1881, from which he withdrew (see The First Company, page 14).

In 1885 he was granted the Sheet Anchor claim, but forfeited it the following year.[200]

December 1885 had the first mention of a United [presumably Union] claim.[201]

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[196] AJHR. Warden's Report to 31 March, 1886

[197] 7 November 1885 Te Aroha News

[198] 27 February 1886 Te Aroha News

[199] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (13)

[200] John Watson Walker: A Leading Mine Manager. Philip Hart 2016. p 33

1886 saw him as “one of the largest shareholders in the Union as well as its manager”.[202] Mr E. K. Cooper in charge.[203] In April:

> Union. — Crushing for this mine with 10 head of stampers was started in the Martha Battery last week and by the show on the plate, the return should at least be worth 2½oz to the ton.[204]

Early in 1887

> Mr J.W. Walker informs me that he has received a cablegram dated January 29th from Home stating that the Union mine has been successfully floated on the English market for the magnificent sum of £100,000, half of which will be spent in the opening up and development of the mine.[205]

The significance of this is not entirely clear to me. This “fact” was also reported in Thames Advertiser.[206] Hart suggests Walker had not gone to London at all.[207] If a company was floated at this time, it seems that this event was overtaken by events later in the year. By the middle of the year was reported “the Union Mine, which they intend floating on the English market as soon as possible” (see below).

> John Watson Walker: The "Union" Gold Mining Company, Limited applies for a Battery Site on the Waitete River [Waihi was sometimes called Waitete early on; presume Ohinemuri River], immediately adjoining and northward of the Amaranth Licensed Holding, to the River bank. Also applied for a Special Claim of about 70 acres, bounded on the west by the Sheet Anchor claim [which he re-applied for in August 1886]. Also applied for a Water Race. The Race head is on the Waitete River [What we think of as Walmsley’s Creek. Race never built?] near Walmsley's Agricultural Sections, and Crosses the plain past the Union mine, and onward to the Battery Site on the main river.[208]

In April:

> Eighteen tons of quartz from the Union mine, Waihi, sold in London for £43 7s per ton; gratifying in the extreme.[209]

In June Thomas Russell has been encouraged to come and have a look, and by August was off to England with Walker.

> Last Sunday this place was visited by the Hon. Thomas Russell C.M.G., who was accompanied by Messrs J. B. Russell [James Russell, brother], Henry Russell [Thomas Henry, son], Thomas Morrin, and J. W. Walker, who are all interested in the Union Mine, which they intend floating on the English market as soon as possible.[210]

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[201] Te Aroha News 12 December 1885

[202] John Watson Walker: A Leading Mine Manager. Philip Hart 2016. p 33

[203] Te Aroha News 27 February 1886

[204] Bay Of Plenty Times, 22 April 1886

[205] Bay Of Plenty Times, 10 February 1887

[206] Thames Advertiser, 5 February 1887

[207] John Watson Walker: A Leading Mine Manager. Philip Hart 2016. p 34

[208] Te Aroha News 12 March 1887

[209] Te Aroha News 9 April 1887

[210] Te Aroha News 4 June 1887

> Mr J. W. Walker will be a passenger for England by the R.M.S. Alameda from Auckland on Monday next, in connection with the floating of the Union mine, Waihi, and others on the London market. Mr Thos. Russell, C.M.G. will also be a passenger by the same steamer.[211]

By mid December 1887 the Waihi Gold Mining Company Limited was established.

> The following cablegram was received yesterday by Mr J. Russell, chairman of the Union Gold Mining Company, from Mr Thomas Russell: "Company floated, capital £100,000, Union get 30,000 paid up shares, Rosemont, 11,000, cash. Mines floated under name of Waihi Gold Mining Company Limited. Shares be saleable shortly."[212]

Throughout this year, as Walker was busy organising the various claims to come together under the new company, certain responsibilities had been missed, and liberties taken. One headline in the Te Aroha News claims Evasion of the Mining Act.

> The law compels all mining companies to publish half-yearly statements of their operations, and failure on the part of the Union Company at Waihi, Auckland, to so comply with the Mines Act has been brought under the notice of Mr Seddon by some shareholders and interested speculators.[213]

"Interested speculators" may have included E.K. Cooper, who held the Winner claim. James Russell wrote to Walker in March 1887, concerned to learn that Cooper was applying for a fresh water right. "I hope this will not interfere with our water race and commend the subject to your careful consideration." 'Our water race' presumably the one Walker applied for in February. Russell went on to "enclose an extract from the NZ Herald respecting the Union - the style is remarkably like our little friend Kersey's.....I hope we are safe against any chance of forfeiture, jumping, etc. I also commend this to your very careful consideration." [214]

Even if Cooper did not author the Herald article, James Russell was fearful, and it suggests that tensions were running high in Waihi. Hart reproduces part of the article:

> From a Correspondent.
>
> Mr Kersey Cooper is still driving ahead for the lode. The tunnel is in 450 feet. The Mining Inspector might be less usefully employed than affording this district a little of his attention. Far be it from me to desire anyone's property forfeited, but, on the other hand, shepherding valuable mines will never send the place ahead.
>
> The Rosemont is manned. Yes, one solitary man is holding seventy men's ground. And yet there is a large quantity of more than payable quartz on the upper levels. There were two men up till Christmas; since then, "the last rose of summer." How does that chime in with the new Act?
>
> Another patient for Dr McLaren [James Monteith McLaren, the mining inspector] – the Union. Here there are two men, who resemble Israel at the time of the Judges – each doeth what seemeth best in his own eyes. Report says they have not received any money, nor seen their boss for at least two months, and don't know what to go on with. However, they should be happy, for are not Unions quoted at half-a-crown?[215]

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[211] Te Aroha News 13 August 1887

[212] Te Aroha News 17 December 1887

[213] Te Aroha News 10 December 1887

[214] Edward Kersey Cooper: Mine Manager And Mine Owner In Hauraki. Philip Hart 2016. p 22

[215] Waihi [From a Correspondent]', New Zealand Herald, 14 March 1887, p. 5. In: Hart on Cooper 2016. p 23

The Waihi Gold Mining Company's Waihi Battery (1888)

With Walker as manager, the Waihi Gold Mining Company set about building a battery at the base of Union Hill. The first annual report indicates how the company intended to set off, and how well it went.

> MILL PLANT.—Under the best advice obtainable the Directors determined upon adopting a system of dry crushing, roasting followed by amalgamation in pans, and to accomplish these objects they provided and erected a Mill with Settlers and Wheelers pans, a Howell furnace, several roasting kilns; stone breakers, a set of Eckart rolls and two Globe Mills for reducing the quartz prior to roasting in the furnace and amalgamation in the pans. The whole driven by a steam engine.
>
> After repeated trials the Globe Mills proved inadequate to the work required; the steam engine was found not to have sufficient power to drive the whole of the mill machinery.
>
> There have been mistakes made in connection with the Mill, involving loss of time and waste of money. Some of these failures were, no doubt, incidental to starting a process, new to New Zealand, for the special treatment of our ore. The Directors can see no good result from apportioning blame for these mistakes. The necessary steps have already been taken to rectify them.
>
> At the outset of the Company's operations the cost of timber and other materials required, the cost of transport over long distances and difficult roads, and the cost of construction of the buildings, works and roads were all very much under-estimated, moreover as the plan of operations was developed, the actual requirements became much more extensive than was at first realised, and it soon became apparent that sufficient working capital had not been provided.
>
> Shareholders will remember that the original plan was to drive the machinery of the mill by water power; it was not carried out at the commencement for want of funds, and because the estimated cost was greater than it was afterwards found to be, and the Directors were advised that steam power would more cheaply and speedily procure funds from the mine with which to construct the water-race. The original plan has now been resorted to. Contracts have been made for constructing the water-race so as to drive the whole plant by water power.[216]

Detailed coverage of the Waihi Battery, construction and development, can be found in*: The Waihi Mill on Union Hill*, a document which pulls together text from Mines Statements, Annual Reports of the Directors, EG Banks 1911 and McAra. Therefore this material will not be presented here.

For a well considered summary of events we can't go past Philip Rainer's analysis; an extract well worth reading is presented in the Appendices: Rainer on the Early Waihi Goldmining Company (page 98).

Of importance to our story is the purchase of the Martha Extended Company by Thomas Henry Russell on April 23 1990[217], and its offer to the Waihi Company on 7 July[218].

The Martha Extended Company was gone, Martha mine taken over by the Waihi Company. The idle battery was not required by its new owner. In time it will be sold to the Silverton Company.

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[216] Report Of The Directors. For the year 1888

[217] Waikino And The Victoria Battery, Alistair M. Isdale, BA. June 2000 (p2)

[218] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (21)

Thomas Henry Russell

Not a great deal is known about Thomas Henry Russell (son of Thomas Russell and often called Henry or Harry). "At the end of May, he was attending Board meetings in Auckland, and shortly thereafter was elected to the Local Board".[219] He worked as superintendent of the battery; rather independently it would seem, but technically under manger J.W. Walker. He had an interest in things technical, and became obsessed with perfecting the battery machinery to provide higher bullion extraction rates. Educated at the Thames School of Mines (I think)[220], he understood the value of assaying ore.

He was aware that an immense sum of money had been spent on the Waihi Battery, and that the ore reserves of the Union Hill mines were limited. He had been inspecting the Martha mine and tip heads, making assays. He saw large reserves of low grade ore, which the Waihi Battery, when perfected, should be able to process economically. How the Martha Extended Company was fairing was no secret.

In a very bold move he made an offer to the Martha Company, using his own funds. The Waihi Gold Mining Company was teetering on the brink of insolvency. Would it last long enough to make use of the Martha mine, and justify his purchase?

> At the same time he bought up a number of smaller claims, as well as the Waitekauri mine a few miles from Waihi.
>
> On 7 July [1890] the Local Board received a proposition from Thomas Henry Russell offering to 'hand over to the Waihi Company all his interest in certain properties at Waihi'. The offer was accepted. Local Chairman James Russell wrote to London advising that for a payment of £6,000 and 20,000 paid-up shares, the Company had acquired the Martha mine and plant, the Britannia, Nut, and other adjoining claims.
>
> As usual Inspecting Engineer Gordon entered the fray. 'It seems scarcely credible that the Martha Company should have parted with so valuable a property.' He attributed the sale solely to the fact that few mining companies relied on assaying, and thus did not realise the value of their holdings.[221]

The Waihi Battery started bringing in ore from Martha mine, but continued to mine and process ore from Union Hill for the time being. Mining stopped at Union Hill in April 1893[222], as all effort was directed towards the huge Martha reefs. Mining would be resumed on Union Hill when the Union-Waihi Company was split off from the Waihi Gold Mining Company in 1895.

The Silverton Gold-mining Company, Limited

John McCombie had marked out the Silverton claim on 12th of August 1885.[223] However Hart states:

> When Pond visited Waihi in March 1886, he was contemplating erecting a plant there 'quite as efficient and much cheaper than the La Monte process', then being seen as a possible solution for treating ore.
>
> Whilst there, along with John McCombie he pegged out the Silverton ground; they named it after the latest mining sensation in Australia, near Broken Hill. Pond held 3,080 of the 24,000

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[219] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (18)

[220] The Thames School of Mines has a Russell, (no initials, simply recorded as pupil) enrolled in four classes in 1887.

[221] Company Town, an industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Philip Rainer. 1976 p (21)

[222] Isdale 1978 p (60)

[223] 24 October 1885 Te Aroha News

> shares in the company of that name formed to work it. Elected a director, he worked on developing a new process to treat the tailings[224]

But it is clear from press reports that a Silverton property was being worked towards the end of 1885. For example the Te Aroha News reported on 14 November 1885 (also giving a little history):

> The next claim on the same line of reef going north, is known as the Silverton, ... and some four years ago a party of prospectors drove a level a distance of 300 ft intersecting the reef at a depth of 50ft beneath the surface. At this point it measured from, wall to wall, fully 17ft in thickness, and though there was no gold visible in the stone it gave fair prospects of that metal when subjected to the mortar process. At that time the prospectors knew little and thought less about silver, save and except when it presented itself to them as the current coin of the realm, and after driving another tunnel and doing a large amount of surface prospecting, they relinquished their title and departed. As the reef has been proved by reliable assay to contain both gold and silver in remunerative quantities, I expect that the work which was started this week will in a very short time be attended with favourable results.[225]

We have met James Alexander Pond earlier, and know that he was superintending a crushing through the Martha Battery. He and McCombie were evidently principals in the Silverton Company. In August 1887 Pond applied for the Silverton Extended claim[226], granted October[227]. "The Silverton Extended was not transferred to the Silverton Company until October 1891."[228]

J.H. Moore, manager of the Martha, was also managing the Silverton, presumably since its beginning. He left to go to the Maratoto on October 15, 1887, replaced by McCombie.

Bay Of Plenty Times, 8 April 1886:

> The Silverton mine has taken premier position and there have been several skirmishes inside and outside the law in order to gain possession of land which is supposed to hold a continuation of the much coveted Silverton reef. The reef in question is supposed not to run in a direct course and as a consequence ground all around and about has been pegged out greatly to the enhancement of the County Exchequer if of nothing else.
>
> In the Silverton itself things look A1. The winze is down about 64 feet and during the last fortnight every shift has brought several pounds of specimens to light. Mr J.H. Moore has a large box full that would probably pan out over 15 dwts to the pound on the average.[229]
>
> SILVERTON— this mine is now fairly out of the ruck and has taken the lead in this district by many lengths, it is estimated by experts in mining who have made this sort of thing a study, that for the time and capital spent the Silverton is the greatest mining success since the opening of the field. This is not mere empty talk for the concern has not been started more than six months and now all expenses being paid, and a tremendous quantity of dead work to the good, a balance of several hundred pounds still remains on the right side of the Company's passbook, 240 pounds of picked specimen stone was manipulated during the past week by Mr J.A. Pond Provincial Analyst of Auckland, who is one of the largest shareholders in the mine, at the Martha Battery for a return of 65oz of gold being a ratio of about 560ozs to the ton. The

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[224] James Alexander Pond: An Auckland Chemist Involved In Mining. Philip Hart 2016. p 36

[225] 14 November 1885 Te Aroha News

[226] 24 September 1887 Te Aroha News

[227] 22 October 1887 Te Aroha News

[228] James Alexander Pond: An Auckland Chemist Involved In Mining. Philip Hart 2016. p37

[229] 1 April 1886 Bay Of Plenty Times, Volume XIV, Issue 1969

> tailings of the crushing have been the subject of several offers; but the directorate prefers operating on them itself. These tailings are believed by practical assayers to contain another 60ozs. The directors have wisely decided not to declare a dividend on the strength of the money in hand, but intend carrying it forward for the future opening up of the mine.[230]

The Inspecting Engineer had this to say (report to 31 March 1887):

> Silverton Company.—This company is working on a different lode from the Union, Rosemont, and Nil Desperandum Companies; but, like these companies as well as the Martha Company's mines, it is situated on an isolated hill about 20 chains in a north-east direction from the Rosemont Mine. The reef is running at nearly right angles with the other reefs in the district, its course being north-west and south-east. There is a large outcrop of loose boulders along the summit of the hill; but on sinking a winze the reef formed a more compact body of stone, rich in both silver and gold.
>
> The company was formed with a capital of £24,000, but nothing has yet been called up. They are crushing the best of the stone by the ordinary battery-process at the Martha Company's battery, and have, after paying all expenses, £700 to their credit. After picking out the best of the stone, the rest is stacked awaiting some different process of treatment.
>
> 150 tons of stone have been crushed by the ordinary battery-process, which yielded about 3oz of gold per ton, value £2 18s. per ounce. The loss in crushing this class of ore with the ordinary battery-process is something enormous. When the stone is rich in silver not more than 20 per cent of the bullion is saved, the whole of the silver being carried away with the water. It is quite disheartening to the owners of these claims to know that they have a valuable property, and cannot extract the metals from the ore. They are now making themselves acquainted with the mode of assaying and ascertaining its value, but are yet unable to get a cheap method of treatment. The La Monte furnace, although a failure in treating this class of ore, has nevertheless been a great benefit to the colony, inasmuch as it has been the means of the miners taking up, proving, and working lodes containing silver, which two years ago they would have looked on as mere rubbish. This, together with the School of Mines, will ultimately be the means of opening up reefs which hitherto have been deemed barren.[231]

Unable to successfully process their ore, activity was restricted to development of the mine.

> Silverton Mine.—Very little work was done in this mine. Seventy tons of quartz was crushed for a yield of 340oz. of gold. The mine is now let on tribute and rich quartz is being obtained, but no returns have yet been received from the tributers. Three wages-men and four tributers were employed.[232]
>
> Silverton Mine (Mr. John McCombie, manager).—This mine has been let on tribute. Two hundred and seventy tons of quartz was obtained, and sold at a certain percentage on its assay-value, the amount realised being £1,508[233] (treated at Waihi (Martha) and Karangahake).

Attempts to float the company in Sydney failed.[234]

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[230] 8 April 1886 Bay Of Plenty Times, Volume XIV, Issue 1972

[231] AJHR Inspecting Engineer to 31 March, 1887

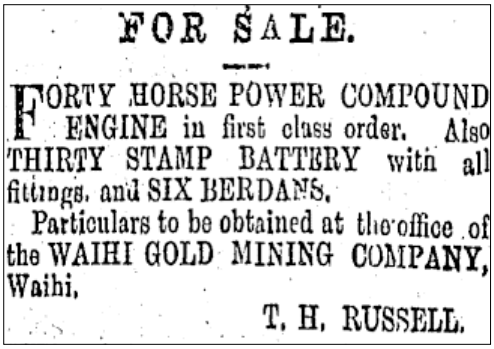
[232] AJHR Inspector of Mines, to 31 March, 1889 (1890?)

[233] AJHR Inspector of Mines to 31 March, 1891

[234] AJHR Inspecting Engineer to 31 March, 1888

Silverton Battery June 1891

Silverton Company Buys a Battery


FOR SALE.

FORTY HORSE POWER COMPOUND ENGINE in first class order. Also THIRTY STAMP BATTERY with all fittings, and SIX BERDANS.

Particulars to be obtained at the office of the WAIHI GOLD MINING COMPANY, Waihi.

T. H. RUSSELL.

You will recall that T.H. Russell purchased the Martha mine and battery in April 1890. He on-sold the mine to the Waihi Goldmining Company, and so had a battery surplus to requirements. By April 30 he was already advertising it for sale.[235] As we will see below, it appears E. M. Corbett made the purchase, and then sold it to the Silverton Company in June 1891.

The Inspecting Engineer reported for 1889-90 that:

> *Silverton Mine.*—All the workings in this mine were suspended at the time of my visit: the shareholders are waiting anxiously to see the Waihi Gold and Silver Company's reduction plant properly tested before forwarding any ore for treatment. They have a considerable quantity of low-grade stacked at the mine.[236]

As they waited, no doubt the topic of the abandoned Martha Battery came up. Perhaps they could purchase it?

The report of the annual meeting of the shareholders of the Silverton Gold and Silver Mining Company, Waihi, December 1891, sheds light on what happened.

> Yesterday afternoon the annual meeting of the shareholders of the Silverton Gold and Silver Mining Company, Waihi, was held at Mr. D. G. MacDonnell's office, Insurance Buildings. There were present: —Messrs J. A. Pond (in the chair), Adam Porter, A. Kidd, J. Burtt, J. Fritter, J. Reid, and T. Melville. The report for the past year was read by Mr. D. G. Mac Donnell as follows : —
>
> We have much pleasure in submitting to you our report for the past year, as also the balance-sheet, which fully explains the present financial position of the company. In last year's report we had to express our regret that the company was unfortunately situated in having no means of dealing with its ore, and that we had to re-let the mine on tribute.
>
> The past year, however, has materially altered the position of the company, which, in consequence of our action, now commands a foremost place amongst the Thames mining companies. Knowing, as we did, the necessity of obtaining crushing power, we opened negotiations with Mr. E. M. Corbett, who had become the possessor of the Martha battery and water rights, and after carefully considering the matter agreed with him to purchase all his interests in the plant and water rights for the sum of £300 in cash and one-twelfth interest in the shares held by the company, agreeing that these should be increased from 24,000 shares, at which they then stood, to 40,000 shares.

We learn that E. M. Corbett had bought the battery.

Edward Mann Corbett had been hired in 1888 as construction engineer for the Waihi Battery on Union Hill. So he was the right man at the right time. He was an experienced miner and engineer. See a biography from the Cyclopedia of New Zealand, 1902, in the Appendices: Edward Mann Corbett (page 104).

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[235] Thames Advertiser, Volume Xxiii, Issue 6597, 30 April 1890

[236] AJHR Inspecting Engineer to 31 March, 1890

> To carry this into effect a special meeting of the company was held on the 22nd June last, when resolutions were carried affirming this increase by the issue of 16,000 new shares, to rank of the same value as those already issued. Of this number, 3330 shares were allotted to Mr. Corbett and 12,670 were offered to the shareholders at a premium of 3s per share. The results were, as we anticipated, an unqualified success, the whole number having been applied for and the proceeds utilised for the part purchase of the plant and the necessary alterations to same, as also for water-races.
>
> After very careful consideration we resolved to erect a pan plant, in conjunction with the battery, and to Mr. Corbett was left the work of drawing and submitting plans of the proposed works; these were adopted, and the work placed in his hands for completion, a contract being at the same time let to Mr. Judd for the erection of the pans and settlers in accordance with specifications, this work having been tendered for in the sum of £268.

The pan plant was decided on after careful study of process as adopted at the Waihi Battery (Union Hill). Mr Corbett was retained to manage the refurbishment of the battery.

> At the same time the water rights were carefully considered, and a new right acquired by Mr. Corbett to the Mangakiri stream, taken over as part of the agreement. The long flume from the Cabbage Tree Creek was repaired in a most substantial manner, and nothing but sound heart of kauri timber used, opportunity being taken by Mr. Corbett to increase the carrying capacity by extending the depth from 18 to 21 inches. At the same timber [time?] another race was brought in from the Mangatoetoe stream, being the third water right your company hold[237], and this was erected at such a height as to come into the main flume of the battery, thus giving a large additional power. In further conservation of energy, a dam is now being erected on the Mangatoetoe stream, which will hold a large body of water, and so ensure no waste from the stream.

The Mangakiri and Mangatoetoe water races date from this time. The Ohinemuri River continues to flow past the battery, unmolested, not harnessed until 1895.

> With the view of constant crushing your directors also had surveys taken for the purposes of bringing in the Mangakiri water-race and erecting dams for the conservation of the water on the south side of the Ohinemuri. This has been done, and the surveys show that a large body of water can be stored and the Mangakiri race brought in at a very small cost, and this work will most probably engage the attention of your new Board.
>
> On completion of the agreement to purchase from Mr. Corbett, we took advantage of an opportunity to amicably determine the tribute on which the mine was let, and to purchase the whole of the ore grassed for the sum of £200, the estimate of ore being about 250 tons, some of which is high grade quartz. Instructions were also given to save all ore, tailings, etc., from the battery, and this to an amount of over 100 tons has been stored, and is anticipated to give good results in the battery; in all, an amount of ore and tailings to the extent of 700 or 800 tons is grassed and awaiting crushing.
>
> In the mine the tributers in their winze carried down on the new shoot of gold, left rich ore on both sides and under foot, and to facilitate the winning of this ore, and the economical and proper working of the mine, we have had in view the extension of a low level drive, which though long is in good easy country, and being in the direction of the battery, will connect therewith in the best and least expensive manner possible, and ensure a large tonnage being won probably for several years without the cost of pumping.

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[237] So: Cabbage Tree Creek, Mangakiri Stream, and Mangatoetoe Stream.

> The plans and data of all the works herein referred to are before you, and we cannot conclude our report without thanking the Waihi Goldmining Company for the ready assistance it has given in submitting its works to our inspection, to enable us to benefit by their efforts, and also feel with pleasure the confidence reposed in us by the shareholders in applying for the whole of the shares offered, and thus enabling us to undertake the extensive alterations and erections with money in hand to ensure their completion.
>
> We are also greatly indebted to Mr. Corbett for the energy and thought displayed in so thoroughly arranging the new plant and motive power. With the economic mode of treating our ore which has been adopted, the facilities attainable in working the mine from the low level, and bearing in mind the large amount of ore at grass, and the richness of the quartz left standing in the winze, we feel confident in our anticipations that this company will have a most prosperous career.
>
> In pursuance of the company's rules, the present directors retire, as also the auditor, but being eligible for re-election, offer themselves for same. — A. Pond, Chairman.[238]

A confident and optimistic report. The sale of the battery took place in June. No hard sale price was been given, but based on £300 and 3330 shares at 3s (at that time), then a total of c.£800.[239]

Isdale reports that in June 1891 "the Silverton had to increase its capital to get funds to 'purchase the Martha battery and secure the company's water rights'"[240]. With confidence increasing, the share issue was over-subscribed.[241]

At the end of the year the company valued the battery (including water races?) at £1,770 (see below).

Purchase complete, August saw E.M. Corbett

> busy "refitting the old Martha battery for the Silverton company, starting with 10 stamps. Crushing was to be wet, and "very fine", being 60 mesh. (Which was considered fine in those days.) He also intended to have a feature "conspicuously absent" at that time in both the existing mills of the Waihi and Waitekauri companies. That was provision for saving tailings.[242]

The Mangatoetoe Stream was captured, a new water race bringing water to the battery (December 1891). This water race took water from a little upstream of Quarry Road (now Roberts Street) in Waihi. Little, if anything, remains of this 750m race. What appears to be fluming for it can be seen on one photograph of the battery, a photograph interpreted to be of the Silverton Battery. It was estimated to give an additional 10 horse power.[243]

> The contractor for constructing the race to bring in the Mangatoetoe stream has finished his work, and Mr. Corbett is now arranging for the erection of a small dam to conserve the water supply.[244]

The Mangakiri Stream water race captured the Mangakiri Stream, taking it north east to Cabbage Tree Creek (Waimata Stream), a little above the dam on that stream. Much of the upper section of this race,

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[238] New Zealand Herald, Volume XXVIII, Issue 8757, 23 December 1891

[239] 3 shillings (3/20=0.15) =£0.15, times 3330 shares equals £499.5, plus £300 equals £799.5

[240] Isdale 1978 p (53)

[241] Isdale 1978 p (54)

[242] Isdale 1978 p (54)

[243] Auckland Star, Volume xxii, Issue 270, 13 November 1891. Our Goldfields

[244] New Zealand Herald, Volume XXVIII, Issue 8750, 15 December 1891

and the dam site, can still be discerned. It was 3.84km in length. An earlier application for its construction was published in the Thames Advertiser, 18 June 1889. Thomas Melville was a director of the Waihi Silverton Extended Company[245], and was present at the annual meeting of the shareholders reported above. We will meet him again. D.W. Bayldon was a mining engineer in Thames.[246] Not to be confused with D.H. Bayldon the surveyor, or Captain T.C. Bayldon the harbour master at Thames[247]. The "branch creek", though not named, must be the Mangakiri Stream. Note also the name Waimata Creek, not Cabbage Tree Creek. The "main Tauranga road" is what we now call the Old Tauranga Road. The water race eventually constructed in 1891-2 was longer.

> To the WARDEN AT THAMES:
>
> I HEREBY GIVE NOTICE that I intend to construct a Water Race to divert and use water for Mining purposes, commencing at a point about half a mile southwest of the Waimata creek on a branch creek of the Ohinemuri River at a point near the bridge crossing the creek on the main Tauranga road and terminating at the dam of the Martha G. M. Co., on the Waimata Creek, Waihi. The length of such Race is about half a mile or thereabouts, and its intended course is northeasterly. The mean depth of such Race is 1 foot 6 inches and the mean breadth is 3 feet, and it is proposed to divert three Government heads of water.
>
> Cost of construction: Five hundred pounds. Time required for construction; Four months. Number and date of Miner's Right; 24117 June 16th, 1889.
>
> Applicant: THOMAS MELVILLE, (per his agent D. W. BAYLDON) Mining and Commission Agent, High Street, Auckland.[248]

Reports in the AJHR for the year ending 31 March 1892 gave other details.

> Silverton Company.—This company has purchased the crushing plant formerly belonging to the Martha Company. They have altered the crushing-battery so as to make a battery of five stamps act as a stone-breaker. There is a very coarse grating in this battery, to admit of the quartz being reduced to the size of small peas. The reduced ore passes into a battery of ten heads of stamps, and there pulverised to sufficient fineness for amalgamation, the ore being treated by a similar process to that used by the Waihi Company.[249]
>
> ******
>
> The Silverton Company have renovated and reconstructed a portion of the old Martha battery, which they are fitting up with all the latest appliances, and, as their mine has the appearance of being a very good one, they should have a very bright future before them.[250]
>
> ******
>
> Silverton Mine, 70 acres (Silverton Gold-mining Company, Limited, owner; Mr. John McCombie, manager).—The average number of men employed at the mine and in the erection of the mill has been ten. No driving has been done during the year, but about 300 tons of ore have been broken out from the main reef, averaging 8ft. in thickness, and the stuff is now being carted to the mill, where crushing operations will be started upon it next month. The

[245] Edward Kersey Cooper: Mine Manager And Mine Owner In Hauraki. Philip Hart 2016. p 47

[246] Thames Advertiser, Volume xxiv, Issue 7005, 26 August 1891. Page 3 Advertisements Column 1

[247] The Cyclopedia Of New Zealand [Auckland Provincial District] p 865

[248] Thames Advertiser, Volume xxii, Issue 6344, 18 June 1889. Page 2 Advertisements Column 3

[249] AJHR Inspecting Engineer to 31 March, 1892

[250] AJHR Warden's Report to 31 March, 1892

> mill comprises fifteen heads of stamps, two of Stevenson's amalgamating pans, one settler, one agitator, and one berdan, driven by a 35-horse power Leffel turbine.[251]

Isdale summarises the annual meeting, end of the year 1891 (that we have just looked at above):

> The Silverton of Waihi had a satisfactory annual meeting, with £459 in the bank, a battery valued at £1,770, add 700 tons of ore and tailings value at £2,000.[252]

It would seem that Corbett's work was complete and the battery started on July 11, 1892[253]. Sadly, the first crushing gave a "disappointing" 90 ounces (reported on September 2, 1892).[254]

The battery had been reduced to 10 (or 15) head of stamps, run by the existing turbine, and would remain wet crushing. Some form of hot pan amalgamation was instituted. It appears that these modifications were not particularly successful, as exampled above, however for the year 1893 "115 tons of quartz were crushed and 200 tons of tailings treated for 321oz. 8dwt. of bullion, valued at £424 10s. 11d"[255].

Cyanide at the Silverton

You will remember that J.A. Pond was experimenting with the tailings from the battery even when it belonged to the Martha Company. It seems he was not particularly successful. The experiments with hot pan amalgamation were not encouraging either. What about this new cyanide process?

The Waihi Gold Mining Company was unsuccessfully trialing the Bohm cyanide process at the Waihi Battery during 1892. In 1893 it undertook to construct a trial Cassel (sometimes erroneously spelt Cassell) plant (using cyanide). In May the Cassel Company purchased from the Waihi Company up to 30,000 tons of accumulated tailings, and set up their Tailings Plant. "By May 1894, the cyanide plant at the Waihi mill was completed, and pan-amalgamation stopped."[256]

These events at the Waihi Battery tended to overshadow those occurring at the Silverton Battery. The Silverton Company were the first to fully adopt the Cassel process in Waihi, April 1893.

Of course there was the royalty payable to the Cassel Company to factor in. This delayed the Waihi Gold Mining Company's uptake of the Cassel process, and may have done the same with the Silverton. The Cassel process was first successfully trialed at Karangahake in 1889.

Thames Star, 3 March 1893:

> In the Silverton the old order of treating the ore is to give place to the cyanide process. Mr Napier, the well-known metallurgist, has been at work in the Silverton Co.'s mill, making the necessary arrangements for the new order of things. There is not much yet to report in the way of results, and of course some little time will be wanted for things to get into real working order. But it is to be hoped that the experiment of treating a Waihi ore by the cyanide process will prove a success, and place the Silverton among the successful gold producing and dividend-paying companies.[257]

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[251] AJHR Warden's Report to 31 March, 1892

[252] Isdale 1978 p (55)

[253] Isdale 1978 p (57)

[254] Isdale 1978 p (58)

[255] AJHR 1894

[256] Milling and Treatment at the Waihi Mine, New Zealand. By E. G. Banks. Paper No. 221 Paper presented at the Australasian Institute of Mining Engineers, Thames New Zealand 1911.

[257] 3 March 1893 Thames Star, Volume XXIV, Issue 7437

Thames Star 26 April 1893:

> Mr Watty Dance was in charge of the Silverton....The alterations which adapted the old Martha battery to a process—I believe that of Mr J. A. Pond, the analyst, a large shareholder in the concern —was not a success.
>
> There is this advantage in it, however, that there was very little further expense required to bring the Cassel process into use. The alterations are now made, and to-day the mill is using Cassel's process pure and simple. I am told that the process is giving entirely satisfactory results. The stuff now going through, valued at 28s a ton, is merely the tailings of the ore crushed by the old process. The capacity of the tank for the Cassel work is only 4 tons a day—just one-half what the battery can put through,—so that another vat will have to be erected. After going through the mill, I called on Mr Bell, a young expert, who is now assaying for the Silverton. He has in use a small furnace, cost 46s, which is very complete for assay and melting small parcels, and ought to be a boon to Lowrie's and other finds. According to assay, the Cassel process is recovering 90 per cent.
>
> The Silverton mine is not working.
>
> I did not go to the Waihi mill, but I heard that the site for the new tanks, for Cassel's, had been marked, and that the erection of them would be commenced at once.
>
> The dry process of crushing is to be used in both Silverton and Waihi mills, the wet process being abandoned.[258]

Things were not going at all well. The Thames Star reported an application for protection in June 1893.

> SILVERTON (Waihi).At the last sitting of the Warden's Court at Paeroa the Silverton G.M.. Co, applied for six months' protection for their mine, water race, and machine site at Waihi. Mr Miller appeared for the applicants, and said that about £6000 had been spent since January, 1888, but the whole thing had hitherto been a failure. Ore could not now be carted from the mine to the mill, owing to the state of the roads. The Warden said he would like to know a little more about the matter, and adjourned the application to the 27th inst.[259]

Silverton Mine Sold

In 1895 the Silverton mine was sold to an English Company.[260] It became the Waihi-Silverton Gold-mining Company (Limited), Glasgow.[261] OK, so not English[262]. The new company was "floated in Glasgow by Melville, formerly New Zealand representative of the Cassel Cyanide Co.[263]".

Capital was injected into capital works. The directors had "cabled: 'Go ahead with the development in accordance with Mr Adams' report' recommending developments costing £10,000"[264]. The battery was refurbished; 40 stamps dry crushing; cyanide process; H.H. Adams in charge. A tramway was

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[258] 26 April 1893 Thames Star, Volume XXIV, Issue 7481

[259] Thames Star, Volume xxiv, Issue 7448, 17 June 1893. Mining News.

[260] AJHR 1895

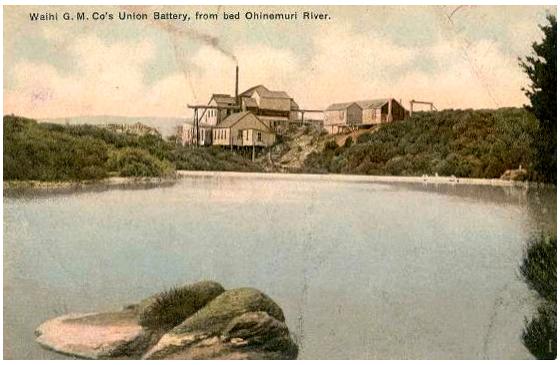
[261] Bulletin No 15 NZ Geological Survey. p 10

[262] However, in the report of the opening of the battery in 1896, Mr Pond says "chairman of the Board at London". See Appendices: Starting of the Waihi-Silverton Battery 1896

[263] Gold Mining at Waihi, 1878-1952, JB McAra. p 98 (28)

[264] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 80

constructed, connecting mine with battery, complete with locomotive. Three in-ground ore roasting kilns were excavated at the mine. Dust was produced.



Hand coloured postcard looking over the dam downstream to the Union Battery. Stone in foreground is still identifiable today. Undated. (c. 1904-11)

The power supply was upgraded. A dam was built on the Ohinemuri River, a little upstream from the battery at what we now think of as Coffey's Creek. The river is shallow here, with a hard rock bottom. This is where the Tauranga Road forded the river, where the mail and a boy were lost in April 1883. The ford was no longer necessary after August 1890 with the erection of the new bridge (where Coronation Bridge is now).

The bed log of the wooden dam is still visible in the smooth flat ignimbrite riverbed, just downstream from the deep water of Coffey's Creek water hole. The dam construction made use of the rocky promontory on the true right bank, with the water taken into a tunnel directly under a present-day pine tree. The tunnel took the water through the promontory to a rectangular tank/surge chamber, from whence a large diameter pipe along the stream bank delivered it through another rocky outcrop to the turbine pit of the battery. These features can still be seen. The pit discharged (spent) water through a short tunnel back to the river. As the dam was not far upstream from the battery (c.125m), and the dam not tall, only 11ft (3.4m) of head was achieved, requiring a low-pressure turbine. A large volume of water could be put through the turbine.

Presumably the Cabbage Tree Creek (Waimata) water race with its 28ft (8.5m) head was still used, with its dedicated Leffel turbine. Also the Mangatoetoe race.

The Mine was connected to the battery by tramway; what we now think of as the Silverton tramway. From the Silverton shaft it passes on the south-eastern foot of Union Hill, passes a little below what used to be Keatley's house, crosses Clarke Street and Mill Stream at the point of the current culvert, and into Gilmour Reserve. The tramway formation is preserved over much of this section, but in Gilmour Reserve it has been largely smoothed over. Exiting the reserve at the intersection of Gilmour and George Streets, it swings in a gentle arc through residential properties to the battery hoppers. It was said to be "about a couple of miles" in length, but is actually 2.4km. A locomotive was used to haul 1 ton trucks. For a photograph and short description of this loco see the Appendices: The Little Loco (page 103). It was not until later in 1896 that the Waihi Gold Mining Company utilised a locomotive to build the tramway to the Victoria Battery site.

The New Zealand Herald of 7 August 1895 reported the application made to the warden for the tramway. It was granted, but the powerful Waihi Gold Mining Company had some conditions. At the southern side of Union Hill the tramway would have to cross over the low level water race of the Waihi Gold Mining Company.

> Waihi Silverton Extended Gold Mining Company, ground tramway, one mile and a-half, at Waihi. Objected to by the Ohinemuri County Council, Waihi Gold Mining Company, and H. B. Barry. All difficulties were overcome, and the Warden granted the application, subject to the conditions suggested by Mr. Rose and Mr. Barry, namely, that mining operations of the Waihi Company shall not be interfered with; also upon condition that if the gold mining company's water-race should sustain injury from the construction of the tramway the Silverton Gold Mining Company or its assigns shall make good the same, and that no action shall be at

the suit of the Silverton Gold Mining Company for any injury caused to their tramway by the Waihi s Company's water - race.[265]

Dry crushing required ore roasting kilns. Three were built near the Silverton shaft, not near the battery, as was more usual. This required dried ore to be hauled to the battery on the tramway. Keeping this dry must have been challenging. Firewood was required, brought to the kilns from the Walmsley timber tramway by an extension probably via Banks and Moore Streets.

The upgraded battery was officially opened on 4 April 1896, with a large crowd, and speeches.[266] H.H. Adams the manager. The event was reported on in detail by the New Zealand Herald, the article displaying the usual sanguine (cheerfully optimist) tone of contemporary press reports. It may be viewed in the Appendices: Starting of the Waihi-Silverton Battery 1896 (page 106). The Observer also published a report, which can also be viewed in the Appendices: The Waihi-Silverton Mine. (Page 112).

Inspecting Engineer to 31 March, 1896:

> Waihi-Silverton Company.—Since the formation, or reconstruction, of this company, large mining operations have been carried on. Some very rich ore was obtained near the surface on this mine in the early days. A level was driven on the lode about 50ft. below the surface, where a winze was sunk, and portions of the lode below that level containing very good ore were stoped out. The stamp-battery, which they acquired from the Waihi Company, and which formerly belonged to the Martha Company, was so obsolete and defective that the company were unable to make the lode pay for working. The present company have, however, sunk a shaft 14ft. by 6ft. in the clear to a depth of 108ft., and cut the lode at this level, distant 196ft. from the shaft, the lode varying from 6ft. to 15ft. At the end of the cross-cut the lode branches off in two directions; one of the branches has been driven on for a distance of 60ft., having a width of about 14ft. The main lode has been driven on at 180ft., having an average width of about 10ft. The manager, Mr. Adams, states that, for a considerable distance, the average assay-value of this lode is from £5 to £6 per ton; but at the eastern end the assay-value gets considerably less, being from £2 8s. to £2 10s. per ton. No stoping has been done on this lode; the main level has only been carried in for the distance stated.
>
> At the time of my visit there were about 800 tons of ore lying in a paddock, ready to send to the mill as soon as the latter was ready to commence crushing.
>
> The crushing-battery is situated on the Ohinemuri River, near the site formerly occupied by the old Martha battery[267]. It consists of forty head of stamps of the most modern construction, 900lb. each, with two rock-breakers, one of Blake-Marsden and the other of Gates's type, together with a Challenge ore-feeder attached to each five-stamp battery. The foundations, framing, and workmanship in connection with the stamps are all that can be desired, arrangements being made to carry away any dust from either the stamp-battery or the rock-breakers, as it is the intention of the company to carry on dry-crushing.
>
> Mr. Adams has made a new departure in the construction of cyanide-solution vats, these vats being made of steel plates 16ft. in diameter by 4ft. deep at sides, with concave bottom and a discharging-pipe in the centre. There are also two solution-tanks 16ft. in diameter and 4ft. deep, with a mixing-tank made out of an old settler. The dry ore is lifted by elevators into covered bins, and from the bins the ore will be taken in trucks and emptied into the vats, the

[265] New Zealand Herald, Volume xxxii, Issue 9892, 7 August 1895. The Goldfields

[266] 4 April 1896. Auckland Star, Volume XXVII, Issue 79

[267] It is the same site.

latter, however, being the most defective operation in the whole arrangement, as large clouds of dust float about the building in emptying the powdered ore from the trucks into the vats; and this dust is very injurious to the health of the workmen.

Arrangements will yet have to be made in all these dry-crushing mills to have hoppers placed between two rows of vats, so that the ore can be conveyed by pipes from the stamps into the bins, and from the bins into each solution-vat. The defect mentioned applies not only to the Waihi-Silverton, but to Waihi Company's works, the Waitekauri and other companies using the cyanide process.

The battery is to be driven by a low-pressure turbine-wheel, the head of water being only 11ft. A dam has been built in the Ohinemuri River, in order to raise the water to this height, from which it is conveyed in wrought-iron pipes. Since my last visit to this mine, the battery has been completed and crushing commenced, and, judging from its construction and the manner in which it is worked, it will prove one of the most efficient plants yet worked on the field. There exists a doubt in my mind, however, whether the solution vats are not by far too small, and that it would be more economical had they been made considerably larger, instead of smaller, than the Waihi Company's vats. This question will, however, soon solve itself, as it is only by experiments that the best methods can be ascertained.

The following is a description of the plant, taken from the Auckland Weekly News :—

"The mill stands on the old Silverton battery-site, and is about a couple of miles distant from the mine, communication with which has been effected by means of a tramway, and over this line the ore is conveyed to the battery in 1-ton trucks drawn by a locomotive. Upon delivery at the mill the ore is tipped on to a "grizzly", the fine particles falling through into the main hopper, while the rough passes into the hopper erected over two stone-breakers, into which the ore is fed automatically. When the stone has been reduced to sufficient fineness, it is passed into the hopper underneath, and from here is drawn automatically a regular supply of ore, the self-feeders being fixed behind the stamps, and continually meet the demand made upon them. The stampers are provided with 30-mesh screens, and the crushed ore after passing through the screens falls into a large receptacle, whence it is elevated and delivered into another hopper erected in connection with the treatment.

"Before passing from the stampers entirely, however, it will be gathered from the remarks made by Mr. George Wilson, Mining Inspector, and others, at the opening ceremony, that an arrangement was introduced by Mr. Adams to minimise the dust evil. This arrangement is unquestionably a very simple one, and should prove most effective in accomplishing the desired end. It merely consists of large hoods being placed over the stamp-boxes, a continuous pipe being connected with a suction-fan, which draws off the dust as it escapes from the stampers, and precipitates it into a receiver, where it is collected. Then, when a sufficient amount has accumulated, no doubt it will be treated with the other ore. The idea, as already stated, emanated from Mr. Adams, and, if it proves as successful as anticipated, the men working in the battery will undoubtedly owe a lot to the originator in reducing to a minimum the danger caused by the floating of dust in the atmosphere, and which they must necessarily inhale.

"When the ore has been elevated and delivered into the hopper connected with the treatment plant, it is conveyed by means of trucks along the tops of the tanks, or vats, and emptied therein. These vats, it may be mentioned, are twelve in number, and are composed of iron, the size of each being 16ft. in diameter by 4ft. deep. The bottoms of the vats are concave, with a sluice-pipe in the centre, while a wooden grating also covers the bottom, a canvas filter being laid over all. These tanks are the first of their kind used in the colony, though they are extensively used in America.

"In conversation with Mr. McConnell, assayer, as to the chemical effects of the cyanide on the iron he informed me that there can be no appreciable loss or decomposition of the cyanide; but, in order to obviate any reaction that may take place, the inside of these tanks has been coated with a mixture of tar and kauri-gum, on which cyanide has no effect. Mr. McConnell also stated that the principal objection to iron tanks was apparently that a certain amount of decomposition must take place in the cyanide used for treatment; but he said, when it is considered that in plants where wooden tanks are used the cyanide is conveyed from these vats through iron pipes, the effect is practically the same. Hence this objection must be swept away. Another great and most important advantage that will be gained by the use of iron tanks is that when once made tight they are impervious for all time, and are not affected by any change of weather, consequently the leakage which takes place in wooden tanks is avoided, and this undoubtedly is a great consideration. However, the Silverton Company has taken the initiative with regard to the introduction of iron tanks to the colony, and the result of the move will no doubt be watched with the greatest interest by those interested in cyanide plants.

"Returning to the mode of treatment, the ore is then charged into the tanks to a depth of about 2½ft., after which the cyanide solution is run in by means of a pipe which enters the tank below the filter. The solution is allowed to rise up from the bottom slowly through the ore until it appears a few inches above the top, when it is then stopped. This method of running on the solution is adopted so as to saturate the ore evenly, and prevent channels being formed through it, as would be the case if the solution were run on to the top of the ore. After the ore has been saturated with the solution for an hour or so, the solution is allowed to percolate through the ore, and, dissolving the gold in its course through the ore, it is carried from the bottom of the tank and passed through the precipitating-boxes. The ore is then washed for the purpose of freeing from it from the gold solution. It may also be mentioned here that, in view of coarse gold existing in the ore, the later, after being treated by the cyanide, is passed over four amalgamating-tables, 24ft. by 12ft., so as to insure the redemption of any gold not soluble in cyanide. One-half of these tables is covered by muntz-metal and the other half by copper; though, practically speaking, there is no difference in the saving capabilities of either metals, but the reason the Silverton Company adopted muntz for one half of the tables is that if there are any minerals in the ore it will not blacken like copper – or, in a nutshell, it is more easily kept clean."[268]

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The shaft is supplied with a Tangye double-cylinder winding-engine of 40-horse power. The pumping-engine is a high-pressure horizontal 40-horse-power engine. Substantial poppet-heads, 60ft. in height, have been erected. The cages are fitted with safety appliances, and detaching-hooks are used to prevent overwinding. Three kilns, with a capacity of 150 tons each, have been excavated in the vicinity of the shaft. A locomotive is used to convey the quartz from the kilns to the battery, along one mile and a half of tramway.

The battery, which is built on the site of the old mill, consists of two stonebreakers—the one a Blake, the other a Gates—forty stamps, and twelve percolating-vats, 16ft. in diameter, made of steel plates, the bottoms being concave to admit of the tailings being sluiced through an orifice in the centre. Suitable buildings for assaying and melting plants have also been erected. Sixty men are employed.

[268] AJHR Inspecting Engineer to 31 March, 1896

> The assays taken daily from the quartz show that those reefs will return a very good profit from working; and, judging from their width and extent, a large quantity of material available for several years is in sight.[269]

C. W. Vennell records that A&G Price Ltd erected a 20 stamp battery on the site of the old Martha Battery in 1895.[270] This may mean 20 *new* stamps?

Adams left Waihi in January 1897 to take up the position of mine manager at the Komata Reefs Battery. When leaving the mine, "he regretted that it 'had not up to the present proved itself a greater gold producer'". [271]

AJHR, to March 1897:

> Waihi-Silverton Mine (Area, 174 acres).— The forty-stamp mill is in fairly good working-order. The mill has been provided with exhaust fans for the removal of the dust caused by the dry-crushing. These fans have the effect of carrying off the dust, and when further improvements are made it will be possible to alleviate the evil.[272]

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> Waihi-Silverton: Returns from this property were for some time not up to expectations. This was extremely disappointing, as it was anticipated that when the battery was started it would be a second Waihi. However, the property is being thoroughly prospected and opened up, and a main shaft is being sunk to a considerable depth. As a consequence the mine is improving, and returns are getting better, so that if care is exercised the property may yet come back to what was anticipated of it.[273]

In May 1897 there appeared an advertisement in the Auckland Star, from the Waihi Silverton Extended Gold Mining Company, inviting tenders for a water race.[274] In September, the same paper reported that:

> The building of the new water race is proceeding rapidly, and will be completed before the dry season sets in. This new race has been surveyed to give six more feet of available head at the battery, or about 20 per cent. more than by the old race. The level of the dam will also be raised 18 inches.[275]
>
> The construction of the new water race is being pushed ahead by the contractor, Mr Macfarlane. The earth work is almost completed, and the whole race is well under way.[276]

It is not clear to which race this alludes. It may be an alteration to the race and dam taking water from the Ohinemuri River, a little upstream from the battery. No further information has been traced.

AJHR, to March 1898:

> The forty-stamp mill has been continuously employed, and 11,253 tons of quartz, yielding 8,456 oz., valued at £16 452, has been crushed. Seventy men are employed.[277]

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[269] AJHR Inspector of Mines Report to 31 March 1896

[270] Men of Metal. The Story of A&G Price Ltd. 1868 - 1968. C.W. Vennell. p 24

[271] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 83-4

[272] AJHR Inspecting Engineer to 31 March, 1897

[273] AJHR Warden's Report to 31 March, 1897

[274] Auckland Star, Volume xxviii, Issue 123, 28 May 1897. Page 4 Advertisements Column 7

[275] Auckland Star, Volume xxviii, Issue 205, 2 September 1897. Waihi Silverton.

[276] Auckland Star, Volume xxviii, Issue 227, 30 September 1897. Kuaotunu School Of Mines.

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To March 1899:

> It was found to be absolutely necessary to overhaul the battery as it had been run until it was in a very bad state of repair, and in consequence of the stoppage the yearly return is not as large as if the battery had been running full time. The prospects of this mine are said to be improving, and it may reasonably be expected that the returns of gold will be larger next year. 8,350 tons of ore was treated for 6,736 oz. of gold ; value, £11,501 4s. 5d. There are 105 men employed.[278]

Union-Waihi Company 1895

We learned that the Waihi Gold Mining Company ceased mining on Union Hill mid 1893. Two years later they split off this area under a new company, the Union-Waihi Gold-mining Company Limited. This may have been for tax or other business reasons, and/or to retain possession of ground that they were not working (ie keeping others out). This was reported as an English company.

At about the same time (April 30, 1895[279]) the Waitekauri Gold Mining Company is also purchased by the Waihi Company shareholders, from T.H. Russell. Optimism abounds, empires to be built. Plans already being made for the huge Victoria Battery at Waikino.

From the Annual Reports of Directors for the year 1894-5 we learn a little more.

> Two special mining claims in the Union section of the Company's property, aggregating about 200 acres, have been granted to the Company by the Warden of the Gold Fields, and are now awaiting formal confirmation by the Government, which it is expected will shortly be granted. This additional ground is on the line of the system of reefs known as the "Winner" and "Amaranth" Reefs, the latter being a well defined reef of considerable width.
>
> A new and separate Company will shortly be organised for the purpose of developing this property. After providing the necessary working capital for the purpose, the remainder of the Shares will be the property of the Waihi Company, and their Shareholders will have a preferential claim to allotment. It is hoped that work upon the Union property will be commenced within the next few months.[280]

McAra suggests this occurred in 1894, but Isdale provides a date:

> Early in June [1895] the Waihi Company was "floating off" a large area of 300 acres - to be worked by a subsidiary company, on a prospecting basis, sinking a shaft.[281]

Rainer provides analysis.

> During 1895 the Company was involved in further manoeuvring. A separate Company was formed - the Union-Waihi - which purchased 250 acres of Waihi Company ground to work the now neglected Union mine. The Company appeared on the London market in September 1895,

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[277] AJHR Inspecting Engineer to 31 March 1898

[278] AJHR Warden's Report to 31 March 1899

[279] Isdale 2000 p (16), Annual Reports of Directors for the year 1895. "At Waitekauri, Thomas Henry Russell played his final hand in New Zealand, when he sold his property to the newly formed Waitekauri Gold Mining Company of London. The latter was registered in May 1895, with a capital of £150,000. Its directors and London premises were that of the Waihi Company" Company Town, Rainer. 1976. p (29)

[280] Annual Reports of Directors for the year 1894

[281] Waikino And The Victoria Battery, Alistair M. Isdale, BA. June 2000. p (16)

> with a nominal capital of £200,000 in £1 shares; 100,000 of which went to the Waihi Company (fully paid- up) in exchange for the land. Nobody was fooled - the Russell clique was in control. The London Board comprised - Thomas Russell, John Boustead, H.J. Bristow, A.M. Mitchison, C.E. Russell, and Hubert Akers. Locally, James Russell, Thomas Morrin and H.P. Barry were at the helm, with Robert Rose as Legal Manager.[282]

AJHR Inspector of Mines to 31 March, 1896 (with yet another figure for the area):

> Union-Waihi Mine.—Owners, Union-Waihi Gold-mining Company (Limited).—The land occupied by this company consists of the Amaranth, Rosemont, Golden Run, and Union Special Claims, of a total area of 346 acres, formerly held by the Waihi Gold-mining Company. Since the present owners assumed possession works of an extensive character have been undertaken.[283]

This new company works vigorously on Union Hill and surroundings, puts in a New No. 1 Shaft, a No. 2 Shaft and extensive tunnelling, but is, perversely, not permitted to have ore processed at the Waihi Battery. AJHR to March 1897

> Union Mine (Area, 250 acres).—This mine is adjacent to the Waihi Company's ground, and is held by the Union-Waihi Gold-mining Company, an English company. A large amount of development work has been done during the year. No. 1 shaft is now 270ft. in depth, and the depths of workings below surface are 177 ft. on Amaranth and 120 ft. on the Union reef. The Amaranth reef at No. 1, or adit level is 112 ft. below collar of shaft; and the Union reef at No. 4 level is 120ft. below the collar of the shaft. The Amaranth reef varies from 14ft. to 28ft. in width, running nearly north-east and south-west, and is free milling, with large amount of silica. The Union reef varies from 4ft. to 9ft. in width, running north-east and south-west, and is of free-milling ore, rather soft and clayey; and the Winner reef undeveloped in No. 9 drive. Other works are as follow: Cross-cut driven to Amaranth reef, 486ft.; cross-cut through country, 620ft.; driving on Amaranth reef (adit-level), 787 ft.; cross-cutting, Amaranth reef, 107 ft.; winzes sunk on Amaranth reef, 420ft.; other drives, winzes, and cross-cuts, 861 ft.: total, 3,281ft. The whole of the above is development work, as the company does not at present possess any mill.[284]

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To March 1899

> The Union-Waihi Gold-mining Company's properties, which adjoin those of the Waihi Company, and are under the same management, have been most thoroughly and systematically prospected and opened up. It is the intention of this company, I am informed, to erect fifty head of stamps during the present year, to enable them to start crushing. There are two or three good reefs to work on, and I do not doubt that the company will be successful.[285]

No battery, but talk of constructing one. They had been promised the Waihi Battery. Why not just buy the struggling Silverton Company and battery?

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[282] Company Town, Rainer. 1976. p 30

[283] AJHR Inspector of Mines to 31 March, 1896

[284] AJHR Inspecting Engineer to 31 March, 1897

[285] AJHR Warden's Report 1899

Union Battery 1899

Union-Waihi Gold-mining Company purchases Silverton Gold Mining Co

About mid 1899 the Silverton becomes incorporated into the Union-Waihi, and the Silverton Battery becomes the Union Battery. Purchase price: £35,000. It was once again refurbished, converted to wet crushing, and was under way by September 25 1900.

Annual Reports of Directors for the year 1899:

> When the Union Waihi Company was promoted by this Company, a promise was made that the Waihi Mill of 90 head of Stamps with Mill Race, etc., should be acquired on equitable terms by the Union Waihi Company. This obligation the Waihi Company has not carried out. During the year the Union-Waihi Company has acquired by purchase the Waihi Silverton Mine and Mill for £35,000 in cash.[286]

******

AJHR to 31 March, 1900

> The Union-Waihi Gold-mining Company have during the past year acquired all the mining properties held by the Waihi-Silverton Gold-mining Company, together with its battery of forty stamp-heads, tramway, &c. The battery is now being thoroughly overhauled and repaired, preparatory to commencing crushing. The process to be adopted, I believe, is to be wet crushing. A large number of men are now engaged in development-work, so as to be in a position to keep the battery going continuously. It will afford me much pleasure to again see this mine figuring amongst the gold-producers of the Upper Thames portion of the peninsula.[287]

******

AJHR to 31 December 1900

> Extensive surface-works have been done in laying tram-roads on the flat and incline-trams to connect the mine with the battery, also the construction of hoppers, &c. The mill, consisting of forty head of stamps which formerly belonged to the Waihi-Silverton Company, and had been used almost exclusively as a dry-crushing mill by that company, has been over-hauled and repaired, a No. 3 Gates crusher erected, and the treatment plant added to, the chief addition being the fitting-together of one of the steel tanks which had not been previously used, and the erection of two large slime-collectors 32ft. in diameter by 14ft. in depth. An air-compressor pressure-tank and filter-press were also added to the plant so as to adapt it to wet-crushing. The process adopted is the same as that in use in the wet-crushing plant at the Victoria mill, Waikino, the sands and slimes being separated, and the latter dealt with by means of a filter-press. The mill was started on the 25th September last [1900], working with two shifts for a time, and then increased to three shifts per day. Up to the 31st December 4,199 tons of ore was treated for 3,385 oz. of bullion; value, £4,558 3s.[288]

A tramway with self-acting incline was constructed on Union Hill, and connection made with the Silverton tramway at Clarke Street (where Mill Stream Walkway exits on to Clarke Street). Ore from both the Silverton mine and from Union Hill were taken to the mill, presumably by locomotive.

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[286] Annual Reports of Directors for the year 1899

[287] AJHR Inspector of Mines to 31 March, 1900

[288] AJHR Inspector of Mines, to 31 December 1900

Despite the improvements to the battery, and the cyanide process, these mines and battery were still troubled. In the Annual Report of Directors of the Waihi Gold Mining Company, for the year 1900:

> Shareholders are aware that for some time past the Union Waihi Mine has been practically managed by this Company, who have provided the funds for work in connection with that Mine. The position at the present time is as follows: The ore in the stopes is abundant for the mill. In stoping it has proved to be of lower grade than was expected when the mine was opened up; but though much less valuable there remains a profit on the crushings. The two shafts, one on the Union Waihi Mine and the other on the Silverton property are being sunk to a depth sufficient to prove the value of the lodes for 200 feet below the present lowest level. If the explorations are successful at these lower levels, there will be no difficulty in reorganizing the finance of the Company and placing it upon an independent basis. Should the explorations not be satisfactory, it will be necessary to defer further explorations until deeper levels in the Waihi Mine can be driven into the Union Waihi property.[289]

The Inspecting Engineer had this to say (to 31 December 1901):

> Union-Waihi Gold-mining Company (Limited).—This mine was vigorously worked up to the end of September by the company, but as the quartz operated on was barely sufficient to pay expenses, and the company having previously found a large sum of money to purchase the Waihi Silverton Mine and crushing plant, the capital became exhausted, and they found it was necessary to apply for six months' protection to give time, and thereby enable the directors to find ways and means to further carry on contemplated works. The Waihi Company holds a large interest in the above-named mine, and it is now rumoured they have taken the property over, and no doubt in a short time further development will be proceeded with to prove the value of the reefs at lower levels.[290]

Waihi Company Take Over the Waihi-Union Company

The Thames Star on 4 November 1901 had the following headline:

> **SERIOUS POSITION IN WAIHI.**
>
> 200 Men Out Of Work. The Union Company Closing Down. Mr. H. P. Barry Interviewed.
>
> (By Telegraph.—Own Correspondent.) WAIHI, November 4.
>
> Mr. H. P. Barry, Superintendent of the Waihi mine, was interviewed this morning. He stated that the Union Gold Mining Company would close almost immediately owing to the end of the finances. Prospecting at the 200 feet level in the Silverton, shaft, below the old workings, and similar work in the Union level at the same depth, close to-day. The stampers at the Union Silverton battery will be stopped in a few days, and as soon as slimes and sands at present in course of treatment are completed all hands will be discharged.
>
> The closing down means the loss of employment to about 200 men engaged on contract, and wages, the greater percentage being on wages. The pumping plants in the Silverton and Union shafts will be at once raised, and also iron rails in the levels. A reconstruction scheme is in hand.
>
> The question as to more men being employed at the Waihi Company mine Mr. Barry said he thought there would not be any more employed, and as to whether the Union Silverton mill would be used as an auxiliary to Waihi company's mill he could not say, as it had been

[289] Annual Reports of Directors for the year 1900

[290] AJHR Inspecting Engineer to 31 December 1901

> decided within the last few days to close down all works connected with Union Company's properties.[291]

It seems the Waihi Company quite quickly decided to take over the Union Battery. The Warden's Report to 31 December 1901:

> The Waihi Company have recently taken over the Waihi Union Company's properties; as this includes the Silverton battery, this company will no doubt utilise that to supplement their crushing-power.[292]

By July 1902 it is old news. The Thames Star had the following on 22 July 1902:

> In commenting on the annual meeting of the Waihi Company, the Mining Journal (London) has the following:—'"The Waihi Company deserves notice as well for the remarkable scale of the enterprise itself as for the sake of comparison with leading gold producers elsewhere. As regards crushing appliances, Waihi has, since its acquisition of the Union Company's battery 330 head of stamps, which, is the largest battery in operation outside America.[293]

Of course this does not give re-employment to the men not working in the battery. Mining at Union Hill and at Silverton ceased and machinery was removed.

Annual Reports of Directors for the year 1902:

> The Union Mill of 40 stamps, which was acquired by the purchase of the Union-Waihi Company's property, was put in order, the necessary tramway completed, and crushing started on 15th September.[294]

The "necessary tramway" was presumably reinstating the connection to Martha mine, which in practice meant the section from battery to the "rake line". It appears that when this section of tramway was no longer required (Martha Battery ceased operating 1890), the council turned it into Silverton Road. See Barry's 1902 report below (page 68). The Silverton loco was now surplus, as its track gauge was 3 feet 6 inches, and the Waihi Gold Mining Company tracks were 2 feet 9 inches. It was sold to Bond Bros. of Wharawhara to haul timber. See in the Appendices: The Little Loco (page 103).

AJHR to 31 December 1902:

> The Union battery of forty stamps (formerly the property of the Waihi-Silverton Company) now belongs to the Waihi Company, and has been thoroughly overhauled and modified. This brings up the company's total crushing-power to 330 stamps, as follows: Union battery, 40 stamps; Waihi battery, 90 stamps; Waikino battery, 200 stamps; total, 330 stamps.[295]

Now the battery was crushing Martha ore once more, and crushing wet again. From 1902 forward the Annual Reports of Directors include details of plant and ore crushed. The yearly reports can be viewed in the separate document.

OK, so is there a description of the "thoroughly overhauled and modified" battery?

H.P. Barry, in his Superintendent's Annual Report of 24th January 1903 (ie reporting on 1902) gave these details. Similar reports were made each subsequent year.

> UNION MILL (40 STAMPS.)

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[291] Thames Star, Volume XXXIX, Issue 10097, 4 November 1901

[292] AJHR Warden's Report to 31 December 1901

[293] Thames Star, Volume XXXX, Issue 11394, 22 July 1902

[294] Annual Reports of Directors for the year 1902

[295] AJHR to 31 December 1902

This mill ran for 89 days during the year.

An average of 33.97 stamps were at work during that time.

A total of 6,154 tons were crushed.

The average duty per stamp per diem was 2.136.

The Mill was started wet crushing on the 15th September.

As the Mill was to crush mineralised ore, considerable alterations and additions to the plant were necessitated. Auxiliary steam power to enable the whole Mill to be kept continuously at work had also to be provided.

The Mill had also to be connected by railway with the Martha Mine. Instructions to proceed with the necessary additions and alterations were received in March.

It was decided to transfer the pumping engine at the Silverton Shaft to the Mill, and overhaul and compound it, which has been done.

The Babcock & Wilcox boiler which was used at the dry crushing stonebreakers at the Victoria Mill was transferred immediately the dry crushing process was stopped, and erected at the Union Mill.

The stonebreakers formerly in use were removed and a Wheeler breaker which was in stock at the Waihi Mill was repaired and erected, the ore being tipped from the Mine trucks into a hopper and fed into the breaker, whence it is raised by means of a belt elevator, weighed and trucked over the ore bins.

Two elevating wheels were procured and erected, the pulp as it comes from the stamps being raised by these and flowing over the muntz metal plates which were formerly in use and which are arranged in a separate room, from which it flows over 10 Union vanners which were procured and erected.

In order to make room for these vanners and wheels, the former assay and melting room was dismantled, and the building extended some 50 feet, and shafting for driving the wheels and vanners put in.

Two steel solution vats, 25 feet in diameter by 8 feet in depth, were obtained. A good second-hand air compressor was obtained and erected, also a pressure tank.

The agitators were moved to a more convenient position nearer the river, and driven direct from the turbine.

Two Martin presses were obtained and erected, and the Johnson press formerly in use moved from its former position in the mill and erected near to the agitators. The quantity of moisture in the slimes is considerably reduced in this press, as in the process at the Waihi Mill.

The precipitator room was enlarged considerably and two new boxes put in, making six in all. The whole of the floor was concreted, and sloped so as to prevent loss of gold-bearing solution and bullion slimes.[296]

Under the heading of Water Power, Barry added:

All the Mills now have independent steam-power; but owing to the changes from dry to wet crushing the demands upon the water power have increased, as, apart from what is required for the actual crushing, power is required at various points in the treatment plant as well as for

[296] Annual Reports of Directors for the year 1902

> the actual treatment itself, to a greater extent than was necessitated in the dry crushing process. [297]

The steam engine was added during the refurbishments of 1902. The massive concrete mounts of the steam engine are still at the battery site, on the river side of the main building. The shelter built over this engine can be seen in several photographs of the battery, and therefore date these.

Coal would have been supplied from Victoria Battery. Prior to the arrival of the Government railway through the gorge, coal was brought to Victoria by horse wagon from Paeroa. The Waihi Gold Mining Company had their own wharf on the Ohinemuri River at Puke. These wooden wharves remain at the Paeroa Maritime Park.

> The increasing amount of coal consumed, and the large amount of stores which come forward, has rendered it advisable that the Company should have its own wharf at Paeroa.
>
> Consequently a freehold section of between two and three acres fronting the river was acquired and a coal hopper has been constructed. This will obviate the necessity of bagging coal. [298]

Still within Barry's report for 1902, under the heading Railways and Tramways:

> Permission to construct a branch line connecting the main line with the Union Mill was obtained from the Waihi Borough Council. Part of the line is on one of the Borough roads.
>
> The earthwork was completed by contract.
>
> The line has been laid with 40 lb. rails, which were taken from the firewood lines, 26 lb. rails from the old line connecting the Silverton and Union Mines with the Union Mill, which line is not now required, being used to replace them.
>
> The length of this line, exclusive of sidings, is 40 chains.

And under the heading: Coal And Goods Wharf—Paeroa.

> The coal hopper which was erected last year has been brought into use. A suitable house has been provided for the Wharfinger. A shed for stores and a jetty have also been erected. [299]

During 1903 this wharf would be used to land very heavy pieces of machinery for the new pumping engine for No.5 Shaft at Martha mine (the Pumphouse).

The battery started crushing on 16 September 1902. "The steam driving plant is not yet completed, but owing to the recent heavy rains sufficient water power was supplied to drive 35 head of stampers."[300] The New Zealand Herald for 15 August 1902 gave a good description of the battery. See the Appendices: Waihi G.M. Co. The Union Mill. Extensive Alterations (page 116)

1903 - 1911

From 1901 the Union Battery was under the ownership of the Waihi Gold Mining Company, Superintendent H.P. Barry. The battery pounded steadily away at Martha ore, with modifications and improvements along the way. Mr W.M. Russell the manager.[301]

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[297] Annual Reports of Directors for the year 1902

[298] Annual Reports of Directors for the year 1901

[299] Annual Reports of Directors for the year 1902

[300] Auckland Star, Volume XXXIII, Issue 220, 16 September 1902

[301] New Zealand Herald, 17 September 1902

Water-power was still very important; it was cheaper than steam.

Reports in the AJHRs chronicle this period in the life of the battery.

> Union Mill (40 stamps).—The Babcock and Wilcox boiler formerly used at the No. 1 shaft of the Union Mine was removed to this mill, and re-erected as the single Babcock and Wilcox boiler in use was overtaxed. A settling-tank and filter was made to improve the quality of the boiler-feed water. A new turbine was procured, and brought into use for driving the agitators.[302]
>
> ******
>
> Union Mill (40 stamps).—A Leffel wheel has been obtained for this mill.[303]
>
> ******
>
> Union Mill (40 stamps).—The Leffel wheel obtained during the previous year was erected and dam and penstock completed. It has been in use during the latter part of the year. During the year four out of the eight mortar-blocks were provided with heavy cast-iron anvils[304], and during the overhaul at Christmas a fifth anvil was put in.[305]

Could this "dam and penstock" be the Mangatoetoe stream water race? If so, then a re-invention of the Silverton version?

Superintendent's Annual Report for 1903. Waihi, 21st January, 1904:

> UNION MILL (40 Stamps).
>
> This Mill ran for 306 days during the year.
>
> The Mill was stopped early in the year for five days, owing to the breaking of the mainshaft at a point where the power from the turbines and steam engine is transmitted throughout the Mill. The broken shaft was replaced by one of larger diameter.
>
> The Babcock & Wilcox boiler formerly used at the No. 1 Shaft of the Union Mine was removed to this Mill and re-erected, as the one Babcock boiler in use was overtaxed.
>
> A settling tank and filter was made to improve the quality of the boiler feed water.
>
> A small storeroom and office was added to the Mill.
>
> A new turbine was procured and brought into use for driving the agitators, the old 14-inch conveyor pipes from the dry crushing plant at Victoria Mill being used to connect with the water race.

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http://paperspast.natlib.govt.nz/newspapers/NZH19020917.2.36. The W.M. presumed from this entry in the Cyclopedia. Mr. William M. Russell, Battery Manager for the Union Waihi Gold Mining Company, was born in Invercargill in 1870. For four years prior to 1889, he was engaged with Walter Guthrie and Co., Ltd., in his native place. He afterwards went to London, where he studied mechanical engineering and electrical engineering for eighteen months at the London University College. After returning to New Zealand in 1898, he was for two years at the Victoria Battery, Waikino, and was appointed to his present position in January, 1900. The Cyclopedia of New Zealand [Auckland Provincial District] Waihi, 1902 p 507

[302] AJHR Inspector of Mines 1904

[303] AJHR Inspector of Mines to 31 December 1904

[304] such an anvil can be seen outside the Waihi Museum in Kenny Street

[305] AJHR Inspecting Engineer to 31 December 1905

> Two elevator wheels were procured and erected towards the end of the year for conserving the sand tailings.[306]

The elevator and flume used for "conserving" some of the (higher grade) tailings can be seen in several photographs of the battery. The tailings were stored on land a little down stream of the battery; this area is flat pasture now. These tailings were processed in 1911 as the battery was closed down. It may be that the tube mill installed in 1909 allowed these tailings to be processed economically.

Superintendent's Annual Report for 1904. Waihi, 25th January, 1905:

> UNION MILL (40 Stamps).
>
> This Mill ran 305.4 days.
>
> An average of 39.356 stamps were at work for the whole running time an increase of 0.556 stamps compared with the previous year.
>
> The average duty per stamp per diem was 2.177, an increase of 0.03 compared with the duty obtained during 1903; the increase in the quartz crushed was 950 tons.
>
> A " Leffel " wheel has been obtained for this Mill.
>
> The Wheeler Stonebreaker previously in use broke down and was replaced by one of a stronger pattern in stock; the necessary repairs to the old one are being made.
>
> The mortar box foundations were examined and temporarily repaired during the stoppage of the Mill; these will require further attention during the near future. It will be advisable to put in heavy iron anvils on new timber crosspieces.[307]

Superintendent's Annual Report for 1904. Waihi, 25th January, 1905:

> UNION MILL.
>
> The extraction according to assay was 88.9 per cent. of the gold and 73.5 per cent. of the silver contents, and the actual recovery obtained was 82.9 per cent. and 76.1 per cent. respectively.
>
> Taking into consideration, however, the estimated increased value of the stocks, including Concentrates under treatment at the Concentrates Treatment Plant, the actual extraction would tally very closely with the theoretical recovery.
>
> The two tailings elevator wheels which were erected towards the end of 1903 have been in use for conserving the tailings whenever these exceed a certain value. It is not advisable to save low grade tailings, as the available storage room is limited.[308]

Superintendent's Annual Report for 1905. Waihi, 18th January, 1906:

> Union Mill (40 stamps).
>
> This Mill ran 303 days.
>
> An average of 37.825 stamps were at work for the whole running-time, a decrease of 1.531 stamps compared with the previous year.
>
> This decrease was due partly to the breaking of the main shaft in the mill, early in the year, necessitating the stoppage of the whole mill for nearly four days, and also in consequence of

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[306] Superintendents Annual Report for 1903. Waihi, 21st January, 1904

[307] Superintendents Annual Report for 1904. Waihi, 25th January, 1905

[308] Superintendents Annual Report for 1904. Waihi, 25th January, 1905

the mill having been run for several weeks towards the end of the year, entirely by water power, which was barely sufficient to keep the whole 40 stamps running; at this time the slimes plant was somewhat overtaxed.

The average duty per stamp per diem was 2.450, an increase of 0.012 compared with the duty obtained during 1904; the decrease in the quartz crushed amounted to 1,270 tons.

The "Leffel" wheel obtained during the previous year was erected, dam and penstock completed, and it has been in use during the latter part of the year; the tail race being deepened[309] to gain maximum head available.

During the year four out of the eight mortar blocks were provided with heavy cast-iron anvils, and during the overhaul at Christmas a fifth anvil was put in; these have improved the running of the stamps and will lessen the breakages.

Some repairs to the timbers of the tail race from the high pressure turbine were necessary and have been carried out.

Part of the accumulated stock of slime in the dam[310] was trucked to the agitators and treated towards the end of the year.

Minor stoppages of stamps were due to repairs being necessary to the sands elevator and air compressors.

During the Christmas stoppage the elevator was overhauled, a new shaft being put in and other repairs effected; the air compressors were also repaired.[311]

Superintendent's Annual Report for 1908. Waihi, 10th February, 1909:

It has been decided to install one of our standard size tube mills[312], and the necessary alterations to elevator wheel, launders, etc., are well in hand; this should result in improved extraction and slightly better stamp duty.[313]

Superintendent's Annual Report For Year Ended 31st Dec, 1909. Waihi, 10th February, 1910:

Union Mill (40 Stamps and 1 Tube Mill since August)— This mill ran 282 days.

The average duty per stamp per day was 2,715 tons, an increase of 0.362 tons compared with 1908; the decrease in the ore crushed amounted to 3,520 tons.

During the year the Mill was stopped for 25 days for alterations and repairs.

One of our standard pattern Tube Mills has been installed and is working well.

A new elevator wheel of larger capacity has been erected on the site of the old one.

The main shafting has been replaced with a larger size in order to drive the Tube Mill.

All launders have been overhauled and replaced where necessary with new ones.

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[309] the tail race was the short tunnel from the bottom of the turbine pit to the Ohinemuri River. It discharged the spent water from the turbines.

[310] in the old stream bed of the Mangatoetoe?

[311] Superintendents Annual Report for 1905. Waihi, 18th January, 1906.

[312] the concrete mounts of a tube mill are distinctive; they may still be identifiable on site

[313] Superintendents Annual Report for 1908. Waihi, 10th February, 1909.

> The vertical turbine has been repaired and better arrangements fitted to carry the weight of the vertical spindle, which gave some trouble in the past owing to the large quantity of tailing in the water[314].
>
> A Martin filter press for the cyanided slime and a Johnson filter press for de-watering the pulp have been brought from the Victoria Mill, erected and brought into use.
>
> The extraction according to assay was 90.1 per cent. of the gold and 71.9 per cent. of the silver.
>
> This shows an increased extraction according to assay of, 1.7 per cent. on the gold and 2.4 per cent. on the silver compared with 1908.
>
> The improved extraction and the increased stamp duty are mainly due to the Tube Mill which was installed during the year.[315]

Isdale:

> June 16, 1909. The Waihi Company's Union battery was stopping pending erection of tube mills "now being installed. These mills grind ore much finer, and have the effect of increasing the output. The mills have proved a great success at the Company's reduction works at WAIKINO."[316]

Superintendent's Annual Report For Year Ended 31st Dec. 1910. Waihi, 17th February, 1911:

> With the exception of a bucket elevator installed to lift the slime pulp from the disintegrator to the agitators there have been no additions to this mill.[317]

The End?

1910 saw the first reduction in ore output from the Martha Mine.

> The sudden drop in the gold content of the Martha reef at No. 9 level (1000 ft) which became apparent in 1910 was almost as spectacular as its continual increase in size and value up to that date. Although it was inevitable that the ore would cut out sooner or later, people in Waihi had been so long accustomed to regard the mine as inexhaustible that it came as a shock to find this was not so.[318]

Isdale:

> 1911. January 18. Superintendent Barry was quoted as having said re a rumour of an alleged intention to close the Union mill that "he knew nothing about it, and it was not correct. He added, 'that the only difficulty experienced by the Company at present was that of finding sufficient workers to get out the quartz for the mills'.[319]

Union Battery closes February 1911. Report Of The Directors 18th day of May 1911:

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[314] this must be the Ohinemuri River water, no other water source would contain tailings

[315] Superintendents Annual Report For Year Ended 31st Dec, 1909. Waihi, 10th February, 1910.

[316] Waikino And The Victoria Battery, Alistair M. Isdale, BA. June 2000. p (49)

[317] Superintendents Annual Report For Year Ended 31st Dec. 1910. Waihi, 17th February, 1911

[318] Gold Mining at Waihi, 1878-1952, JB McAra. p 134 (42-3)

[319] Waikino And The Victoria Battery, Alistair M. Isdale, BA. June 2000. p (51)

> The Union Mill of 40 stamps was shut down in February. Only 6 or 7 per cent. of the total tonnage has been crushed at this Mill in recent years.[320]

Superintendent's Annual Report For Year Ended 31st Dec., 1911. Waihi, 20th February, 1912:

> Owing to the necessity of reducing our output, the Union Mill was stopped in February, and, after treating an accumulation of tailings, etc., the Mill was sold to an Auckland syndicate.[321]

Auckland syndicate?

H.P. Barry's Report on the Milling and Treatment operations for the year ended 31st December, 1911:

> Crushing was discontinued on February 8th, and the treatment of the accumulated sand and slime was proceeded with; the plate room and concentration plant were cleaned up, all concentrate being sent to the Concentrates Treatment Plant at Victoria Mill. This work was completed by the end of April, and a contract was then let for the treatment of the sand dump, collected some years ago, and about 149 tons of fine quartz, sand and dust lying around the rock crusher and stamps.
>
> ....the mill was sold on the completion of this work.[322]

The Union Battery was the first casualty from the need to reduce output. The Waihi Mill was the second, closing down at end 1912-13.

The Union Battery never installed air agitation tanks, and the 1912 arrival of electricity to the Martha mine occurred too late.

But Wait, There's More

The battery lives on.

The Auckland syndicate mentioned above was effectively H.H. Adams. "In 1909, he was referred to as 'one of the principal mining investors in Auckland'"[323].

The New Zealand Herald, 27 October 1911, records the sale of the battery to H.H. Adams:

> SALE OF UNION BATTERY. [by TELEGRAPH. OWN correspondent.] Waihi, Thursday. The Waihi Company's Union battery (more generally known as the Silverton Mill), which was closed down when the management decided to reduce the monthly gold output, has been sold to Mr. H.H. Adams, who recently purchased the Waihi Gladstone mine. It is understood that the mill, which is of 30 stamps, was acquired for use in connection with the Gladstone property.[324]

Henry Hopper (Harry) Adams.

Adams was there at the start, in the middle, and again at the end. He is a man poorly recognised in Waihi's traditional historical narrative. Although the Waihi Borough Council Diamond Jubilee Booklet 1902-1962 suggests Adams Street was named after Joseph Adams, Draper, I think it more likely it was honouring H.H. Adams. It is close to the battery site.

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[320] Report Of The Directors 18th day of May 1911.

[321] Superintendent's Annual Report For Year Ended 31st Dec., 1911. Waihi, 20th February, 1912.

[322] Metallurgical Report For Year Ended 31st December, 1911. Waihi, 20th February, 1912. H. P. Barry, esq., Superintendent.

[323] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 136

[324] New Zealand Herald, Volume XLVIII, Issue 14822, 27 October 1911

A 1926 Observer article characterised him thus:

> At one time Harry Hopper Adams controlled a regular cordon of mines from Coromandel to Waihi. They are all asleep now, and their backers dead or gone, but Old Harry is still vigorous....Harry has bought and sold nearly every old battery on the goldfields, [and] has hawked new ideas in crushing and reducing ores...[325]

H.H. Adams, from Observer, 26 December 1903, p. 13.

He was born in Auckland in 1851, one of eleven children. He started mining in Thames when he was 17 years of age, and died in 1928. Philip Hart has written a comprehensive discussion of Adams' life.[326]

The Auckland Star, 6 December 1911, reported on the Waihi Standard Company:

> WAIHI STANDARD. The Company has been successfully floated for the purpose of developing the Waihi Gladstone property. Poppet heads are being erected, and a winding plant installed. It is expected that the plant will be ready to start on the reef before Christmas holidays. The Union battery, which was purchased from the Waihi Company, is now treating old tailings. The stampers are being put in order, and it is proposed to keep 10 head of stampers at work to test the value of the ore broken from the two reefs that were opened up by the old Company.[327]

The Waihi Gladstone Battery had not been successful at treating its ore, and the tailings were saved. From the above it seems that these tailings were put through the Union Battery late in 1911, and may be into 1912. In addition, the Waihi Extended Gold Mining Company[328] may have had ore crushed.

MINING NEWS. New Zealand Herald, 6 July 1912:

> The ordinary general meeting of shareholders in the Waihi Extended Gold Mining Company..... A shareholder suggested the advisability of testing the ore, as soon as work was resumed at the mine. The Chairman replied that as soon as opportunity offers this will be done, and the proprietors of the Union battery had already been approached as to crushing their ore. Mr. J. Frater stated that there were about 50 tons of ore ready for crushing, and it was estimated that about 2000 tons would be available in Nos. 3 and 4 levels.[329]

Little more information has been traced, beyond a comment by Hart: "During the war he [Adams] obtained some gold from his Thames and Coromandel foreshore dredges and from cleaning up the Komata and Silverton batteries"[330]. It looks like Adams was involved in the final removal of the battery.

Of the Waihi Standard Gold-mining Co. J.F. Downey wrote:

---

[325] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 11

[326] See his document: Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016

[327] Auckland Star, Volume XLII, Issue 290, 6 December 1911

[328] Not to be confused with the old Martha Extended Gold Mining Company. This company was formed in 1895, holding 100acres beside the Waihi and Grand Junction Companies. The operations of the Waihi Extended Gold Mining Company have not been traced for this document

[329] New Zealand Herald, Volume XLIX, Issue 15038, 6 July 1912

[330] Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016. p 110

> Beyond cleaning out the old workings, extending the lowest level 90 ft. northward on the reef, and sinking a winze a short distance below the level, this company did little work, and ceased operations in 1913, since when the ground has lain idle.[331]

It seems likely that this, and the Waihi miners' strike of May to November 1912, put an end to it all. Whether the Waihi Extended Gold Mining Company ever had any ore crushed at the battery has not been traced.

Ignominy

Ohinemuri Gazette, December 1915:

> TIMBER! TIMBER!
>
> FOR SALE CHEAP. MUST BE DISPOSED OF AT ONCE.
>
> We beg to notify the public that we have now dismantled the Silverton Battery, Waihi, and are prepared to dispose of it dirt cheap.
>
> 100,000 FEET OF HEART KAURI & RIMU IN ALL SIZES
>
> We also have a large assortment of Machinery, Engines, Boilers, Shafting Volleys, Bearings, Belts, Pumps, Tanks, Pipes, and Fittings, and all manner of gear, which must be disposed of at Scrap Iron Prices.
>
> Apply MANAGER, Silverton Battery, Waihi.[332]


Timber! Timber!
FOR SALE CHEAP.
MUST BE DISPOSED OF AT ONCE.
We beg to notify the public that we have now dismantled the Silverton Battery, Waihi, and are prepared to dispose of it dirt cheap.
100,000 FEET OF HEART KAURI & RIMU IN ALL SIZES
We also have a large assortment of Machinery, Engines, Boilers, Shafting Volleys, Bearings, Belts, Pumps, Tanks, Pipes, and Fittings, and all manner of gear, which must be disposed of at Scrap Iron Prices.
Apply
MANAGER,
Silverton Battery,
Waihi.

And it gets worse. Thames Star, 8 November 1916

> Meeting of the Thames Harbour Board November 7. Inward correspondence.
>
> From Silverton battery, Waihi, offering 300,000 ft. of Kauri contained in the water race, which was to be dismantled.—Offer declined.[333]

[331] J.F. Downey, Gold-Mines of the Hauraki District, New Zealand (Wellington, 1935)

[332] Ohinemuri Gazette, Issue 3466, 13 December 1915

[333] Thames Star, Volume lviii, Issue 10242, 8 November 1916

Time Line

1875 3 March. Ohinemuri Goldfield was opened

1876 August 3. Karangahake Gold Mining Company's battery with 12 head of stampers started

August 16. Wick's battery of nine stamps on Mangakara Creek started

August 30. Waitekauri Battery started

1877 January 9. Perry's battery of 20 stamps at Owharoa started

1878 Late 1878 saw McCombie and Lee testing a large reef on Pukewhau spur.

1880 Nicholl and Majurey leave the Te Aroha goldfield late 1880, and venture to the Waihi Plains.

1881 17 January, Nicholl made the first public announcement of his find

End January. Nicholl had trial parcel crushed at the Smile of Fortune Battery Owharoa.

16 February, he applied for three acres, one rood, and 26 perches as his Martha claim. Granted 24 March.

Late June FA White set up Martha Gold Mining and Quartz Crushing Company

1882 24 May. Martha Battery completed, officially opened with a gala event.

23 June. Waihi Company Battery completed (with Cabbage Tree Creek (Waimata Stream) water race)

1883 31 March. Martha Extended Company was launched, Mr J. H. Moore manager (amalgamation of Martha, Waihi and Young Colonial). Not Dulcibel

April. Firth and Clark Battery at Waiorongomai opened

October-November, Martha Extended Company add 10 stamps to its battery, making 30

1885 Rosemont, Union and Silverton mines taken up

12 August. John McCombie marked out Silverton claim

1886 Silverton Company using 10 stamps at Martha Battery, and saving tailings

1887 15 October, Martha and Silverton manager John H. Moore left for Maratoto. Tributers took over (includes Hollis)

December. Waihi Gold Mining Company Limited floated in London

1888 Construction of Waihi Battery on Union Hill commenced

February. Martha Extended Company mine and battery for sale

1890 23 April. Battery sold to Thomas Henry Russell for £3000. Offered to the Waihi Company on 7 July

1891 June. Silverton Company purchased Martha Battery; became Silverton Battery

December. Mangatoetoe Stream water race constructed, followed shortly by Mangakiri Stream water race

1893 April. Silverton Company fully adopted Cassel process (cyanide); the first in Waihi

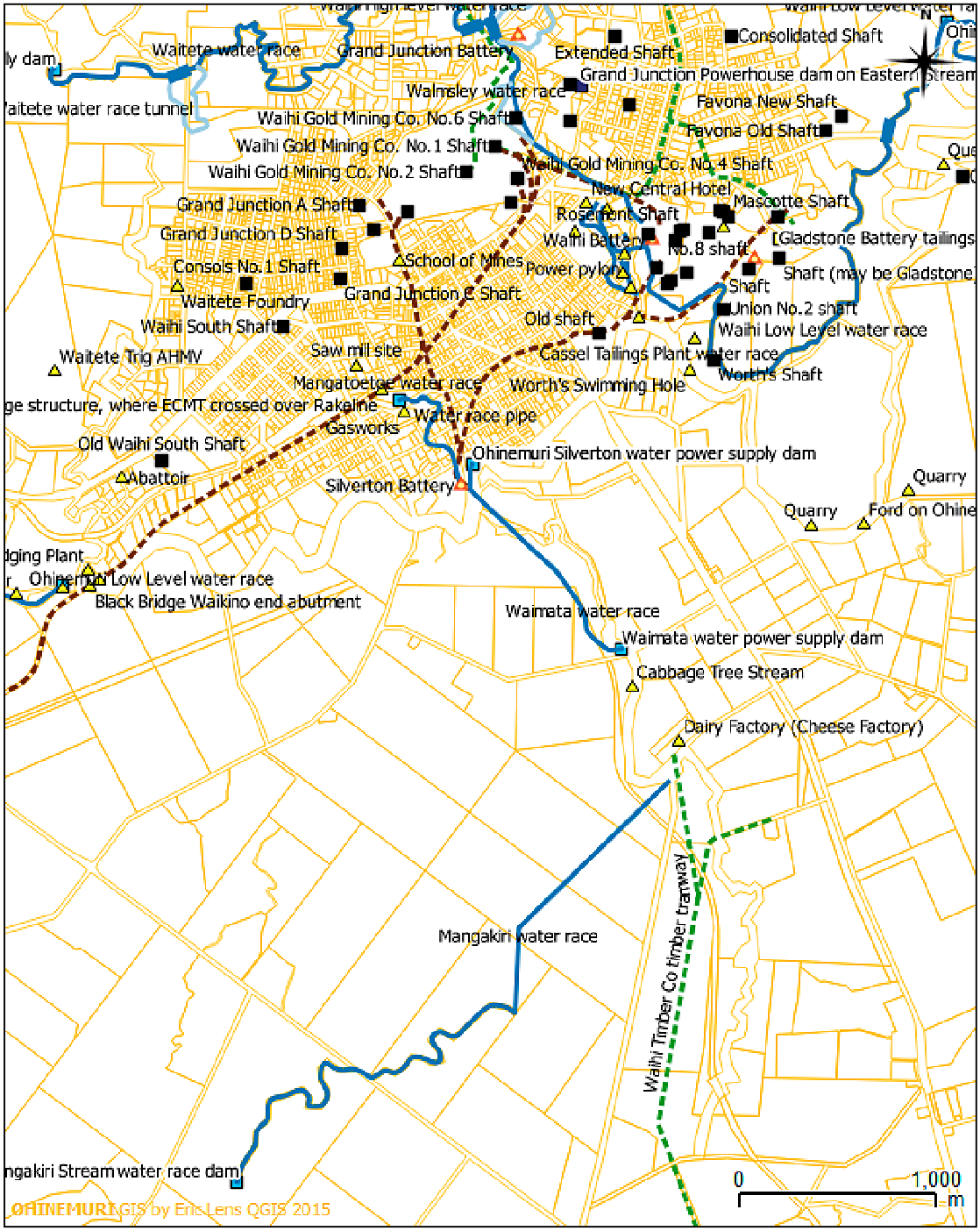
1894 May. Cyanide plant at the Waihi Battery complete

1895 Silverton mine sold. Became Waihi-Silverton Gold-mining Company (Limited), Glasgow

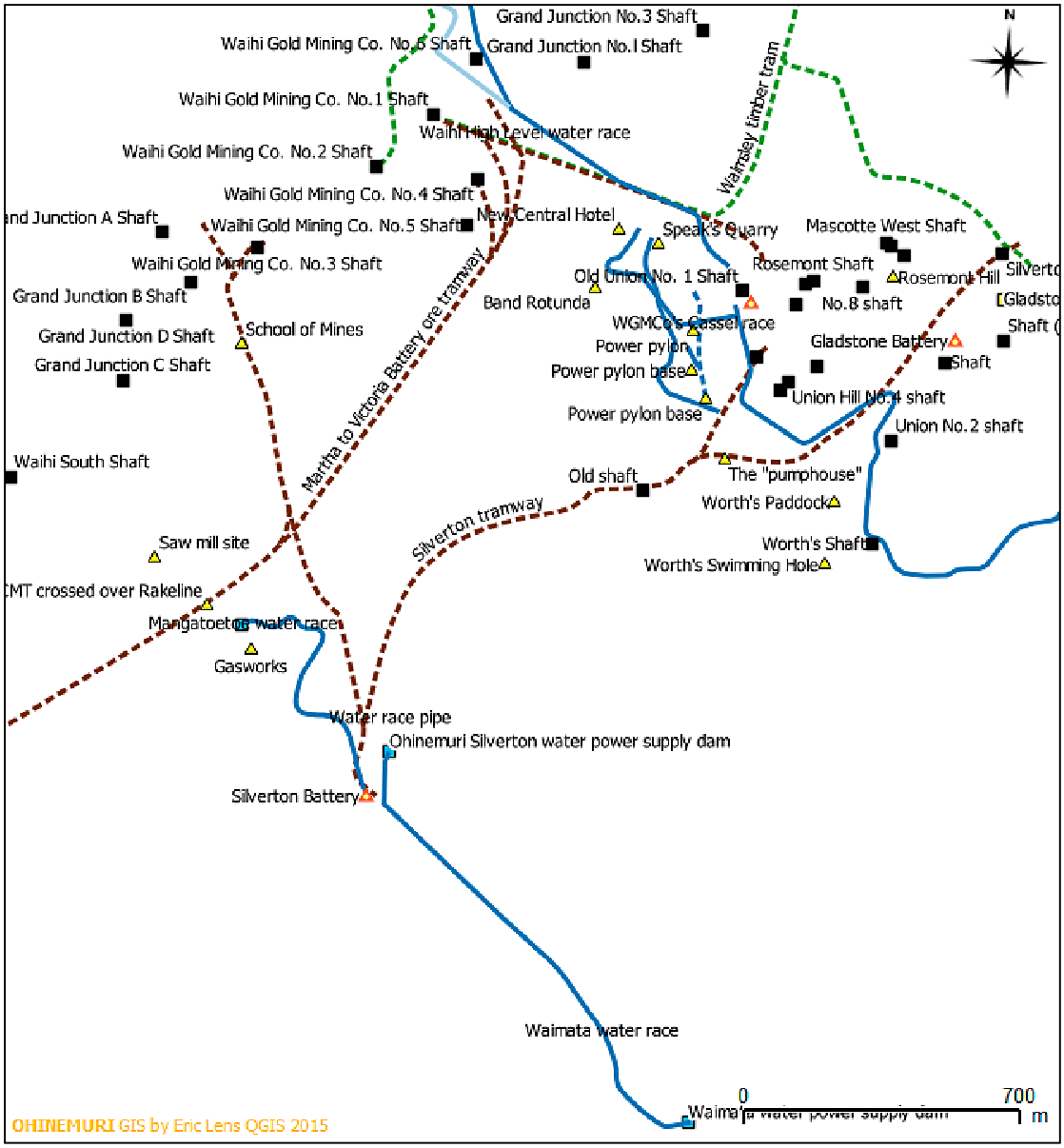
	Silverton Tramway constructed, dam on Ohinemuri River
	Three in-ground kilns constructed at mine, dry crushing at battery
	June. Union-Waihi Gold-mining Company Limited split off from Waihi Gold Mining Co., combining the Amaranth, Rosemont, Golden Run, and Union Special Claims
1896	4 April. Upgraded Silverton Battery officially opened. Dry crushing. H.H. Adams the manager
1898	Victoria Battery starts on first 100 stamps
1899	Union-Waihi Company purchased Silverton Company and battery, which became the Union Battery. Converted to wet crushing
1901	November. Waihi Gold Mining Company took over the Waihi-Union Company, and the Union Battery of 40 stamps
1902	Auxiliary power in form of steam engine and boiler installed at Union Battery. Tramway connection to Martha mine made
	16 September. Commenced crushing
1903	A new dam and penstock completed, with Leffel wheel
1909	August. One tube mill added to the plant
1911	18 January. Superintendent Barry denies rumour of intention to close the Union mill
	February. The Waihi Gold Mining Company shut down Union Mill
	H.H. Adams purchases the Union Mill, and Waihi Gladstone mine
1912-13	Waihi Battery on Union Hill closed
1913-15+	It seems likely that the Union Battery was “cleaned up” and removed by H.H. Adams

Maps and Plans

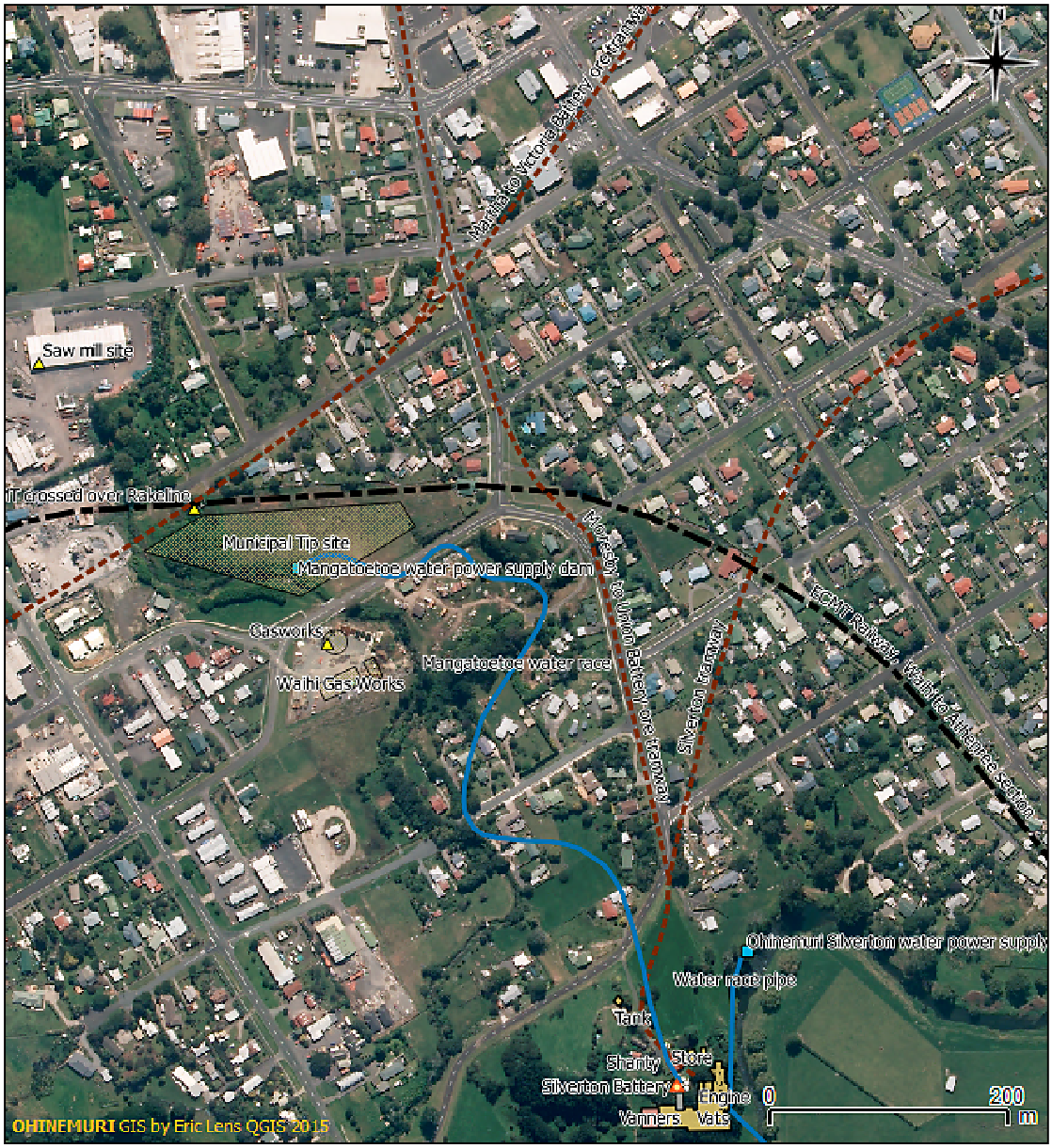
The **Ohinemuri GIS** project collects and presents geographical elements of our heritage in a digital format. Below are map images taken from the GIS; they show the location of water races, tramways and battery. Old mining maps have been incorporated into the GIS, and many features can still be traced on the ground. An on-line version of the GIS is available at: ohinemuri.org.nz/gis. A mobile version for your phone is available at: ohinemuri.org.nz/phone.



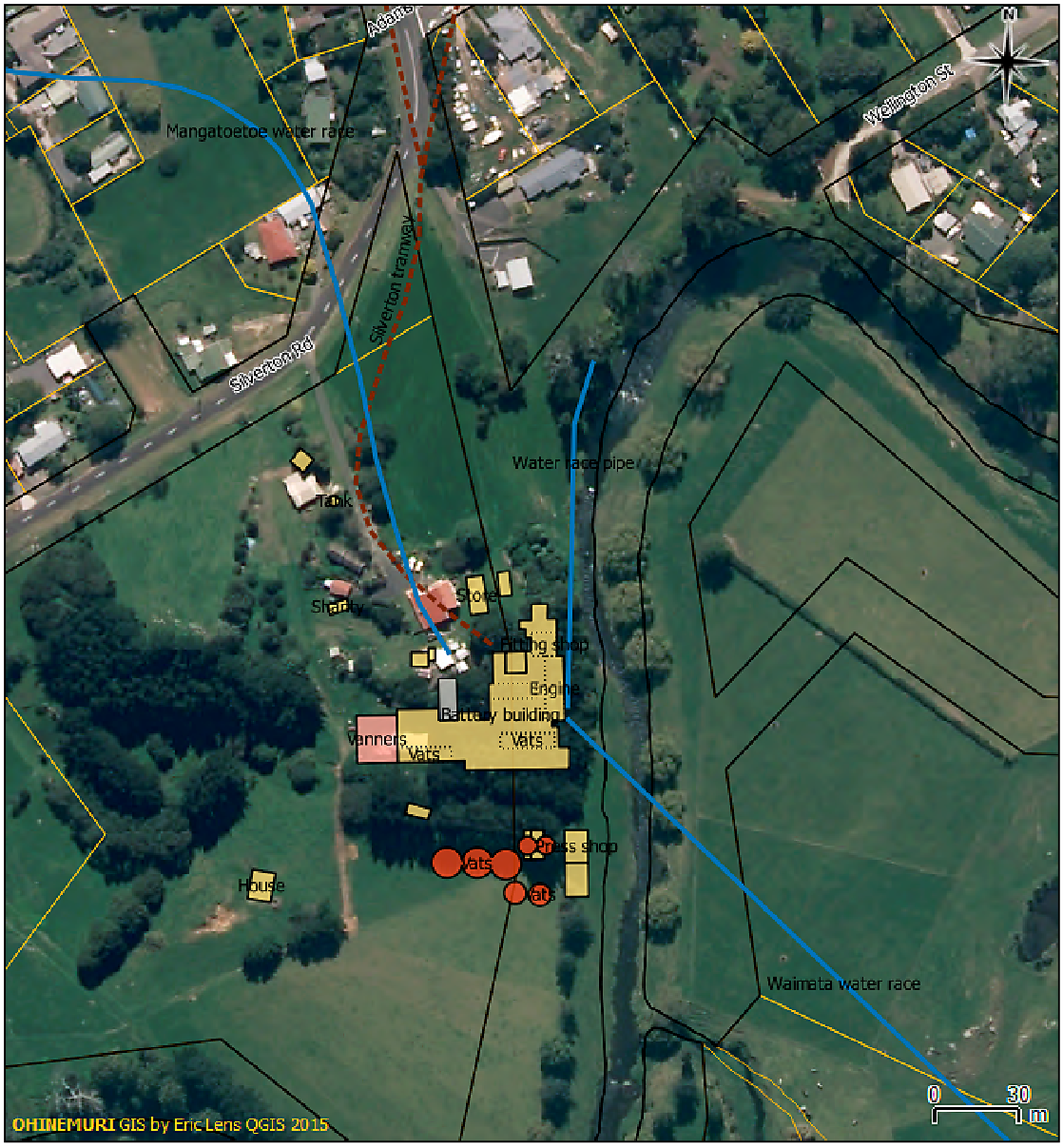
The battery, here labelled Silverton Battery, can be seen at middle (red triangle), with its associated water races in blue (the four lower water races). The tramways are designated by brick coloured dotted lines. The blank area at top middle is Martha mine, Union Hill to the right, and the black squares indicate mine shafts. The yellow lines are cadastral lines (property boundaries).



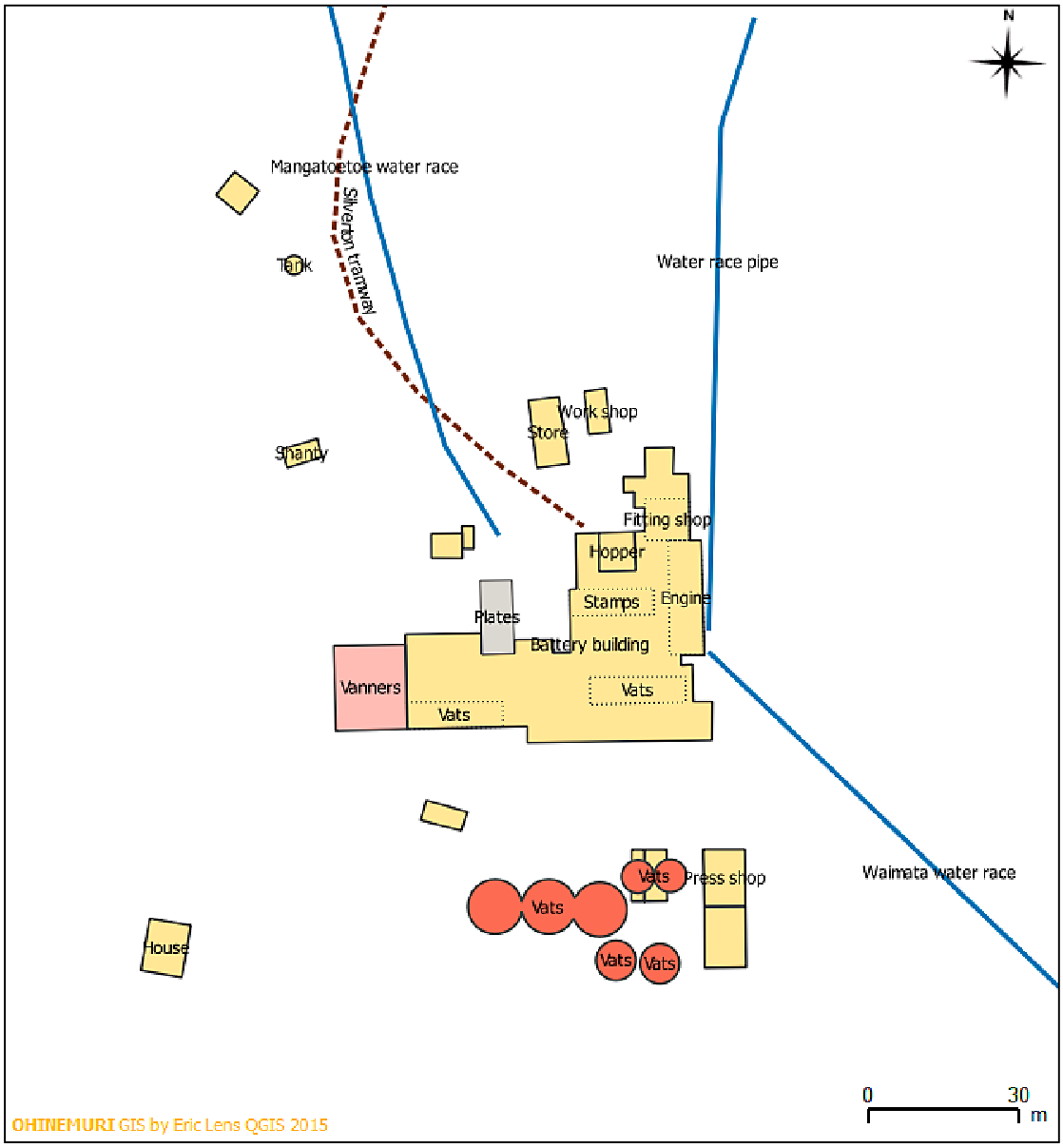
An enlarged and simplified version of the previous map. Silverton mine at top right



Tramway details over aerial image 2013

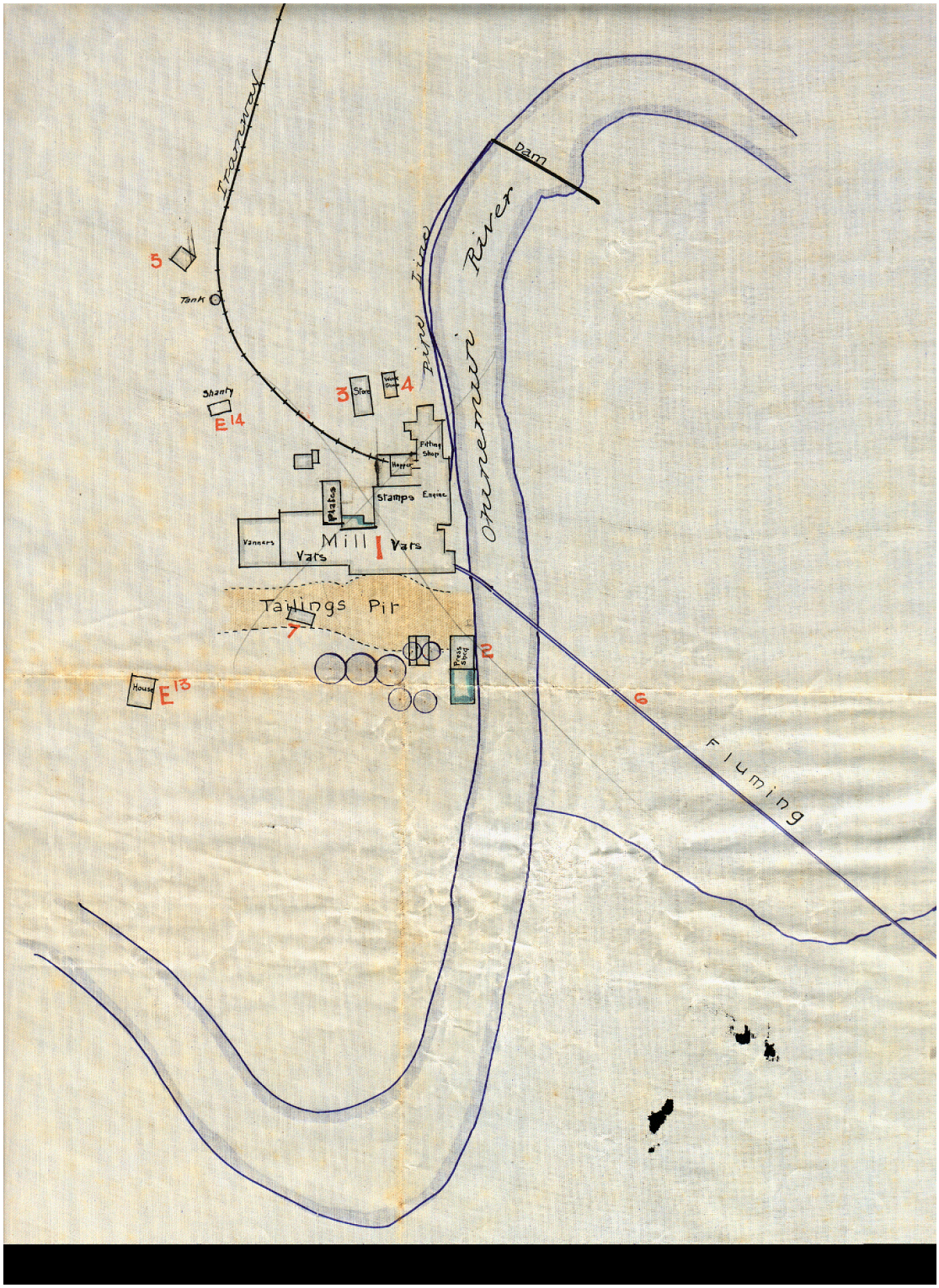


The battery buildings over aerial image 2013. The building layout has been taken from the Union Battery Insurance map dated May 1908. This map is presented on a following page.



The building layout has been taken from the Union Battery Insurance map dated May 1908. This map is presented on the following page.

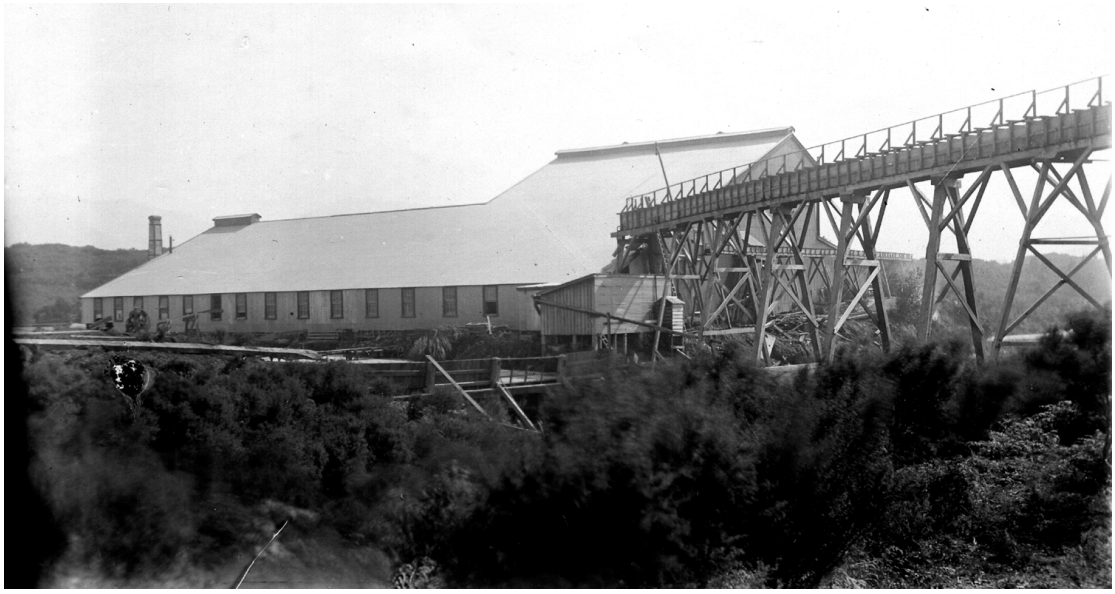
The battery building is approximately 73m long, and 58m across its widest point.



Union Battery Insurance map dated May 1908. Although this map is unlabelled and not dated, it matches a similar one of the Waihi Battery with this date.

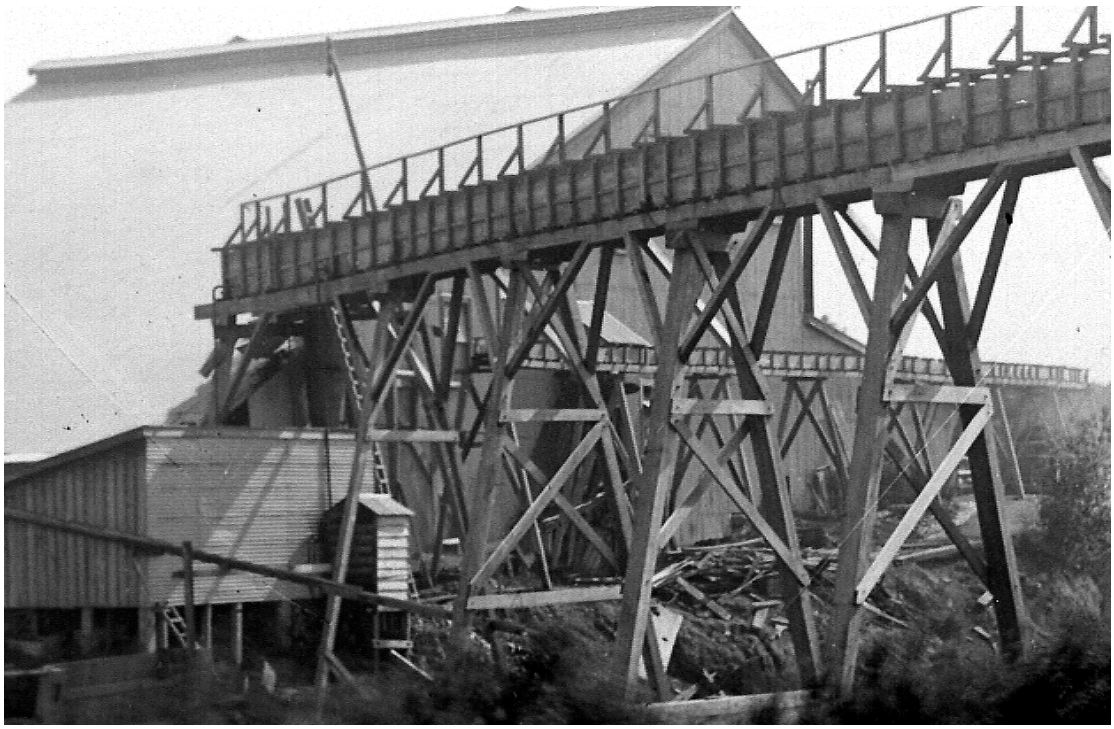
This map is uncropped, and is the only plan/map located.

Photographs - Historic

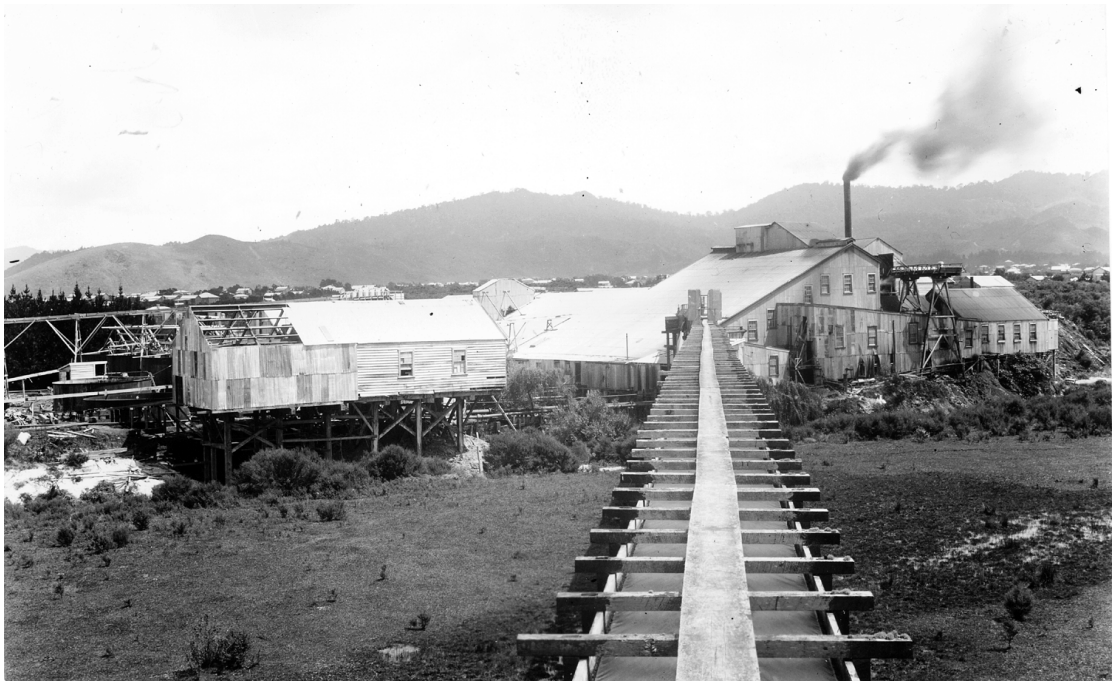


Silverton Battery 1898.

The upgraded battery was opened on 4 April 1896, so the building shown here may be two years old. The taller section would house the 40 stampers. Note the brick chimney of the smelthouse. The Ohinemuri River is between the foreground vegetation and the building. The high wooden flume is bringing water from the Waimata Stream, dropping it down a large diameter pipe to the turbine at river level. Photograph courtesy M. Roycroft.

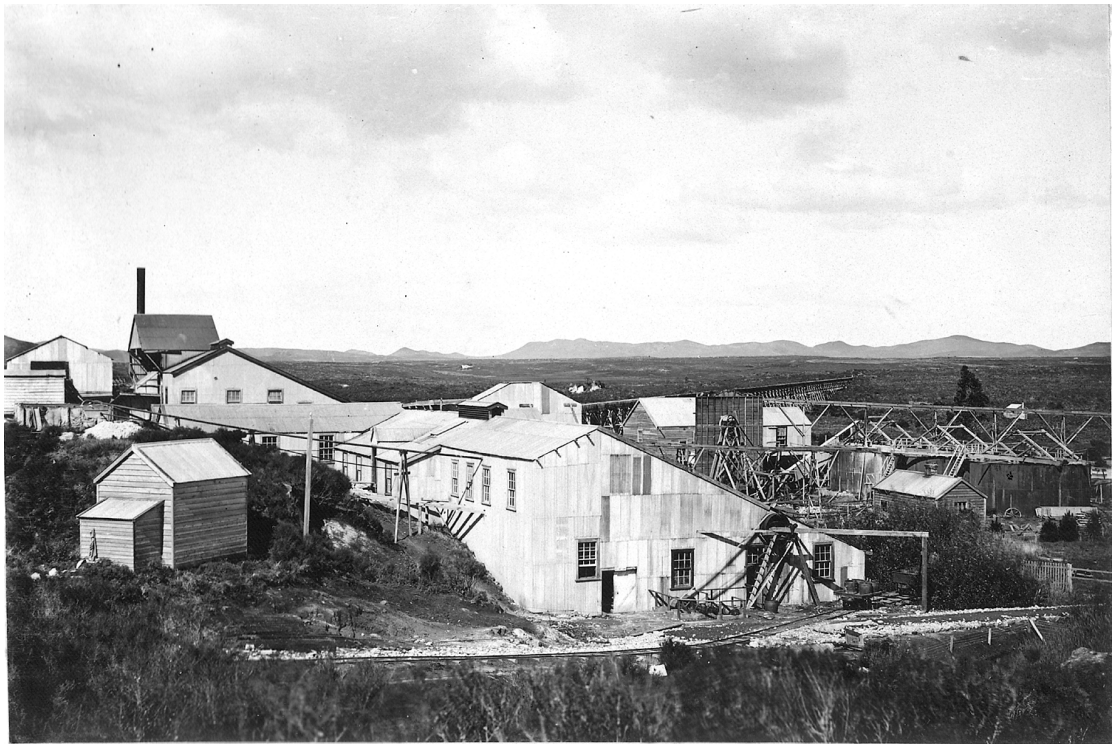


Detail. The large turbine pipe can just be made out near the left hand end of the large wooden flume. The much smaller flume in background may have been the terminus of a Mangatoetoe water race.



The Union Battery

Photograph taken from on top of the water race flume. The original Silverton building is still identifiable, but has been modified and added to. There is now a boiler-house and smoke stack, and directly in front of the building is the rough building housing the steam engine. The tramway extends through the ore hopper on to a tall timber trestle, and the fitting shop is to the right. It appears that an extension is being added to what may be the press shop at middle left. Behind this can be seen large steel tanks. Waitete ridge top right. HP Barry album WACMA.

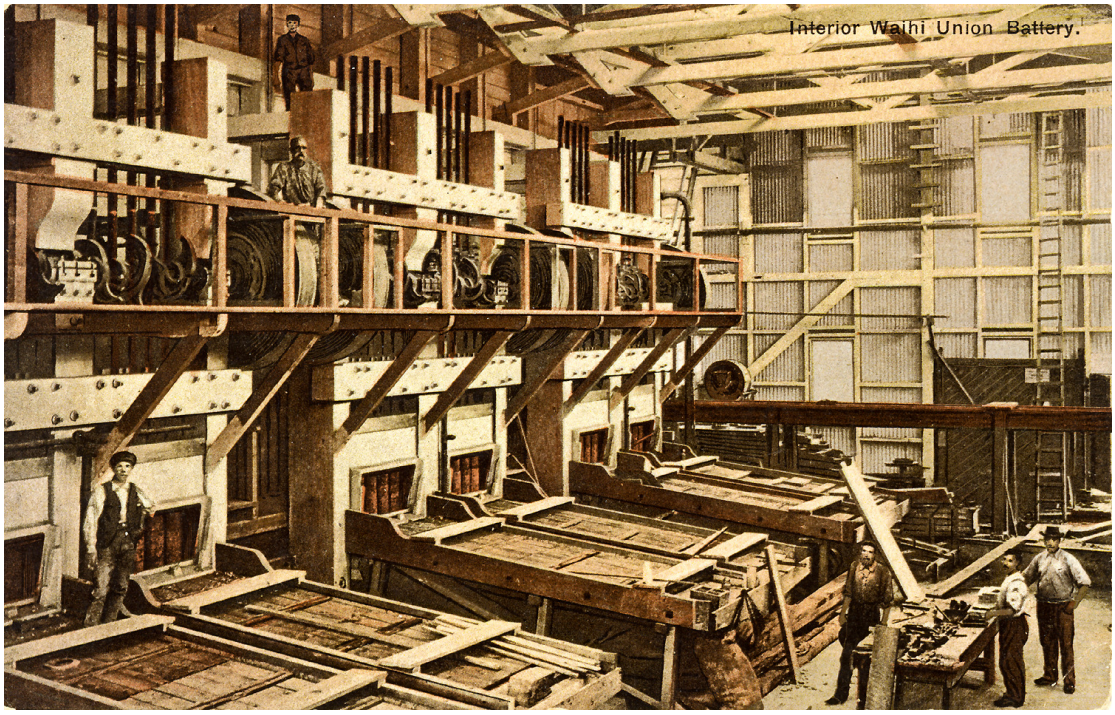


Union Battery

Looking in the opposite direction to the image above. Vanner room in foreground, tanks to right. Waimata flume in background. The roof of the original Silverton building now has an upstanding portion to accommodate elevator wheels. HP Barry album WACMA.

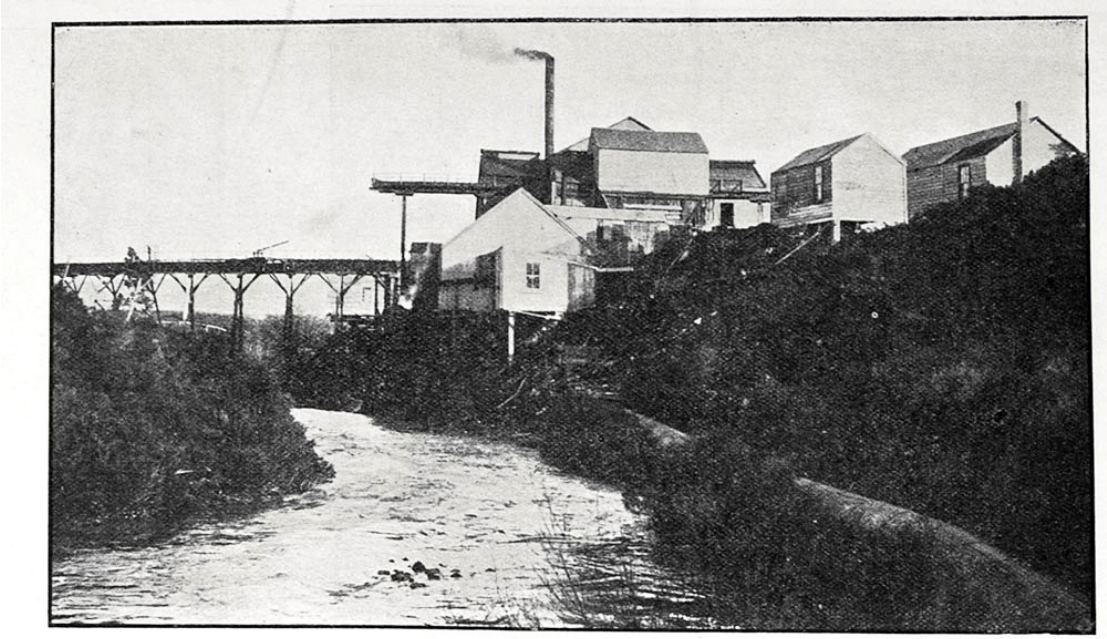
Union Battery

The Ohinemuri River is visible; we are looking upstream. Steam is venting behind the water race flume. Notice the lever silhouetted above the flume; this controlled release of water from the flume when it was not needed. Left of photo shows the large tanks, and above them a tailings flume from elevator wheels. Some tailings were conserved (saved). Three men are placed for scale, and are watching the photographer (their boss). HP Barry photo. DoC.



Interior Union Battery

This hand coloured post card shows the interior of the battery. It appears the battery is under construction, the amalgamated plates, seen here in front of the stamper mortars, were later moved to their own room. That might make the date circa 1902. WACMA. The same image was reproduced (black and white) in the NZ Graphic, 05 October 1907.



AUCKLAND'S GOLD MINING INDUSTRY: THE OLD WAIHI-SILVERTON BATTERY, NOW THE PROPERTY OF THE WAIHI GOLD MINING COMPANY.

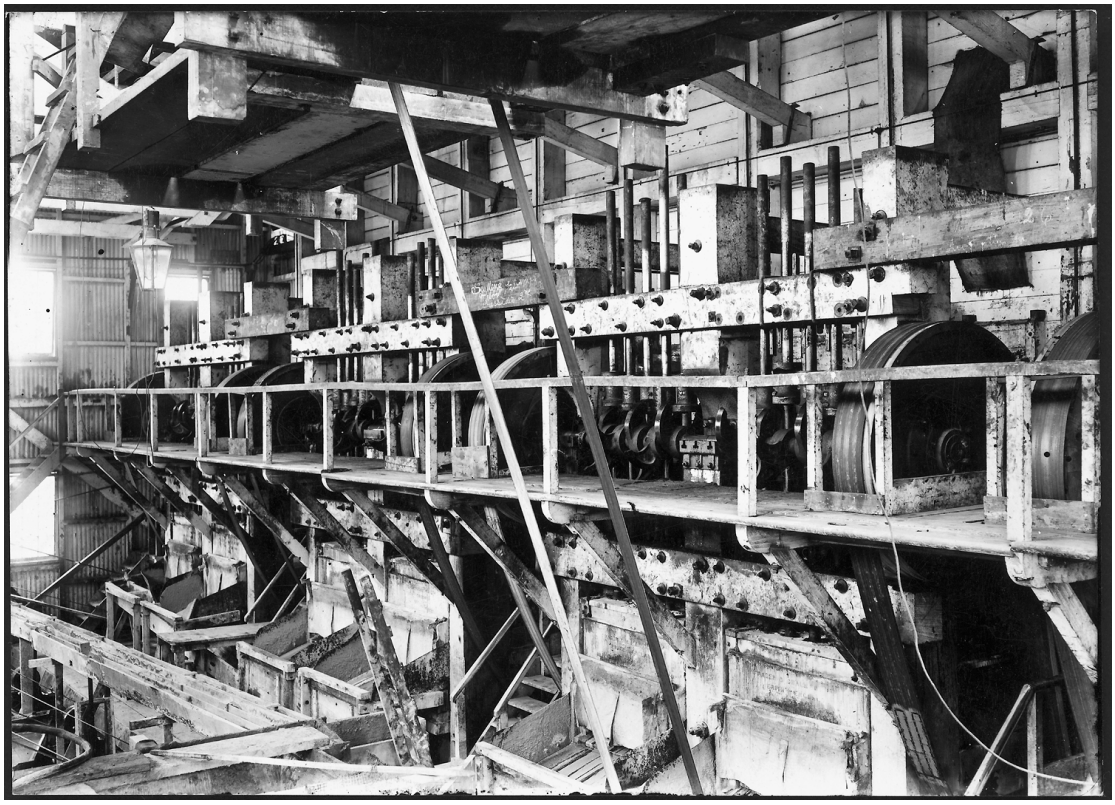
Union Battery 1905

Looking down the Ohinemuri River from just below the dam. Right foreground shows the large metal pipe taking water from the dam to the turbine at the battery. Notice again the trestled extension for the tramway, to allow a small rake of trucks to pass the opening of the ore hopper. Also visible again is the control lever for the flume over flow.

Taken from the supplement to the Auckland Weekly News 13 JULY 1905 p004 .Sir George Grey Special Collections, Auckland Libraries, AWNS-19050713-4-2

Union Battery

Looking southwest from Union Hill, the Waimata water race flume is prominent, the battery at the right. Tauranga Bridge at bottom left. Note the white tailings deposited on the river banks, from the Waihi Battery a little upstream. A detail from the Union Hill Panorama 1909-10. HP Barry.



Union battery stampers. The cam shafts and bull wheels stretch across the middle of the image. Six mortar boxes are visible below. FL16664154 ATL

Silverton Shaft 1897. The building housed a wood fired boiler, winding engine, and pumping engine. There are 13 men and two dogs pictured here. Behind the men are squared mine props ready to be taken below. Behind the poppet legs is a mullock tip from the Gladstone shaft, and at the very right of the photograph can be seen (just) the Union No. 2 Shaft poppet. WACMA.

Sources

Several of these sources exist as digital documents from which original page numbers have been lost. Numbers in brackets indicate page numbers in these digital documents.

Appendix to the Journals of the House of Representatives (AJHR)

https://paperspast.natlib.govt.nz/parliamentary

The document 'Mines Statements covering Waihi' contains extracts of most years from 1881 to 1915.

Bulletin No 15 NZ Geological Survey

Bulletin No 26 NZ Geological Survey. Waihi Goldfield

The Cyclopedia of New Zealand [Auckland Provincial District], 1902

Papers Past

https://paperspast.natlib.govt.nz/newspapers

Philip Hart. Te Aroha Mining District Working Papers

http://researchcommons.waikato.ac.nz/handle/10289/10304 and then filter by Hart.

In particular, papers:

- No. 55 Leahy

  Daniel Leahy: A Prominent Hauraki Prospector And Miner. Philip Hart. 2016

  Shortened to: 'Hart on Daniel Leahy, 2016' in the footnotes.

- No. 57 Nicholl

  William Sharman Crawford (Billy) Nicholl, The Prospector Who Discovered The Martha Lode At Waihi: His Life, Told Largely In His Own Words. Philip Hart. 2016

  Shortened to 'Hart on William Nicholl, 2016' in the footnotes.

- No. 58 Walker

  John Watson Walker: A Leading Mine Manager. Philip Hart 2016

- No. 89 Cooper

  Edward Kersey Cooper: Mine Manager And Mine Owner In Hauraki. Philip Hart 2016

- No. 59 Pond

  James Alexander Pond: An Auckland Chemist Involved In Mining. Philip Hart 2016

- No. 80 Adams

  Henry Hopper Adams: A Te Aroha Miner Who Became A Mine Owner. Philip Hart. 2016

- No. 62 Porter

  Adam Porter: A Miner Who Became A 'Self-Made Man'. Philip Hart. 2016

- No. 72 Battery

  The Te Aroha Battery, Erected In 1881. Philip Hart. 2016

- No. 78 F & C

  The Firth And Clark Battery At Waiorongomai. Philip Hart 2016

Isdale

- Waikino And The Victoria Battery, Alistair M. Isdale, BA. June 2000
- Notes From Contemporary Newspaper Records Bearing On Waihi Plain And Mines On And Around Martha Hill For Period 1868-94: As Early Background To J.B. McAra's Magnificent Work: By A.M. Isdale B.A. 20.4.1978. Rough Draft.

  Shortened to 'Isdale, 1978' in the footnotes. Numbers in brackets indicate page numbers of the document in my computer, not Isdale's original.

- OWHAROA, By Alistair M. Isdale B.A. October, 1996

Rainer

COMPANY TOWN. An industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in History. By Philip Rainer University of Auckland, December 1976.

Shortened to 'Company Town, Rainer. 1976' in the foot notes.

EG Banks

Milling and Treatment at the Waihi Mine, New Zealand. By E. G. Banks. Paper No. 221 Paper presented at the Australasian Institute of Mining Engineers, Thames New Zealand 1911.

Ohinemuri Regional History Journals (ORHJ)

http://www.ohinemuri.org.nz

Waihi Borough Council Diamond Jubilee Booklet 1902-1962

The Waihi Mine

http://www.ohinemuri.org.nz/historic-texts/waihi-diamond-jubilee-book

McAra

Gold Mining at Waihi, 1878-1952, JB McAra

Lens

Historic Features of Union Hill, Waihi. Research by Eric Lens. 2003 – 2004

Union Hill Early Mining History: Early Events Pertaining to Union Hill Waihi, including Mining Claims, and Prominent People (Eric Lens 2010), produced for inclusion in Conservation Plan For Union Hill, Waihi. Phillip R. Moore 2010

Heritage notes on the Waihi Dredging Plant 1897 - 1910. Eric Lens 2005

Biographies of Early Mining People. Prominent People Pertaining to Martha/Silverton/Union Battery Waihi

Annual Reports

Reports of the Directors of the Waihi Gold Mining Company. They include the Superintendents Annual Reports.

The document 'Annual Reports of the Directors, Waihi Gold Mining Company' contains extracts from 1887 to 1916.

C.W. Vennell

Men of Metal. The Story of A&G Price Ltd. 1868 - 1968. C.W. Vennell. 1968

Downey

J.F. Downey, Gold-Mines of the Hauraki District, New Zealand (Wellington, 1935)

Waihi Arts Centre and Museum

HP Barry photograph albums

Maps?

https://archway.archives.govt.nz/ViewFullItem.do?code=23824578

https://archway.archives.govt.nz/ViewFullItem.do?code=23824579

MINING MAPS OF WAIKATO AREA WARDENS' COURTS 24626

SERIES DESCRIPTION

Plans of residence sites in Waihi, Karangahake and adjacent areas, as well as water rights, bush rights, tramways, roads, machine and special sites, quarries, dams and water races, timber rights, quartz claims, reserves, farms and gardens etc. These documents originated in the Waihi Warden's Court as far as can be ascertained, and had later been deposited with the Library of the University of Waikato.

Appendices

Water Races at Waiorongomai

This is a description of the water races constructed for the Firth and Clark Battery at Waiorongomai.

> While the building was being erected and the machinery overhauled and modified, a water race to provide water to drive the machinery was being constructed by the contractor, Henry Hopper Adams, to his own specifications. By September 1882, he was working day and night to complete it on time. Commencing slightly downstream from the foot of Butler's Spur and running along the eastern side of the Waiorongomai Stream for three quarters of a mile, it had six ditches three feet wide and two feet deep, totalling 1,798 feet, six flumes totalling 761 feet, and three tunnels totalling 1,073 feet; the fall was 1 in 400. A dam stored water at the head of the race; in the twentieth century, and presumably originally, it was a large kauri log. The Thames Advertiser considered the race was 'constructed in a manner which would do credit to a Government as a colonial undertaking'. Most of it was 'carried through the solid earth, the gullies crossed being spanned by substantial trestle-work carrying wrought-iron open fluming'. One tunnel 600 feet in length was 'driven from both ends simultaneously, and notwithstanding that the country driven through was of a very rough character, so well were the levels taken that the drives met almost in a direct line with each other'. All joints in the tunnels were 'carefully cemented'.[334]

[334] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 6

The Firth And Clark Battery At Waiorongomai

'**A Visit to the Battery at Waiorongomai'**, *Waikato Times*, 15 May 1883, p. 2.[335]

The large building in which the battery is erected is situated on the western side of the Waiorongomai creek, near where the stream emerges from between high ranges, and from thence winds through the flat to the Waihou River. The building is 85ft by 82ft, and the walls 18ft high. The roof is covered with corrugated iron. Twenty-four sky-lights and 12 windows will give sufficient light during the day, and at night 12 large kerosene lamps are to [be] used. The stamps are 40 in number, five stampers to one box, and are geared in four different batteries, ten stampers to each battery. The bed log on which the boxes are fixed is of solid kauri, three feet square, and 62 feet in length, laid on cross logs 12 inches square, and the whole bolted down on a solid concrete foundation. Each battery of stamps is supported by cast iron columns and brackets stayed with inch and eighth and inch and quarter round iron diagonal stays. The length of each stamper and shank complete is 12ft, and the weight 10cwt; the shanks are three inches in diameter, and fitted with screw disks and jam nuts. The stamps are to be wrought, with a nine-inch drop which can be increased to 11 inches, but the latter is seldom used.

The driving shaft, which is 5in and the cam shaft 4 1/2in in diameter, are fixed in front of the columns. Each battery has a separate cam shaft, geared from the driving shaft with a set of two-to-one cog-wheel gearing, and provided with a disconnecting clutch attached to the driving-shaft pinion. The stamps are driven by two Furneyron Turbines of 60 horse-power each; one fixed at either end, and geared to the driving shaft. The belting from the 20in wheel on the turbine shaft to a five-feet driving-wheel, is of the best ten-inch rubber. This five-feet wheel is geared to the main driving shaft with a set of heavy 1 to 5 pinion wheels. The turbines are powerful enough singly to drive the whole of the stamps, but both will be used as there will be less strain on the driving shaft. The tables, which are 6ft 4in in width, are provided with No. 20 gauge copper plates; there are three drops to each, five inches between the plates, seven inches from lower plate into trough, and five inches from trough to the blanket streaks, which are 22 feet in length. The berdans are 12 in number, arranged in one row in frames of 6in x 6in heart of kauri timber, and are driven by a turbine of 20 horse-power, the driving shaft is 70 feet long, 2 3/4 inch iron, and each berdan is provided with separate clutch gear. The berdans are 4 feet in diameter, and are so set that when water is up to the brim in front there will only be three-quarters of an inch on the bottom behind the boss. The berdans are situated to admit of trucks on a small tramway running between the blanket troughs at the foot of the tables and the feeding boxes at the back of each berdan. The hoppers into which the quartz is to be tipped from the tramway waggons are situated immediately behind the building, so that the self-feeding hoppers placed near the stamp boxes are filled by means of an iron shoot from each door. In order to ensure that the quartz falling into the main hoppers shall not exceed a certain size a large iron grating is placed over each where the waggons are to be emptied, the large rocks will roll down the grating to a platform, where they are to be broken by hand labour in the meantime, but eventually stone-breaking machines, driven by water-power, are to be substituted. There is one self-feeding hopper to each stamper-box, and the quartz is discharged into the stamper-box in the following manner:- The bottom and lift of a self-feeding hopper is a cast iron circular plate or disc, 20 inches in diameter, provided with a circle of levelled teeth on the side, under this is set with a slight incline, the lower edge being about six inches above the opening to the stamper-box, a spindle from the under side of the plate resting in a socket

[335] From: : The Firth And Clark Battery At Waiorongomai. Philip Hart 2016. p 2-4

supports it, and leaves it free to revolve. Alongside of the second stamp from the outside of each battery a bumping rod with rubber spring top is so arranged that when the stamp drops to 3/4 of an inch from the bottom, the bumping rod receives a blow from the disc on the stamper shank each time it descends. The bumping rod is attached to the end of a lever with a spring return, which works a ratchet; on the axle of which is a small bevel wheel with teeth fitting those on the under side of the plate, which forms the bottom of the hopper. When quartz gets low in the stamp-box, the disc strikes the bumping-rod; this, by the aid of the spring return, works the ratchet, and the plate is caused to revolve by the bevelled pinion. The quartz resting on the plate is thus carried to the edge; immediately over the opening a guide plate is here fixed which sweeps it off into the stamp-box. A gangway is built along the whole length of the 40 stamps, on the top of the self-feeding hoppers, and the levers attached to the doors of the main hoppers can be worked by any one walking on it. The person in charge of the feeding is thus enabled to attend to the whole of the stamps, and do all the work necessary from this gangway. There are eight pots outside the building to which the tailings are conveyed in a flume from the end of the blanket streaks. The level floor near the berdans is laid with concrete, the remaining portions being laid where necessary with timber. A retorting house with two furnaces and concrete floor is erected in front of the main building near the tailing pits. The whole of the building, the hoppers and tramway are erected in the most substantial manner, the battery being one of the most complete of its kind, and provision is made to adopt such suitable labour-saving appliances as may enable the proprietors to crush quartz at a much less cost than is required in connection with most batteries in this part of New Zealand. A great deal more might be said, in order to give a just description of the battery.[336]

The whole document makes interesting reading: The Firth And Clark Battery At Waiorongomai. Philip Hart 2016.

[336] The Firth And Clark Battery At Waiorongomai Philip Hart 2016. p 2-4

Regulations for Ohinemuri Gold Fields Under The Gold Fields Act, 1866.[337]

Extracts from the regulations in force at the opening of the Ohinemuri Goldfield

Miners' Rights to be issued.

1. Miners' rights for the Ohinemuri Gold Field shall be issued by the Warden on payment of a fee of one pound (£1), and no person not being the holder of such miner's right will be permitted to mine on the said gold field; such miners' rights not to be transferable.

Miners' Rights to be exhibited on demand.

2. Every holder of a miner's right must exhibit the same on demand of any gold fields officer, or any other person duly authorized in writing by the Warden to demand such exhibition.

Form of Claims.

4. A claim, with the exception of river and creek claims, may be of any form, provided that it shall not exceed in length twice its breadth; but unoccupied land of irregular shape between two or more claims may be taken up, irrespective of length or breadth.

Area of Claims.

6. In Class No. 2,— The area of land which may be occupied for mining by one miner shall not exceed 15,000 square feet [1394 sq m or 0.344 acre] in each claim taken up by him, but any party of miners, not exceeding ten in number, each being actually present and engaged in the marking out of any land for mining—or represented by a miner so present and engaged, such representative miner being at the time of such marking out in personal possession of the miner's right or rights of the miner or miners represented—instead of marking out separate land for each miner in such party, may mark out, in the manner hereinbefore prescribed, an aggregate area of land equal in extent to 15,000 square feet for each miner in such party.

Amalgamation.

7. The owners of adjoining claims, being in the same class, and which together shall not exceed in area or extent four times the largest area or extent allowed for a claim of that particular class, may amalgamate the same. The owners of the several claims desiring amalgamation shall sign in duplicate a writing in the form in the schedule hereto appended, marked A, and deposit the same in the office of the Mining Registrar, who shall return one of such writings, sealed with the seal of the office, to the parties, and thereon the several claims mentioned in such writing shall be amalgamated, and thenceforth be held and worked as one claim.

Working.

9. Every claim shall be bona fide and continuously worked from day to day, and there shall be employed therein or thereon at least one miner for every man's ground comprised, in such claim, and the term "man's ground," as used in this Regulation, shall mean the land which a miner, in the several classes of claims, marks out and occupies under one miner's right.

Defining Work on Claim.

10. Any miner employed in making necessary preparation for the working of any claim, or any work immediately in connection therewith, or in the erection of machinery for the same, shall be deemed to be working on the claim.

Forfeiture of Mining Claim.

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[337]AJHR_1875_I_H-15 Mining Regulations. https://atojs.natlib.govt.nz/cgi-bin/atojs?a=d&d=AJHR1875-I.2.2.4.21&e=-------10-

11. Any claim not worked in accordance with the provisions of these Regulations shall be deemed forfeited, unless under protection, or circumstances be proved sufficient, in the opinion of the Warden, to excuse any default in such working: Provided that the default of any miner in working in respect of his share in any claim shall only entail forfeiture of such share, and shall not affect the title of any other miner.

Protection of Claim, and Terms of Protection.

19. Permission to retain a claim or interest therein unworked may be granted by the Warden, and the same shall be thereon protected for such time as the Warden shall think fit, not exceeding the terms hereinafter mentioned. The causes and time for which a claim may be protected under this regulation shall be as follow, viz.

(1.) Any claim having been proved to the satisfaction of the Warden to have been worked by the party wishing to have it protected, for at least three (3) months immediately pre-ceding the application for protection, and no payable quartz having been obtained from suck claim for at least one month previous—Three (3) months.

(2.) The claim having been sunk and worked to the water—the party being unable to over-come the same—the adjoining claims not being down to the water—Three (3) months.

(3.) Any claim, the holder of which intends to procure machinery for quartz-crushing or water-baling, during the time of protection, and shall give security by bond, or otherwise, to the satisfaction of the Warden that he will procure such machinery within a time to be fixed by the Warden—Three (3) months. And such further time as the Warden shall think fit, not exceeding in the whole twelve (12) months, according to the description of machinery.

(4.) Any river claim during fluming, race cutting, or other works for the benefit of the claim— Three (3) months.

(5.) Any miner suffering from sickness, or being compelled to be absent from sickness in his family—Protection for the period of the continuance thereof.

(6.) Any miner engaged as a party to or a witness in any case, as an assessor or juryman in any Court of Justice—During the sitting of the Court in the case in which he is engaged, and with reasonable time for travelling to and fro.

Notice of Protection to be Posted on Claim.

22. All protected claims or interests must be marked by a notice, with "protected" and the owner's name, address, and particulars of the claim or interest, posted on the ground.

Application for Water Rights.

26. Any miner intending to divert and use water for mining purposes by means of any water-race to be constructed, shall give notice thereof in writing in the form hereto appended, marked Schedule C, to the Warden, and to any person whose interest may be affected by the diversion of such water; and copies of such notice shall be posted and maintained for fourteen (14) days at the source whence it is proposed to obtain water, and at the proposed termination of such water-race; and the intended course thereof shall be indicated by clearing a line as nearly as may be practicable along the proposed course of the race, and by pegs not less than two inches square, or by large stones marked A and placed not more than two hundred (200) yards apart, and such notice shall state the mean breadth and depth of the proposed water-race, the quantity of water it is capable of carrying, and the number of sluice-heads which it is proposed to appropriate. And if no valid objection be entered against the construction of such water-race within fourteen (14) days, a license renewable annually may, on payment of the fees

payable in respect thereof, be granted by the Warden to the applicant, subject to the provisions and conditions of these Regulations.

Superior Rights Defined.

27. Superiority of right to a supply of water shall be determined by priority of occupation, the earlier occupant having the superior right; and occupation shall be taken to have commenced at the date of the license under which a race is held.

Races to be Commenced within Given Time.

28. The cutting and formation of a race must be commenced within one calendar month from the date of the license, and the occupier shall continue cutting and forming the same, or engaged in necessary work connected therewith, until the work is completed, otherwise such license shall be deemed forfeited.

Area of Machine Sites.

56. The area of a machine site shall not exceed half an acre.

Area of Residence Sites.

69. The area of a residence site shall be thirty-three (33) feet frontage by sixty-six (66) feet [2178 sq ft or 202 sq m or 0.05 acre].

Residence Sites not to encroach on Roads.

70. No miner shall occupy as a residence site any portion of any street, road, or thoroughfare:

Provided that in cases where two or more adjoining residence sites are held by members of one family they may, with the approval of the Warden in writing, amalgamate their sites.

Residence Sites may be Protected during Absence.

71. The holder of any residence site, having any building erected thereon, may have the same protected for any period, not exceeding three months, during which he may be absent from the same.

Miners may use Timber for Mining.

83. Any miner may use timber (other than kauri) for building or mining purposes, or for firewood.

Kauri Timber to be paid for.

84. Any person requiring kauri timber must apply to the Warden, who will give permission to cut the same on payment to him of the sum of one pound five shillings (£1 5s.) for each tree required by the applicant.

Period within which a Claim should be Registered.

89. Every miner taking up a claim or other authorised holding shall within ten days thereafter cause his title to the same to be registered in a book kept for that purpose by the Mining Registrar, and if he shall make default in so doing his title to such claim shall be deemed to be forfeited.

Rainer on the Early Waihi Goldmining Company

Extracted from: COMPANY TOWN. An industrial history of the Waihi Gold Mining Company, Limited, 1887-1912. Thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in History. by Philip Rainer University of Auckland, December 1976.

The actual mining of the ore, at least at this early stage, was a relatively simple operation. Human muscle performed most tasks. At first it was not even necessary to sink shafts. Ore was taken from adit levels -tunnels driven into the exposed hillside. Extraction of the gold from the ore, however, was more complex. Expensive machinery, and efficient technical processes were essential. To facilitate rapid development £25,000 was set aside as working capital. It was expected that so large an amount would be adequate: but it quickly proved insufficient, necessitating the raising of further capital.

The Company determined to institute dry crushing of the quartz. Walker had visited the West Coast of America en route from England, to investigate the process. Common practice throughout the Ohinemuri was to use wet crushing, but a method thought to result in much of the gold being washed away. In dry crushing the quartz was first roasted to burn off the sulphur content, and then crushed in a stamper battery. The resultant crushings were then mixed into a slurry and passed over mercury coated copper plates – a process known as pan-amalgamation. [The foregoing is not a description of pan amalgamation. The Company did adopt hot pan amalgamation, where the crushed ore was treated with mercury in cast iron pans. Water, salt, and sometimes copper sulphate, were mixed with the ore to form a slurry, the lot being heated by steam –E.] The known affinity of gold for mercury saw the gold taken up and dissolved in the mercury. All that remained was for the amalgam of gold and mercury to be scraped off - and a further process finally separated the gold from the mercury.

The Local Board swung into action, in order to concentrate the necessary men and materials at Waihi. At their first meeting, the Managing Director, Seymour Thorne George, was instructed to proceed to Waihi and 'make all necessary arrangements prior to the arrival of Mr J. Walker from England with the machinery.' Timber, bricks, and machinery soon littered the site. Contracts were let for road formation and construction. Deeds were signed, licence fees paid. Overall management at Waihi was in the hands of John Walker. Edward Corbett, Construction Engineer, was hired to supervise the erection of mill and processing plant. His salary was £8 per week. Walker was present at this meeting when Corbett's position was confirmed. In the course of discussion his attention was drawn to the need for economy in wages. It was early days, but already Management was making its policy clear. Equally important was Walker's reply. He intended to work as much as possible by contract. The Company expected its 'pound of flesh' from the beginning.

The physical characteristics of the country presented obstacles. By late March 1888, progress had stalled. Heavy machinery had been shipped from England and the United States of America to Paeroa, via Auckland. But the road from Paeroa to Waihi was muddy and flooded. It looked as if the machinery would remain at the wharves until the spring. However, a month later, following a prolonged fine spell, the machinery was successfully hauled the fourteen or so miles. It was then found that further excavation and foundation work was required. Such were the everyday experiences of erecting plant to commence production.

At the end of May, Thomas Henry Russell, (Thomas Russell's son) was attending Board meetings in Auckland, and shortly thereafter was elected to the Local Board. This younger Russell remains an enigma. Little is known about him, although he certainly displayed his father's drive and determination. He was soon the driving force at Waihi. Possessed of a good

knowledge of assaying, ‘Harry’ as he was commonly known, was soon experimenting with ore from other local claims.

Considerable progress had been made by the middle of the year. 'The Manager's and men's quarters, office, store-room, smithy and carpenter's shops, are all finished; the assay rooms are being built.' The next month Walker was exulting over the richest ore yet found in Waihi - from the Union smithy level.

Yet all was not well. Commencement of crushing operations was continually delayed. Both the time necessary for construction and associated expenses had been seriously under estimated. There was no reprieve. Workers struck for more pay, demanding 8/- a day. 'Being in no position to hold out, I [Walker] was obliged to submit so far as underground workers are concerned.' Even then four of the best miners walked off the job. Walker was still being taxed about expenses. Having divulged his labour troubles, he felt bound to conclude with the plea that the Directors should, ‘Be assured there is no unnecessary expense being incurred here, and if our pay roll and other costs are heavy, it is simply because we are doing big work and under grave difficulties.'

By October the position was serious. Seymour Thorne George reported that an estimated £4,700 was needed to meet current liabilities and pay wages. In addition £1,500 was required to erect a rotary roasting furnace. Thomas Henry Russell offered to advance a total of £6,500 to meet those needs, on condition of being given a mortgage over mine and property. A telegram was hurriedly despatched to Thomas Russell in London, urging acceptance. He agreed. His son was quickly assuming control of events.

Later that same month, in an endeavour to repay Thomas Henry Russell and provide for mounting debts, the Company raised £10,000 by a debenture issue. Yet still the Company had processed little, if any, of its ore.

1889 held no brighter prospects. Defects in the assembled crushing machinery caused further delay. The Company metallurgist, Mr G. Small resigned in disgust. Thomas Henry Russell continued to pay workers wages in exchange for a lien on eventual bullion returns.

His father revealed the extent of the troubles to anxious shareholders at the First Annual General Meeting in London, 20 May 1889. Thomas Russell was confident that dry crushing would succeed. Fault was now attributed to the steam plant which was unable to generate sufficient power to drive the stampers, water power would provide the answer. A water-race would be quickly constructed and all would be well. To pay for this, and for the 10,000 debentures already issued, plus other liabilities, a further debenture issue of £20,000 was proposed. Issued at par, it would carry an interest rate of 8% per annum for a three year period. First option was given to shareholders, with the right of exchange for Company shares as yet not taken up: operations having commenced with just 85,150 shares allocated.

In Auckland a shareholders meeting was called for 29 May. Present were - 'J. Russell (Chair) Morrin, George, W.S. Wilson, Boole, [?] Fenton, Mace, Clarke, McPherson.' Shareholders were apprised of the situation, and informed that the London Directors expected New Zealand shareholders to subscribe £4,000 of the £20,000 required. Details of the ensuing discussion are not given, but it was resolved to issue a circular to Colonial Shareholders setting out the position. James Russell penned the missive himself, adding the dire warning, 'It is plainly intimated to the local Directors that in default of this sum being raised liquidation of the company must follow.' Shareholders were not impressed. On the 12 June a curt telegram was sent by James to his brother Thomas. 'None of the Auckland shareholders will take Debentures.' The response in England was little better, with shareholders agreeing to uplift a mere 2000. In desperation the Directors were forced to take up the majority themselves.

Years later, on a happier occasion Thomas Russell remembered how impossible it had been to interest shareholders in this issue. He recalled how shares had completely fallen in value, 'sales were made of them as low as 2/6 each, and 5/- for sometime was a good price.'

The Company, though close to collapse, managed to hang on. If only successful production would commence, troubles might be overcome. Salvation arrived. In December 1889, a telegram reached London, '10 head of stamps started. Mill a complete success. The whole Battery starts about the beginning of January.' The news was heralded to shareholders without delay, a printed card being despatched before Christmas.

It had taken almost two years to successfully install the machinery and commence crushing. On isolated occasions the stampers had been set in motion, but each time faults necessitated further delays. The Company had taken a gamble: dry crushing was a comparatively new technique, especially in the Ohinemuri. Adding to the difficulties was the vast scale of operations planned - there were few, if any, models on which to base operations.

Government reports were most critical. Inspecting Engineer, H.A. Gordon, was a perceptive and searching official. While others might gloss over and consolingly soothe, Gordon was always ready to probe and disturb. His criticisms were often devastating. In 1889 he contented himself with the observation that the general arrangement of the plant 'does not do credit to the Superintendent.'

The following year he approvingly recorded the erection of a good plant and thirty head of stampers. He then proceeded with more feeling. As the Waihi Gold Mining Company was in many ways a forerunner, Gordon's remarks are worth quoting at length. They illustrate much that cannot be deduced from Company records, and provide an insight into the experimental nature of the construction work. In review 1889 was seen as a year of haphazard experiments - machinery being constantly erected and pulled to pieces again. Explosives had sometimes been employed in an endeavour to break up unwanted reminders of error. Looking to the future,

it is to be hoped that there will be an abundance of payable ore to refund the shareholders for the large outlay and money spent in foolish blundering, which would not have been tolerated had it belonged to local proprietors; but, unfortunately, the money spent is foreign capital, and unless the mine possesses such rich ore to recoup the outlay it will be the means of retarding the introduction of capital into the colony for mining ventures.

Gordon was to prove correct. The Company did influence future developments. Inside three years Company debts would be paid off, the capital increased to £150,000, and the first dividends paid. All beyond even Gordon's wildest imaginings!

1890 established the pattern for the next three years. With consistent production underway, bullion proceeds began to reduce Company indebtedness. But the most momentus event was the purchase of the neighbouring Martha Extended Company's mine. Thomas Henry Russell was responsible for this amazing coup. This restless soul had assayed ore from various parts of the Martha property. He was of the opinion that the property was of immense potential, even though the Hollis Brothers and their band of tributers were barely eking out a living. The Martha was purchased for £3,000. At the same time he bought up a number of smaller claims, as well as the Waitekauri mine a few miles from Waihi.

On 7 July the Local Board received a proposition from Thomas Henry Russell offering to 'hand over to the Waihi Company all his interest in certain properties at Waihi' . The offer was accepted. Local Chairman James Russell wrote to London advising that for a payment of £6,000 and 20,000 paid-up shares, the Company had acquired the Martha mine and plant, the Brittannia, Nut, and other adjoining claims. James was overjoyed: 'At one place on the side of

the reef, Hollis, George and I sat down with a pick and broke out at least twenty pieces of Quartz, in all of which you could plainly see the gold.' Thus for a mere trifle the Company acquired a mine that was to yield millions within a few years.

As usual Inspecting Engineer Gordon entered the fray. 'It seems scarcely credible that the Martha Company should have parted with so valuable a property.' He attributed the sale solely to the fact that few mining companies relied on assaying, and thus did not realise the value of their holdings. Thomas Henry Russell would have been only too ready to agree. An independent engineer, Richard Spratt had furnished a report, estimating the Martha held 500,000 tons of payable ore, with an approximate overall value of £5 per ton. Once deficiencies in processing were overcome there was no reason why the Company should not return a handsome profit. The Waihi Company was obviously as impressed with Spratt as with his report. Less than three weeks later he became an employee at £200 per annum.

Changes continued. At the meeting confirming Spratt's appointment, the Local Board accepted John Walker's resignation as General Manager (or Superintendent). Thomas Henry Russell was appointed in his place, at the princely salary of £1000 a year - a figure far in excess of any other employee. Just two months later he tendered his resignation, effective from the end of the year. Spratt was offered the job, but declined. The reason for Russell's resignation is not clear. An unpredictable individual, his Waitekauri mine was consuming much of his energy, and was undoubtedly a factor. Yet this did not end his association with the Company. At an informal meeting in December he offered his services in an advisory capacity at £600 a year. Again he was accepted. Mr Thomas Gilmour was appointed to take charge of the Martha mine at £5 per week.

Thomas Gilmour was of Irish birth. A married man he lived at Thames. He commenced his duties in January 1891, and in the Company diary began twelve years of dedicated service with the simple inscription, 'Saturday January 3 1891. Arrived at Waihi and slept in Old Battery.' It is from this and other diaries that more personal glimpses of early conditions at Waihi can be elicited. The ferocity of the rainstorms never ceased to amaze Gilmour. During the winter of 1891 he had inch thick ice in his water bucket - the thickest he had ever experienced in New Zealand. Gilmour's early years of service were lonely. Lack of suitable accommodation resulted in his wife and family living in Thames for a further two and a half years. Almost without fail, he made the weary journey back and forth each weekend to be with them.

1890 had proved quite a year. By September some £14,316 had been received from bullion sales. The Martha had been purchased. Simplistic notions that the Waihi Gold Mining Company itself was founded in 1890 with this purchase must be for ever dismissed. 1890 was the third year of operations - albeit the first worth remembering. But the previous two years must not be ignored. A stock of knowledge had been accumulated; mistakes would not be repeated.

Management had undergone changes. Walker had left. What responsibility for past failures were laid at his feet? There seems no way of knowing, although he received harassment from the Directors on numerous occasions. However, he is not lost to us. For many years he was associated with the Waihi Grand Junction Mining Company; periodically journeying to England to promote further ventures. This was perhaps his true vocation.

In excess of £50,000 had been spent on the site at Waihi, and in December 1890, Company capital was increased to £106,000. One month later it was up to £150,000. A circular informed local shareholders that, 'It is anticipated that when this money is raised, and the debts paid, the Company will at once be in a position to pay dividends.' Optimism abounded. The Local Directors cabled Thomas Russell recommending an expansion of stamper capacity, and by

February 1891, this was in hand. The Company now had a plant of fifty stamper heads; ten more were to follow.

The Little Loco

This little four-wheel tank loco had been built in 1882 by Bagnall in England, their works number 416. It was imported new by the Mercury Bay Sawmilling Co, and used on at least two bush trams in that district. Its track gauge was 3 feet 6 inches. This loco supplied logs to the mill in dry weather when the principal supply method of floating was not feasible. In 1888 the Mercury Bay operation passed into the ownership of the Kauri Timber Co. They saw no further prospects for tramways at Mercury Bay and soon sold the loco to the Silverton Gold Mining Co at Waihi. The new owners used it to haul ore along a one-kilometer tramway from the mine to the crusher. The Silverton Company sold out to the Waihi Gold Mining Co in 1902. The new owners linked the Silverton rail system to their own extensive rail system. However the gauge of the Silverton line was narrowed to 2 feet 9 inches, rendering the Bagnall loco redundant, and leading to its sale to Bond Bros in 1903.

On 19 June 1903 it was reported that laying the bush tram with iron rails was in progress under the supervision of W. J. Gray of Katikati. A small steam loco named Sampson [Samson?] had just arrived for Bond Bros. This loco was purchased from the Silverton tramway in Waihi. It was transported from Waihi to Katikati by an eight-horse team driven by Charles Mundy. Care was taken during the journey to ensure a safe passage of the heavy load over the county bridges. 'Considering the state of the roads it appears to have been a Herculean feat reflecting great credit on the horses and driver'. It seems likely that the intention was to work the loco over the entire eight-kilometer tramway.[338]

Silverton locomotive. Waihi Arts Centre and Museum Association, Hinton album.

[338] Sadly, source not known

Edward Mann Corbett

Corbett, Edward Man[339]

The Cyclopedia of New Zealand [Auckland Provincial District], 1902 Page 501

Hanna, photo
THE LATE MR. E. M. CORBETT.

Mr. Edward Man Corbett, sometime of Waitekauri, was one of the oldest and best known mining engineers on the Hauraki Goldfields. He was born at Appleton, Berkshire, in March, 1842, and was educated primarily at the Parish School, and afterwards at the Blue Coat School, Oxford. On leaving school he was apprenticed for seven years to Mr. Alfred White, agricultural implement maker, of Besselsleigh, Berks. After the expiration of his term he was for twelve months at Fifield, Berks, with Mr. William White, the well known engineer and agricultural implement maker, who offered to take Mr. Corbett into partnership. Mr. Corbett having decided, however, to try this colony, he, on the 2nd of August, 1864, left London by the ship "British Trident," and arrived in Auckland on the 5th of November of the same year.

Shortly after landing he accepted an engagement with Messrs. Vickery and Masefield, the then well-known Auckland engineering firm, and remained with them until the opening of the Thames Goldfields in 1867, when he resigned to follow the "rush" to that district. After working as a miner for about six months Mr. Corbett started in business as a mechanical and mining engineer. For some time he had charge of the "Homeward Bound" Battery at the Kuranui Creek, where he met with a serious accident. On recovering, he took charge of the pumping and winding machinery at the Imperial Crown Company's shaft (now known as the "Big Pump" shaft). This position he held for about twelve months, when he was appointed by the Moanataiari Gold Mining Company to take charge of their battery (the "Victoria") and pumping and winding machinery in the Moanataiari Creek. After about eighteen months his directors decided to build a larger and more complete battery on the beach, and Mr. Corbett was instructed to draw up a plan and prepare specifications of a mill he thought best suited for their class of ore. The plans were duly completed and approved by the directors, and Mr. Corbett proceeded with the work of erection at once. The mill embodied all the then latest appliances for gold saving and the economy of labour, and is claimed to have been the first on the Thames with a complete assay plant. Mr. Corbett supervised and carried out this work to the entire satisfaction of his directors, at a time when materials were at their highest price, the cost of the whole plant being £13,500. He resigned the charge of the mill after twelve months.

On the opening of the Ohinemuri Goldfield, Mr. Corbett, in conjunction with some of his late directors, entered into an agreement with the shareholders of some of the Waitekauri claims to erect a forty-one stamp mill, and connect it with the mines by a tramway. After preparing plans and specifications, he carried out the erection and construction of this work to the entire satisfaction of all parties. In the meantime the whole concern had been floated into a company, and Mr. Corbett was placed in charge of the mill. After a year and a half he took charge of the mine as well, and held this position for over three years. During the whole of that period (five years) he took down to the Thames £100,000 worth of gold. Shortly afterwards it was decided to let the whole of the mine in sections on tribute. On the expiration of the term for which they were let, some of the sections were re-applied for and granted, others were abandoned. One of these latter was proved to contain a considerable quantity of low grade ore, and Mr. Corbett (at this time lessee of the mill) entered into an arrangement with two others to take charge of this section, he to crush the ore won on percentage. After about three months of ordinary

[339] Mann. See Hart

work a rich reef was cut, from which, during the succeeding nine months, £24,000 worth of gold was won. For some time previously mining in the Waitekauri district had been at a very low ebb, but this revived the industry; prospecting operations were extended to the surrounding districts, and gold was discovered at Waihi, in the now famous “Martha” Lode.

About six years after this discovery the present Waihi Company was formed, and Mr. Corbett, although suffering very much from rheumatism at that time, was appointed superintending engineer to the company, with instructions to prepare plans, etc., and to supervise the erection of a crushing and pan plant; he afterwards, on two occasions, undertook and carried out the erection of other important portions of their present mill at Waihi. Mr. Corbett was afterwards in business as a consulting and mining engineer. As he possessed a thorough knowledge of the goldfields of the Hauraki Peninsula, his services were constantly in demand. Mr. Corbett represented the Waitekauri Riding in the Ohinemuri County Council for many years. He was elected a member of the Goldfields' Committee in the first council of the Auckland Chamber of Mines, and was a member of the New Zealand Institute of Mining Engineers. Mr. Corbett had been twice married, and had ten surviving children—six sons and four daughters. He met his death on the 21st of January, 1898, through a buggy accident.

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Mary and Francis Murray and Annie

Elsie M. Graydon 1987

80 YEAR ON WAITEKAURI - GOLDEN CROSS [C.J.GWILLIAM 11/2/87]

Well here's the bridge and the end of our tar-sealed road [Twin Bridges, Waitekayri]. Just up above is the house where the CORBETT family lived in the earliest days, a fine home with verandahs on three sides. Four sets of terraced steps led up to it and its garden, tennis courts and large orchard of real old English plums, pears, apples and oranges.

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Waitekauri Re-Visited, 1955

By Walter P. Wylde

Ohinemuri Regional History Journal 16, June 1972

Across the two bridges on the Golden Cross Road was a fine old dwelling built by Mr. E.M. Corbett to replace one destroyed by fire, but the original stables and some of the fruit and nut trees were still there. Mr. Corbett, one of the best known mining engineers on the Hauraki goldfields had been associated with the planning and erection of several important mills and pumping installations at Thames, before superintending the erection of the 40 Stamp Mill at Waitekauri with its famous water wheel, the largest in the southern hemisphere. Later he became superintending engineer for the Waihi Company and planned and erected many big plants. He represented the Waitekauri riding on the Ohinemuri County Council for many years, but met his death in a buggy accident in the Karangahake Gorge in 1898, leaving six sons and four daughters.[340]

[340] https://ohinemuri.org.nz/journals/42-journal-16-june-1972/778-waitekauri-re-visited-1955

Starting of the Waihi-Silverton Battery 1896

New Zealand Herald, Volume XXXIII, Issue 10098, **6 April 1896**

WAIHI-SILVERTON. STARTING OF THE BATTERY. PUBLIC CEREMONY. AN AUSPICIOUS EVENT.

[FROM OUR OWN CORRESPONDENT.]

Waihi, Saturday. Although a considerable amount of mining has been done at Waihi during the past couple of years, operations have so far only resulted in one mine contributing to the wealth of the district by means of bullion returns; and that mine, as readers of the Herald are already aware, is the veritable Waihi, which it can be said without contradiction has not a peer in the ranks of the bullion-producers of the colony. This does not imply, however, that there are not other valuable mining properties at Waihi; for it has been proved beyond doubt that, in addition to the lodes existing in the Waihi Gold Mining Company's ground, there are other ore bodies containing a very high percentage of the precious metal traversing portions of the Waihi district.

That the Waihi-Silverton property has been favoured with some of these lodes is unquestioned, and the mine having been acquired by British capitalists, it is not to be wondered at that practical steps were taken to prove the reefs in question, namely, by battery and cyanide treatment. In order to give effect to this decision, however, the old Silverton mill had first to be removed, and at the commencement of last winter the erection of the new mill on the old battery site was undertaken. The terrible state of the roads between Paeroa and Waihi made the work of construction prolonged and arduous, inasmuch as the conveyance of the machinery to the destined site was considerably retarded by the bad roads just referred to and a very wet season. However, it seemed impossible to exhaust the patience of either the directors or the manager (Mr. H.H. Adams), and making the best of the situation, they persistently kept matters progressing as rapidly as circumstances would permit, with the result that there stands at Waihi to-day one of the most efficient plants of its kind in the southern hemisphere—an opinion held by numbers of our leading mining authorities.

The mill consists of 40 head of stampers, and is replete with all appurtenances connected with battery and cyanide treatment, and all details associated with its construction having just been completed, a public opening took place to-day. Fully 300 people—including a fair sprinkling of the fair sex, who manifested the keenest interest in the proceedings— assembled at the battery, among those present being Messrs. J.A. Pond, managing director of the Silverton Company; Captain Argall, supervising engineer; D.G. McDonnell, legal manager; Gray and A. Kidd, directors; G. Wilson, mining inspector; A. Rhodes, manager of the Bank of New Zealand; also the following managers of mining companies, H.P. Barry, general manager of the Waihi Gold Mining Company; J. Gilmour, manager of Waihi mine; J. McCombie, Woodstock; Evans, Grand Junction; Collins, Alpha; Morgan, Owharoa; Scott, Heitman's Freehold; Newdick, Queen of Waihi; Brokenshire, Inglewood; Quinn, Waihi Extended; G.H. Purchas, Waitekauri. There were also a large number of mining enthusiasts, including Mr. George Comer, of the Thames, who had visited Waihi specially for the opening ceremony.

Precisely at half past ten a.m. Mr. J.A. Pond set the machinery in motion, and having declared the Waihi-Silverton battery opened, three cheers were called for, and it is needless to say were lustily given. An inspection of the battery by the public was then commenced, and when all the various parts of the battery had been visited and the working of the machinery closely watched, the general consensus of opinion was that a more satisfactory state of affairs could not exist, all the parts having worked without a hitch. For this happy consummation, no doubt, the greatest praise is due to the manager, Mr. Adams, who, it may be stated, supervised all the works connected with the construction of the mill, besides attending to the opening up developments of the mine. Consequently he fully deserved the eulogies passed upon him to-day for the skill, etc., displayed by him in giving effect to the

desires of his directors, while it should also be mentioned that one great object Mr. Adams sought to attain in the construction of the battery was the minimising of the dust evil, and an idea of his has been put into practice which will act as an experiment. This, I might state, is the erection of suction fans over the stamper boxes, but whether the experiment will be successful remains to be proved. It is, however, the first step of its kind taken in connection with dry crushing plants, and is to be highly commended.

Mr. Pond (chairman of directors) and Mr. Kidd (director) are also to be complimented for the watchful interest manifested by them during the erection of the mill, this being evidenced by the periodical visits to the workings made by them even during the worst parts of the winter season. Altogether one and all should feel pleased at what has been accomplished as the result of capital and labour, and if the quantity of ore that can be obtained without difficulty from the large reefs of the Silverton mine, combined with the assay value of the same, can be taken as a criterion, the future prosperity of the Silverton Gold Mining Company is assured, the ore insight being sufficient to keep the mill constantly employed for a very long period indeed.

When the battery had been running for about an hour, the machinery was stopped again, and the company repaired to the ground floor section of the building, where a long table laden with refreshments had been placed. Mr. J.A. Pond presided, and after having referred to the happy circumstances which had brought them all together, he said he thought that it was worth while giving a few facts regarding the history of the mine. He then went on to state that in the year 1886 the Silverton property was pegged out by Mr. J. McCombie and himself, and it was named the Silverton consequent upon the Broken Hills, then called the Silverton, coming to the front as a great wealth producer, which he was sure their mine would also prove to be. The mine was then placed in the hands of the late Mr. J. Moore, whose memory they all respected, and after operations had been conducted for a while rich ore was struck, as a result of which dividends were paid, the original shareholders being the happy recipients. The quartz, however, was treated by the old battery process at the Martha battery, with such poor success that the tailings, 300 tons of which were saved and stored in pits, varied in value from £10 to £20 per ton, showing that the percentage of gold extracted was very small.

Successful efforts were then made to purchase the Martha battery, after which a new plant was erected, pan treatment being adopted which, though yielding higher results than the old method was far from the anticipated success. Difficulties in the mine had then to be contended against, the water trouble being considerably annoying, which made it necessary to seek additional capital in order to successfully develop the property. An effort was then made to obtain English capital in order that the mine might be properly worked. The negotiations terminated successfully, and a company was formed in London with a working capital of £27,500. This the chairman of directors designated a record flotation, inasmuch as the whole of the capital was subscribed six hours after the property had been placed on the market. He (Mr. Pond) felt it was a record flotation, for the simple reason that the shares were taken up on the strength of a statement made by the directors, in conjunction with a private letter from himself, which was accepted at home without any verification.

The present local board was then appointed, he (the speaker) having the honour to be elected chairman. Of the many difficulties they had to surmount the greatest they found was in the choice of manager, for with the long list of skilled and faithful men before them it was a matter of extreme pain to have to eliminate any, and it was only after much thought and considerable anxiety that they arrived unanimously at the choice of the present manager (Mr. H.H. Adams). The development of the mine and the erection of the present crushing plant were matters at once taken in hand, a standing memorial of which they could all see before and around them, the whole of the machinery being driven by water power.

In the latter the skill of the Manager brought to a state of great perfection, a power which was running past their doors being utilised, and he might say that it had been determined by the management that no water shall pass the battery without being harnessed in doing its work in reducing the Silverton ore.

That brought him to the point regarding the size of the battery with its 40 head of stampers. This, he felt sure, was too limited for future working and in this opinion they had the concurrence of the Home board.

In support of this Mr. Pond read the following portion of a letter, dated 21st February, 1895, which he had received from the chairman of the Board at London: —"I quite agree with you that we should have to increase our stamping power, but I think we must have some few months' experience of our forty head before we decide to increase the number. It may be desirable to have heavier stamps, and as our water supply will, I presume, be inadequate, we shall have to face a much larger cost in the necessary machinery to work them." Thus, he continued, one and all would see the determination exhibited by the English shareholders to leave no stone unturned to bring the plant to the highest state of efficiency.

As they would all see, the mode adopted for the treatment of the Silverton ores was that of cyanide, this method having been proved eminently successful in the extraction of bullion from the ore. He could not, therefore, let the opportunity pass just then without referring to the present unsatisfactory condition in which the process in question stands, with its paying and non-paying royalties—the royalties varying in different mines— the legal difficulties overshadowed the whole, making it, as he said, very unsatisfactory. He trusted that at an early date some method would be adopted by the Government of our colony to arrange with the Cassel Company by which this mode of treatment would be free to all, making its use greatly extended, while its adoption would permit vast quantities of low grade ore to be treated remuneratively. He would also add that in his opinion, men never more thoroughly deserved compensation than the discoverers of the cyanide process, one beautifully complete within itself, and which he as a chemist could say was of great value in its present condition, but yet capable of great improvement. Regarding the Silverton plant alone it had been the effort of the company in erecting the plant to make it as complete as the knowledge of to day would avail, and few plants, he contended, were as complete as the one in which they then were assembled.

He would now say a few words with regard to the supply of ore. Those present who had been down and through the mine were acquainted with the vast supplies of quartz available, but to those who had not, and from whom he had heard the matter of supply called into question, he would remark that it was almost presumptuous folly to venture an opinion without the facts before them. From the two large lodes—each being more than 15 feet in width— to the extent they are, a supply can be drawn far beyond the ability of the Silverton Company to treat with the present crushing power, and he could not help referring to his letter of April, 1894, in the prospectus, when he said, "While the output of quartz need only be controlled by our ability to crush," since which time the discovery of new lodes of still richer character was, he thought, sufficient to warrant the Silverton people in being assured that not only could the supply of ore be sufficient to keep the present battery supplied, but the ore in sight rendered it necessary to contemplate an early extension of the works.

In the letter just referred to the following note of his would doubtless be of interest:—"I have now given you the data you require, and hope with your assistance we may be enabled to properly develop the mine, which in my opinion is one of the most valuable properties we have on the Thames Peninsula. I am confident that it will be a credit to us, and a great financial success when opened up."

In conclusion Mr. Pond said that the implicit confidence of the directors at Home was well evidenced by the fact that over £18,000 had been entrusted to the colonial Board to bring the mine and battery into their present condition, while the cordial unanimity of the local directors, and the confidence reposed in them by the Home Board was a matter for congratulation to themselves. The returns from the mine through the battery which had been started that morning would, he was assured, place the property in the forefront of bullion producers—a marked success of the developments achieved by the utilisation of British capital in our New Zealand mines. (Loud applause.)

Toasts were then drunk and responded to, "The Queen " being first on the list. Then came “Success to the Battery,” Mr. Pond pointing out that in the construction of the plant every effort had been made to

protect the men from the danger if dust or chemicals. "The Legal Manager and Directors" was next proposed, and responded to by Mr. Gray, who spoke in felicitous terms of the happy associations he had with the legal manager, Mr. Pond, and other directors. Mr. Gray also spoke for Mr. MacDonnell, legal manager, who had to leave on account of indisposition.

Feeling references were then made to the deaths of Messrs. Spratt, J. Moore, and A. Porter, all of whom had been connected with and were deeply interested in the Silverton property. The manager, "Mr. Adams," was the next toast, and was proposed by Mr. A. Kidd, who said that he had known Mr. Adams for twenty years and had always found him to be the right man in the right place. Mr. Adams, he need hardly say, enjoyed the entire confidence of the Board, and as a result of the latitude given him, they that day stood in a battery which was a memorial of his skill and unquestionably one of the finest batteries in the southern hemisphere. In conclusion he said that the success of the battery depended upon the success of the Silverton mine, and the success of the Silverton property meant additional success to the Waihi district. Mr. Adams replied thanking those present for the hearty manner in which the toast had been drunk, and spoke of the assistance he had received from the board of directors. He could say from his connection with the same a better board he never had to deal with. The men, he thought, deserved as much praise as he did, for they all worked hard to promote the interests of the Silverton.

"Captain Argall, Mr. J. McConnell, and the Visitors," coupled with the names of Messrs. J. McCombie, Rhodes, and G. Wilson (mining inspector), were next drunk with honours and duly responded to. Mr. Wilson, mining inspector, said that it gave him very great pleasure to be present at the opening of the plant, and he must say that in his official capacity he had thoroughly inspected the mill, and he had not the slightest hesitation in saying that he was sure it would realise expectations. One thing that pleased him was the care and interest for the safety of the men exercised in its construction. Mr. Adams had introduced an experiment to eliminate to a great extent the dust trouble, and although the arrangements made to cope with this difficulty were not yet complete, he thought from the way in which the fans had worked that morning that they would be a success.

"The Success of the Silverton Company" was then proposed by Mr. Adams, who combated the assertion of some that there would not be sufficient ore to keep the mill running for long. He stated that he had been mining since he was 17 years of age, and during his career one of his appointments was that of underground boss at the Bright Smile, which mine kept 96 head of stampers running on ore won from lodes which were not nearly so large or as permanent as the lodes traversing the Silverton property. He, therefore, had not the slightest doubt with regard to maintaining a good supply of ore, and with the knowledge he possessed of the bullion-producing capabilities of the lodes, and the quantity of ore they could command, he had the greatest confidence in the success, not of the battery alone, but of the returns that would be forthcoming as a result of the treatment of Silverton quartz. He was not now speaking in a boasting manner, but his practical knowledge gave him the power to assert that the bullion yields would be all that could be desired. The toast having been drunk three cheers were given for the success of the Silverton Gold Mining Company, after which the company dispersed, but not before several photos were taken of the party by Mr. J. McConnell, the company's assayer.

The Plant

Already a description of this fine plant has appeared in the columns of the Herald, but it may not be out of place to briefly refer at this juncture to it again. As already indicated, the mill stands on the old Silverton battery site, and is about a couple of miles distant from the mine, communication with which has been effected by means of a tramway, and over this line the ore is conveyed to the battery in one ton trucks drawn by a locomotive. Upon delivery at the Mill the ore is tipped on to a " grizzly," the fine particles falling through into the main hopper, while the rough passes into the hopper erected over two stone-breakers into which the ore is fed automatically.

When the stone has been reduced to sufficient fineness, it is passed into the hopper underneath, and from here is drawn automatically a regular supply of ore, the self-feeders being fixed behind the stamps and continually meets the demand made upon them. The stampers are provided with 30 mesh screens, and the crushed ore after passing through the screen falls into a large receptacle whence it is elevated and delivered into another hopper erected in connection with the treatment plant. Before passing from the stampers entirely, however, it will be gathered from the remarks made by Mr. George Wilson, mining inspector, and others, at the opening ceremony, and recorded above, that an arrangement was introduced by Mr. Adams to minimise the dust evil. This arrangement is unquestionably a very simple one, and should prove most effective in accomplishing the desired end. It merely consists of large hoods being placed over the stamp boxes, a continuous pipe being connected with a suction fan, which draws off the dust as it escapes from the stampers, and precipitates it into a receiver, where it is collected. Then, when a sufficient amount has accumulated no doubt it will be treated with the other ore. The idea, as already stated, emanated from Mr. Adams, and if it proves as successful as anticipated the men working in the battery will undoubtedly owe a lot to the originator in reducing to a minimum the danger caused by the floating of dust in the atmosphere, and which they must necessarily inhale.

When the ore has been elevated and delivered into the hopper connected with the treatment plant it is conveyed by means of trucks along the tops of the tanks or vats and emptied therein. These vats, it may be mentioned, are 12 in number, and are composed of iron, the size of each being 16 feet in diameter by four feet deep. The bottoms of the vats are concave, with a sluice pipe in the centre, while a wooden grating also covers the bottom, a canvas filter being laid over all. These tanks are the first of their kind used in the colony, though I understand they are extensively used in America. In conversation with Mr. McConnoll, assayer, as to the chemical effects of the cyanide on the iron, he informed me that there can be no appreciable loss or decomposition of the cyanide, but in order to obviate any reaction that may take place, the inside of these tanks has been coated with a mixture of tar and kauri gum, on which cyanide has no effect. Mr. McConnell also stated that the principal objection to iron tanks was apparently that a certain amount of decomposition must take place in the cyanide used for treatment, but he said when it is considered that in plants where wooden tanks are used, the cyanide is conveyed from these vats through iron pipes, the effect is practically the same. Hence this objection must be swept away.

Another great and most important advantage that will be gained by the use of iron tanks is that when once made tight they are impervious for all time, and are not affected by any change of weather, consequently the leakage, which takes place in wooden tanks is avoided, and this undoubtedly is a great consideration. However, the Silverton Company has taken the initiative with regard to the introduction of iron tanks to the colony, and the result of the move will no doubt be watched with the greatest interest by those interested in cyanide plants.

Returning to the mode of treatment, the ore is then charged into the tanks, to a depth of about 2½ feet, after which the cyanide solution is run in by means of a pipe, which enters the tank below the filter. The solution is allowed to rise up from the bottom slowly through the ore until it appears a few inches above the top, when it is then stopped. This method of running on the solution is adopted so as to saturate the ore evenly, and prevent channels being formed through it, as would be the case if the solution were run on to the top of the ore. After the ore has been saturated with the solution for an hour or so, the solution is allowed to percolate through the ore, and dissolving the gold in its course through the ore, it is carried from the bottom of the tank and passed through the precipitating boxes. The ore is then washed for the purpose of freeing from it the gold solution.

It may be also mentioned here that in view of coarse gold existing in the ore, the latter, after being treated by the cyanide, is passed over four amalgamating tables, 24 feet by 12 feet, so as to ensure the redemption of any gold not soluble in cyanide. One-half of these tables is covered by muntz metal and the other half by copper, though, practically speaking, there is no difference in the saving capabilities of either metals, but the reason the Silverton Company adopted muntz for one half of the tables is that

if there are any minerals in the ore it will not blacken like copper—or, in a nutshell, it is more easily kept clean.

Of course there are numerous other details connected with the battery and its saving appliances which space would not permit me to enter into, but before concluding I must state that attached to the plant is an excellently fitted up laboratory and assay furnace room, which have been placed under the control of Mr. J. McConnell, who, I understand, supervised the Cassell Company's works at Karangahake, and had the pleasure of managing there the first big plant of that company erected in the world outside Glasgow. The company are therefore to be congratulated upon their choice in selecting Mr. McConnell to superintend the working of the treatment plant, and with Mr. H.H. Adams, the general manager, the company's property, which is indeed a valuable one, is in good hands, and it is to be sincerely hoped that the anticipations of even the most sanguine will be more than realised by the development of the Silverton Gold Mining Company's property at Waihi.

The Waihi-Silverton Mine.

Observer, Volume XV, Issue 902, 11 April 1896

OPENING OF THE NEW BATTERY

Easter Saturday was a red-letter day for Waihi. From far and near visitors had poured in to witness the formal opening of the Waihi-Silverton battery, and the new battery was the theme of conversation anywhere and everywhere between the Grahamstown Wharf and the Te Aroha Railway Station. A variety of circumstances combined to invest the occasion with more than local importance and quite exceptional significance. It was recognised, in the first place, that to a large extent the future of mining in the Upper Thames would be made or marred, or at any rate considerably influenced by the result of the first crushing from the Waihi-Silverton mine. In the second place, the completion of the battery — the second of the kind erected in Waihi with British capital - marked the fruition of a plucky enterprise on the part of the local promoters and of the rare energy and resourceful skill of

That Prince of Mine Managers,

Mr H.H. Adams, whose peer we venture to say is not to be found in the Australasian colonies. In the third place, it was known and generally admitted that this battery — the creation of Mr Adams's inventive talent — marked the furthest advance of engineering skill in the winning of gold from refractory ores. And here we may just add that Mr Adams makes it a special point to keep himself thoroughly *au courant* with the latest devices in America and Europe for the safe, effective and profitable treatment of auriferous stone, and such of these notions as had commended themselves to his ripe judgment, or had passed the practical tests applied by himself, were seized upon and turned to account. In two especial points does the Silverton battery designed by Mr Adams, and constructed under his immediate direction, take precedence of all other dry crushing mills in the world. The substantial frame within which the machinery is set up is thoroughly up to-date and the suction fans placed over the stamper boxes is the mine manager's own clever idea for combating

The Dust Evil.

If this idea answers its purpose, and there is every reason to assume that it will, Mr Adams will have earned the deep and lasting gratitude of the mining community. Hitherto, the fine, impalpable dust, which is thrown up from the stamper boxes of the batteries previously built, has been levying heavy toll upon the lives and the health of the men employed in those batteries. It floats easily in the atmosphere, and, being inhaled by the men, it lodges upon their lungs and sets up a local irritation, which frequently ends in consumption. Already some half-dozen men in Waihi have contracted the fell complaint from just that cause and have paid forfeit with their lives. It was a sad coincidence that one of them — an underground boss from the Waihi mine — passed in his checks on the very day that the Silverton battery was opened.

The Opening Ceremony.

However, we have run off the track somewhat, and must hark back to the point of digression. Sufficient has been said to indicate why the opening of this particular battery should be regarded throughout Auckland and the Thames with such profound and general interest. It now remains for us to deal with the ceremony itself and its attendant incidents. It is estimated that about 300 people were present, and among the 300 there was a fair representation of the fair sex. The celebrities, for whom particular mention is reserved by the scribes of the press, were the following : — Messrs J.A. Pond, managing director of the Silverton Company; Captain Argall, supervising engineer; D.G. McDonnell, legal manager; J.B. Gray and A. Kidd, directors; G. Wilson, mining inspector; A. Rhodes, manager of the Bank of New Zealand; also the following managers of mining companies: H.P. Barry, general manager of the Waihi Gold Mining Company; J. Gilmour. manager of Waihi mine; J. McCombie, Woodstock;

Evans, Grand Junction; Collins, Alpha; Morgan, Owharoa; Scott, Heitman's Freehold; Newdick, Queen of Waihi; Brokenshire, Inglewood; Quinn, Waihi Extended; G.H. Purchas, Waitekauri. Mr Geo. Comer, Thames, was also present. There were others who have attained celebrity in other fields than mining, as, for instance, Jack McDonald, on the running track — now engaged in running up a fine new pub at Waihi; ex-champion Jimmy Parslow, on the rifle range — now busy in shooting quartz in lieu of lead; ex-representative Hugh Poland, on the football arena — now less intent upon getting the leather oval over the cross-bar than in getting his press news over the telegraph wires. At half past ten Mr J.A. Pond started the fly wheel which set the machinery in motion, and as the full head of forty stampers got to work with resounding din, driven by a full head of water, he leaped into the air with boyish glee, and called out in his best tenor voice,

'I Declare this Battery Open.'

But there was no need for the declaration. The forty stamps left no one in the slightest doubt that they were open. If there was a stone-deaf man present even his dense tympanum could not have been impervious to that solid fact. More than that, the battery worked with the ease and smoothness and regularity of clockwork. The crowds of people who marched from floor to floor, peering into every nook and cranny, said so to each other a hundred times as they looked, and admired, and marvelled. And Harry Adams admitted it was so, as the mining magnates hustled around him and shook his hand. The people gazed at the stampers, inspected the suction fans, surveyed the double row of iron vats each measuring 16 feet in diameter by 4 feet in depth, and gave due praise to Messrs Price Bros., of the Thames, for the thoroughness with which they had constructed them. They peeped into the tank prepared for the cyanide solution and noted the clever arrangement of pipes for distributing it among the vats. They passed under review, also, the four amalgamating tables, 24 feet by 12 feet, and likewise the complete laboratory and assay furnace-room.

By the time most of them appeared to have found an aching just about the region of the waist-band, and by a curious course of magnetic attraction they gradually lined up into a solid phalanx on both sides of a long table, upon which was set out a tempting array of sandwiches, whisky and ale, and an adequate supply of 'softer tack.'

Mr Pond Orates.

But the signal for attack was not yet. Mr J. A. Pond was anxious to be delivered of a speech which lay heavily upon his manly bosom. He sounded a gong, and sailed in with the toast of 'The Queen.' Several hundred loyal Britons lifted as many brimming glasses to their thirsty throats, and gurgled out 'the Queen,' as the liquor ran free. After this 'Success to the Battery', prefaced by Mr Pond's pent-up oration. It covered the whole ground. It told how Mr Pond and Mr McCombie pegged out the Silverton mine in 1885; how it came to be named 'Silverton' after the Broken Hill silver mine; how Mr John Moore took charge; and how rich ore was struck that panned out into good dividends. The old battery process was so unsatisfactory that 300 tons of tailings, happily saved and stored, subsequently yielded at the rate of from £10 to £20 per ton. After that, the Martha battery was purchased, a new plant was put up, and the pan treatment was resorted to; but the difficulty of coping with the water trouble proved at last so formidable, that the aid of English capital had to be invoked.

A Record Flotation

was the result. The required capital of £27,500 was subscribed six hours after the property was placed on the market, and that, too, merely on the faith of a prospectus from the directors, and a letter from Mr Pond himself to Mr Melville. Another difficulty was the choice of a manager from among the long list of good and true men who applied for the position. But after very full consideration, the unanimous choice of the directors singled out Mr H. H. Adams, and the wisdom of the selection had never since been doubted. The subsequent development of the mine, and the erection of the present crushing plant, to be driven entirely by water power, were enduring memorials of his skill and ability. Not one drop of

water would pass the battery without being harnessed in for the crushing of the Silverton quartz. After some words of praise for

The Cyanide Treatments

and the Cassel Company, which first brought it into general use, and the expression of an opinion that this mode of treatment was capable of still further improvement, Mr Pond proceeded to dwell on the stability of the supply of ore from the Silverton reefs. In his opinion it was presumptuous to look upon their reef, 15 and 20 feet wide, and doubt their capacity for keeping the battery going. In fact, it was intended, after some months' trial of the present 40 head of stampers, to still further increase the stamping power of the battery. For that purpose the directors had now £10,000 in hand, and he expected the winter would not have passed away before a start was made to add to the battery. So far, £1800 had been expended on the mine and battery, and this latest departure was being inaugurated with the utmost approval and confidence of the directors at Home. In conclusion, a tribute of praise was paid to Mr Adams for the improvements he had introduced into the machinery to cope with the dust evil and to safeguard the men from injury through the chemical solutions. The toast of 'The Directors and Legal Manager' followed. Proposed by Mr J. McCombie, and responded to by Mr J. B. Gray and Mr J. A. Pond. Regretful allusion was made to those departed pioneers, Johnny Moore, Dick Spratt, and Adam Porter.

The Mine Manager.

Mr Alfred Kidd proposed the health of the mine manager, Mr H.H. Adams. He had known him for twenty years, and he might add that Mr Adams enjoyed the entire confidence of the directors. The battery was a fitting monument of his skill, for it was, unquestionably, one of the finest batteries in the Southern Hemisphere. The success of the Silverton mine meant, to a large extent, the assured success of the Waihi district, and work for all. Mr Adams replied briefly and with characteristic modesty. He would rather build another battery than make a speech, he said; but he made a speech all the same, praising the directors as the best Board he had ever worked under. Since he took charge they had never once interfered with him. After this, 'the visitors' were toasted, and Capt. Argall, and Messrs J. McConnell, J. McCombie, Rhodes, Geo. Wilson (mining inspector), replied. 'Success to the Silverton.' This concluding toast was proposed by Mr Adams in a first-class speech. He scouted the fears of those who doubted the sufficiency of the ore to keep the battery running for long. He had been mining on the Thames Peninsula since he was 17 years of age, and was confident both of the adequacy of the ore and its payableness. When he was underground boss of the Bright Smile they kept 120 stampers going with lodes not half as big as the Silverton had got. The Silverton ore might not realise all that the most sanguine anticipated, but he was sure that all that a man in reason could expect would be fully realised. After this the liquor and the sandwiches were attacked with great gusto, and the wants of the inner man having been duly satisfied, an excursion was made in the trucks to the mine, where Mr McConnell took several photographs of the party.[341]

[341] Observer, Volume XV, Issue 902, 11 April 1896

SKETCHES OF MINING CELEBRITIES AT THE OPENING OF THE WAIHI-SILVERTON BATTERY.

NZ Observer, Saturday April 11 1896

Waihi G.M. Co. The Union Mill. Extensive Alterations.

New Zealand Herald, Volume XXXIX, Issue 12045, 15 August 1902

WAIHI G.M. CO. THE UNION MILL. EXTENSIVE ALTERATIONS

Paeroa, Thursday.

When the Waihi Gold Mining Company acquired the Union Waihi Company's interests it was decided to completely alter the latter company's 40-head stamper mill and plant, and fit it up in such a way that the management would be in a position to deal with the increasing supplies of sulphide ores in a most comprehensive manner. The dismantling and rearranging of the battery has therefore been going on for some time past, and on the occasion of a visit to the battery in question I found that under the supervision of Mr. W.H. Russell, engineer, excellent progress has been made with the conversion of the mill to suit modern requirements, and that the alterations had reached such an advanced stage that there is now every probability of crushing operations being commenced in from three to four weeks' time.

The mill is connected by means of a tramway with the Waihi mine, the main section functioning with the various shaft branches, and though comparatively speaking the line is only a short one, I noticed more activity being displayed in constructional works than is the case with Paeroa Waihi branch of the Government railway. At the base of the battery hopper is located a large and powerful jaw stone-crusher, of the Wheeler type, and this reduces the stone to a fineness sufficient to materially assist and facilitate crushing by the 40 8001b stamps with which the mill is equipped.

From the stone-crusher the ore is carried up into a large ore-bin which has been erected at the back of the stamps, and extends for the whole width of the crushing plant. Before the pulp flows to the plates it passes through a sizer, the coarser particles being classified and ground up in a pan before being allowed to pass over the tables. It is then carried to the equalising boxes, and from there it flows to the 10 large Union vanners erected on the ground floor of the building. The operation of the vanners has the effect of separating the mineral from the quartz. The concentrates thus saved are at present being shipped to Australia for smelting treatment, but I understand that in consequence of experiments now being made at the Waihi mill, it has been clearly demonstrated that a highly satisfactory extraction can be obtained at the works, and that as a result the concentrates will in the future be treated locally. After passing the vanners the pulp is elevated to the slimes separating boxes, whence the sands and slimes are automatically distributed to their respective vats.

The fitter-pressing process is rather an interesting one, and by the time that the method of treatment is completed upwards of 90 per cent of the bullion contents is saved. The slimes come down from the slimes separating-boxes and are mixed with lime water and thickened up in the collecting vats, whilst the surplus water is conveyed to a reservoir for re-use in the mill. The slimes from the collecting vats then flow to a pressure-tank, in which they are forced into a Johnston filter press by compressed air. The object of this is to get rid of as much moisture as possible before cyaniding. From the Johnston filter press the slimes cakes, now formed, and containing only about 27 per cent. of moisture, are dropped into one of two agitators, measuring about 16ft in diameter by 6ft deep. Here the cake is disintegrated back to slime again, mixed with cyanide solution, and agitated whatever time is found necessary for the dissolving of the precious metal. From the agitators the cyanided pulp is pumped up to a third slime-collecting vat, whence it passes into another pressure-tank, and is then forced into a Martin filter-press. The plant is provided with two of these presses, containing 50 frames, each 3ft square, and they make a cake 3in thick. In this press the bulk of the gold solution is forced out during the operation of filling the press, the balance being displaced by weak cyanide and water washes, the process finally finishing up by forcing compressed air through the cakes. This has the effect of further extracting all gold-bearing solution, and as the cakes have now lost practically all their values, they are

discharged into the Ohinemuri River. When the mill has been started the company will have 200 head of stamps operating at Waikino, 90 at the Waihi mill, and 40 at the Union, making a total of 330 head.

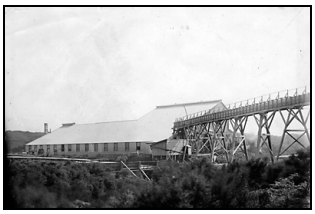
For driving power at the Union battery both water and steam will be used. A large air-compressing plant is also being erected, and will be utilised in connection with the filter presses. The whole of the plant is to be lighted by electricity.

A3 Photographs

Silverton locomotive 1895-1902

Note the full ore cart in front of the loco, and another beside it, presumably on a siding. The man in front of the smoke stack is telling us he is a carpenter, holding a saw and what looks like a wood plane.

Waihi Arts Centre and Museum Association, Hinton album.



Silverton Battery 1898

The upgraded battery was opened on 4 April 1896, so the building shown here may be two years old. The taller section would house the 40 stampers. Note the brick chimney of the smelthouse. The Ohinemuri River is between the foreground vegetation and the building.

The high wooden flume is bringing water from the Waimata Stream, dropping it down a large diameter pipe to the turbine at river level. The large turbine pipe can just be made out near the left hand end of the large wooden flume. The much smaller flume in background may have been the terminus of a Mangatoetoe water race.

The Mangatoetoe stream channel, coming in from the left, has been dammed with a wooden structure, and appears to be holding tailings (saved for future processing).

Courtesy M. Roycroft.

Union Battery 1904-11

Photograph taken from on top of the water race flume. The original Silverton building is still identifiable, but has been modified and added to. There is now a boiler-house and smoke stack, and directly in front of the building, facing the river, is the rough building housing the steam engine.

The tramway extends through the ore hopper on to a tall timber trestle, allowing the emptied ore carts to move past as others are emptied. The fitting shop is to the right. It appears that an extension is being added to what may be the press shop at middle left. Between this and the main building the tailings dam is partly visible.

To the left can be seen large steel tanks. Waitete ridge top right. HP Barry album WACMA.

Union Battery 1904-11

Looking in the opposite direction to the image above. Vanner room in foreground, tanks to right. Waimata flume in background. The roof of the original Silverton building now has an upstanding portion to accommodate elevator wheels.

Top right is the tailings flume (for saving tailings), exiting from a double elevator wheel (behind the rectangular panel, and driving belts). The wooden structures over the steel tanks accommodate mechanical stirrers.

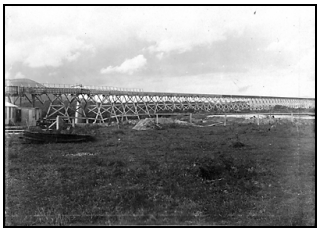
The Waimata flume is visible in background, and in the foreground can be seen a tramway for delivering supplies etc.

HP Barry album WACMA.

Union Battery 1904-11

The Ohinemuri River is visible; we are looking upstream. Steam is venting behind the water race flume. Notice the lever silhouetted above the flume; this controlled release of water from the flume when it was not needed. Left of photo shows the large tanks, and above them a tailings flume from elevator wheels. Some tailings were conserved (saved). The press shop has not yet been extended as in the previous photographs. Three men are placed for scale, and are watching the photographer (their boss).

HP Barry photo. DoC.



Union Battery Waimata flume 1902-11

53 trestle legs a visible in this photograph. Excess water is being discharged; it falls into the Ohinemuri. Part of this flume blew down in a storm in 1887.

Photograph before the tanks installed?

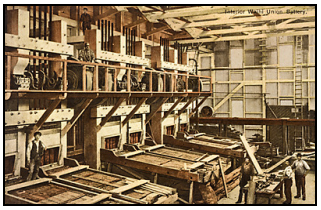
HP Barry album WACMA.

Union Battery tanks 1902-11

Three large steel tanks, with frames to mount stirrers. A man is working on top of the nearer tank.

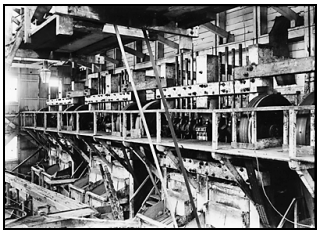
Water is being discharged from both sides if the Waimata flume. A tramway loops around the tanks.

HP Barry album WACMA.



Interior Union Battery c.1902

This hand coloured post card shows the interior of the battery. It appears the battery is under construction, the amalgamated plates, seen here in front of the stamper mortars, were later moved to their own room. That might make the date circa 1902. WACMA. The same image was reproduced (black and white) in the NZ Graphic, 05 October 1907.



Union battery stampers 1903-11

The cam shafts and bull wheels stretch across the middle of the image. Six mortar boxes are visible below.

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Silverton Shaft 1897

The building housed a wood fired boiler, winding engine, and pumping engine. There are 13 men and two dogs pictured here. Behind the men are squared mine props ready to be taken below. Behind the poppet legs is a mullock tip from the Gladstone shaft, and at the very right of the photograph can be seen (just) the Union No. 2 Shaft poppet. WACMA.

Silverton Shaft 1898

Another boiler is in use. Note the stacked firewood and the horse and cart with firewood. Big timbers in foreground for use underground. Four children and four adults pictured.

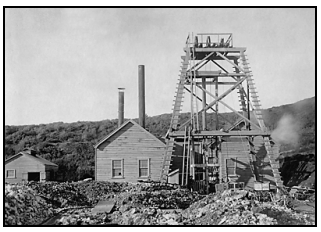
M. Roycroft

Silverton Shaft c.1900

Extra structures connected to poppet head. To do with dry crushing and kilns?

Note the photographer's dog near centre of image. Barry would be interested in this location because it was purchased by the Union-Waihi Company in 1899.

HP Barry album WACMA.



New No.1 Shaft, Union Hill 1896-1902

Note the steam venting at the right, and that two men are visible by the shaft, bottom mid right. Ore from this shaft was sent to the Union-Waihi Battery, after the Silverton Battery was purchased by the Union-Waihi Company in 1899.

Photo after 1896, before 1902, when work stopped.

HP Barry album WACMA

Incline on Union Hill c.1899

This self-acting incline took ore from the New No. 1 Shaft to join the tramway going to the Union-Waihi Battery.

Visible is the portal of the tunnel from which the ore carts were filled.

Staples