INTRODUCTORY NOTES TO WORKING PAPER SERIES 'A SOCIAL HISTORY OF MINING IN THE TE AROHA MINING DISTRICT'

Philip Hart

Te Aroha Mining District Working Papers

No. 1

Revised on October 7, 2026

Historical Research Unit
Faculty of Arts & Social Sciences
The University of Waikato
Private Bag 3105
Hamilton, New Zealand

ISSN: 2463-6266

© 2016 Philip Hart

Contact: prhart1940@gmail.com



THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

INTRODUCTORY NOTES TO WORKING PAPER SERIES 'A SOCIAL HISTORY OF MINING IN THE TE AROHA MINING DISTRICT'

These working papers are provided as a resource for historians and genealogists. When covering the lives of individuals, they are deliberately as detailed as possible – possibly too detailed on such aspects as land ownership, but the intention is to provide as much information as is traceable. The nature of my research was inspired by the farewell address given by Sir Keith Hancock when he retired from being head of the History Department in the Research School of Social Sciences, Australian National University, when I was a student there. He included the comment that, in his retirement, he would tend his own garden; not meaning an intention to turn from historical research to gardening but to focus his research on his own locality, meaning the district of Monaro to the south of Canberra. The outcome was his publication, through Cambridge University Press, in 1972, of his excellent *Discovering Monaro: A study of man's inpact on his environment*. The structure of this book combined a general analysis of geology, weather patterns, farming practices, and many other issues with case studies of farmers and others who lived in and developed the district. As this is a social history of the Te Aroha district, concentrating on mining, his example has been followed, with general papers being combined with personal accounts that illustrate the points made in the former papers. For instance, there is a paper on the skills required for successful prospecting, and the paper on Billy Nicholl relates the story of one of the most successful prospectors (successful at Waihi, that is, much less so elsewhere). As an unexpectedly large amounts of information was uncovered about some of those included in the case studies, the latter have ballooned far beyond the modest mini-biographies originally anticipated.

This 'history from below' details the lives of people who, usually, were prominent at the time. Because in most cases this is pioneering research into now obscure people, should one of them have written a letter to a newspaper, for instance, usually it will be printed in full and unedited as being a rare example of their actual words because what was written, and how it was written, can provide insights into personalities. As such information is far too detailed for academic publications, in writing conference papers and publishing articles in the *Journal of Australasian Mining History* much of this detail was omitted and quotations were kept to

the bare minimum, thereby removing some of the 'colour' but meaning a clearer focus on the issues.

Each paper stands alone, with links to other events and other people being noted in footnotes. Some papers clearly fit into a particular category, but most cover a range of topics, with the case studies of individuals providing details of mining and other issues that are covered in the general papers. No attempt has been made to provide an exhaustive analysis of the significance of what each paper records, especially in the case studies of people's lives, though the wider significance is implicit if not explicit.

For instance, in the example of Hone Werahiko (my mining hero), not only is this paper a case study of an individual's life but it gives an example of the harsh conditions under which miners and prospectors worked; the impact of prospecting and mining on their health; the discovery and early development of the Te Aroha, Waiorongomai, and Tui goldfields; prospecting on other Hauraki fields; prospectors' and miners' skills; the 1881 murder; his links with his father-in-law, Hoera Te Mimiha, and other Maori; Pakeha attitudes to him as compared to their opinions about Maori in general; and how he was recalled by Pakeha in the later nineteenth century and the twentieth century. In addition, it deals with the early days of Rotorua and with Maori-Pakeha interaction there.

In another example, the paper on the one and only murder at Te Aroha focuses on this event and the system of justice, with the likelihood that the perpetrator escaped hanging because his guilt could not be proved using the forensic skills of the day, but also covers relations between Pakeha and Maori, including the conflicts between Ngati Rahiri and Ngati Hako, the earlier wounding of Daldy McWilliams, and the fear of utu; the start of mining at Tui and the impact of the murder on this; the role of a Pakeha Maori, Joseph Harris Smallman; the role of Mokena Hou; the link with Hone Werahiko through his future second wife; Maori and Pakeha social interaction, including living and drinking together; leisure activities, in this case horse racing; and the basic housing hastily erected for the first settlers.

The titles of each paper are listed below:

General Background

No. 2: The Geology of Te Aroha Mountain
No. 3: The Physical Environment of the Te Aroha District
No. 4: The Vegetation of the Te Aroha Area

No. 5: The Te Aroha Hot Springs (Mainly in the Nineteenth Century)
No. 6: Pollution in the Te Aroha District Caused by Mining
No. 7: Developing the Te Aroha District until c. 1910
No. 8: Special Settlements in the Te Aroha District
No. 9: The Thames High School Endowment at Waiorongomai

The Maori Background

The context of mining in the Te Aroha Mining District was that Maori owned some of the land, a Maori was the first to discover gold (twice), and some Maori were prospectors and/or recipients of goldfields revenue:

No. 10: Maori and Pakeha at Te Aroha: The Context: 1: Pakeha Perceptions of Maori
No. 11: Maori and Pakeha at Te Aroha: The Context: 2: Maori in Hauraki in the Nineteenth Century
No. 12: Maori Land in Hauraki
No. 13: The Aroha Block to 1879
No. 14: The Aroha Block from 1880 Onwards
No. 15: Ngati Rahiri versus Ngati Tamatera [in 1877]
No. 16: The Daldy McWilliams 'Outrage' of 1879
No. 17: Maori and Mining in New Zealand and Beyond
No. 18: Maori and Goldfields Revenue

Case studies of some Maori, Pakeha Maori, and one 'half-caste':

No. 19: Hoera Te Mimiha, a Ngati Koi rangatira, and father-in-law of Hone Werahiko
No. 20: Merea Wikiriwhi and George Thomas Wilkinson, a Native Agent
No. 21: Lavinia and Henry Dunbar Johnson, who became a Land Court judge
No. 22: John William Richard Guilding: a 'Native Interpreter'
No. 23: William Nicholls, Hera Te Whakaawa, and their children
No. 24: William Grey Nicholls and Rihitoto Mataia
No. 25: Joseph Harris Smallman, who prospected at Thames before becoming a Pakeha Maori who farmed near Te Aroha

Maori Te Aroha

No. 26: Maori Te Aroha Before the Opening of the Goldfield (mostly through Pakeha eyes)

No. 27: Maori at Te Aroha After the Opening of the Goldfield in 1880 (Mostly through Pakeha Eyes)

No. 28: Maori and Mining at Te Aroha

No. 29: 'Revolting Murder at Te Aroha' in 1881

Rangatira living at Te Aroha in 1880:

No. 30: Karauna Hou: the senior Ngati Tumutumu rangatira

No. 31: Reha Aperahama: a Ngati Rahiri rangatira

No. 32: Aihe Pepene: a Ngati Rahiri rangatira

No. 33: Piahana Hou: a Ngati Tumutumu rangatira

No. 34: Keepa Te Wharau: a Ngati Tumutumu rangatira

Mokena Hou and his children:

No. 35: Mokena Hou and his wife Rina

No. 36: Akuhata Mokena: eldest son of Mokena Hou

No. 37: Eta Mokena: daughter of Mokena Hou, and her husband, Hare Renata

No. 38: Ranapia Mokena: son of Mokena Hou

No. 39: Rewi Mokena: youngest son of Mokena Hou

No. 40: George Lipsey: a Pakeha Maori who married Ema Mokena, daughter of Mokena Hou, and some of their children

The most notable children of George Lipsey:

No. 41: Akuhata Koropango Lipsey: the eldest son of George and Ema

No. 42: Ani Jane Lipsey, eldest daughter of George, and her husband, Alexander Watson Edwards

Two other notable residents of the Te Aroha district:

No. 43: Alice Grey Nicholls, daughter of William, and her husband, Charles John Dearle

No. 44: 'Pakeha Bill': William John McClear, a Pakeha who lived at Te Aroha

Mining in General

All the general papers include examples taken from the Te Aroha Mining District. Although all the miners whose lives are traced had some involvement in this district, most of their mining was on other Hauraki fields.

No. 45: Prospectors' Working Lives in General and at Te Aroha in Particular

No. 46: Miners' Working Lives in General and at Te Aroha in Particular

No. 47: Miners' and Prospectors' Skills in General and Te Aroha in Particular

No. 48: The Thames Miners' Union

No. 49: Financial Struggles and (rare) Successes of Miners in General and at Te Aroha in Particular

No. 50: Financing Prospectors and Miners in General and at Te Aroha in Particular

No. 51: Financing Companies in General and at Te Aroha in Particular

No. 52: Harry Kenrick: the first Warden of the Te Aroha Mining District

No. 53: George Wilson: Inspector of Mines at Te Aroha

No. 54: Charles Gallagher: a mining investor

No. 55: Daniel Leahy: a prominent Hauraki prospector and miner

No. 56: Alexander Mackay: a Hauraki prospector and miner

No. 57: William Sharman Crawford (Billy) Nicholl: the prospector who discovered the Martha lode at Waihi

No. 58: John Watson Walker: a leading Hauraki mine manager

No. 59: James Alexander Pond: an Auckland chemist who was involved in mining

The Te Aroha Rush, 1880-1881

No. 60: Rumours of Gold at Te Aroha

No. 61: Hone Werahiko: the discoverer of gold at Te Aroha

No. 62: Adam Porter: a miner who became a 'self-made man'

No. 63: John McSweeney: labourer, miner, farmer, publican

No. 64: The Discovery of Gold at Te Aroha and its Consequences: January to October 1880

No. 65: Awaiting the Proclamation of the Te Aroha Goldfield: 1 - 24 November 1880

No. 66: The Opening Day of the Te Aroha Goldfield: 25 November 1880

No. 67: The Te Aroha Goldfield From its Opening until Christmas 1880

No. 68: Mining at Te Aroha Before the Murder in February 1881

No. 69: The Te Aroha Goldfield is revealed to be a Duffer

No. 70: The Prospectors' Claim at Te Aroha

No. 71: The Aroha Gold Mining Company, formed to work the Prospectors' Claim at Te Aroha

No. 72: The Te Aroha Battery, erected in 1881

No. 73: The Waitoa Prospecting Association/Gold Mining Company

No. 74: The Golden Hill Gold Mining Company

The Waiorongomai Goldfield

No. 75: The Discovery of the Waiorongomai Goldfield in 1881

No. 76: Before the Battery Started: Mining at Waiorongomai from late 1881 to late 1883

No. 77: The Piako County Tramway at Waiorongomai

No. 78: The Firth and Clark Battery at Waiorongomai

No. 79: The Battery Company, formed to operate the Firth and Clark battery at Waiorongomai

No. 80: Henry Hopper Adams: a Te Aroha miner who became a mine owner

No. 81: The First Crushing at Waiorongomai, November 1883

No. 82: The Strike at Waiorongomai in 1884

No. 83: An Overview of Mining in the Te Aroha Mining District during the 1880s

No. 84: The New Find Mine at Waiorongomai

No. 85: The Eureka Mine at Waiorongomai.

No. 86: Peter Ferguson and his New Era: the second battery at Waiorongomai

No. 87: The Waitoa Find: a fraudulent discovery near Te Aroha

No. 88: Thomas Gavin: 'Tommy Chairman': a Te Aroha mine manager and local government politician

No. 89: Edward Kersey Cooper: a mine manager and mine owner in Hauraki

No. 90: The Goldsworthy Brothers (and James Gribble, a brother-in-law): prominent Hauraki miners

No. 91: Edward Quinn: a Hauraki mine manager

No. 92: The Te Aroha Silver and Gold Mining Company: the introduction of Australian capital to Waiorongomai

No. 93: An Overview of Mining in the Te Aroha Mining District during the 1890s

No. 94: The Waitoki, Waitoki Extended, Werahiko, Success, Silver King, Cadman, and Bendigo Mines at Waiorongomai

No. 95: The Mining Boom of the 1890s in New Zealand in general and in Hauraki in particular

No. 96: The New Zealand Exploration Company and Aroha Gold Mines Ltd: the last introduction of overseas capital to Waiorongomai

No. 96: Edwin Henry Hardy: a Waiorongomai mine owner

No. 97: William Morris Newsham: a Te Aroha prospector and miner

No. 98: An Overview of Mining in the Te Aroha Mining District from the Turn of the Twentieth Century until the Start of the Depression

No. 99: Hardy's Mines Ltd, of Waiorongomai

No. 100: The Bendigo Battery: the last Waiorongomai battery

No. 101: Charles Manuel: a miner and farmer in the Te Aroha district

No. 102: Mining in the Te Aroha Mining District during the Depression Years

No. 103: Prospectors and Investors in the Te Aroha Mining District during the 1930s

No. 104: Company Formation in the Te Aroha Mining District during the 1930s

No. 105: Malcolm Hardy: the last Waiorongomai miner

The Tui District

No. 106: The Tui Mines: a portion of the Te Aroha Mining District

No. 107: Clement Augustus Cornes: the discoverer of the Tui mines

No. 108: Edward Cameron: a mine manager in the Tui mines

No. 109: Joseph Campbell and his Thermo-Hyperphoric Process

No. 110: The Auckland Smelting Company: developing the Tui mines after the Second World War

No. 111: Pollution and Norpac: a chronology, to 1980: the legacy of the last mining done at Tui

Social History

Settlements:

No. 112: Te Aroha Township During the First Rush: 1880-1881
No. 113: Te Aroha, 1882-1889
No. 114: Te Aroha in the 1890s
No. 115: Waiorongomai Township
No. 116: Living in the Bush and at Quartzville, high on the hillside above Waiorongomai

Social issues:

No. 117: Social Relations and Class Divisions in the Te Aroha District
No. 118: Neighbourly and Un-neighbourly Behaviour in the Te Aroha District
No. 119: Private Lives in the Te Aroha District, Mostly in the Nineteenth Century
No. 120: Physical and Mental Health Issues in the Te Aroha District
No. 121: The Drink Problem in the Te Aroha District
No. 122: The Temperance Movement in the Te Aroha District
No. 123: Religion in the Te Aroha District
No. 124: Involvement in Political Issues by People living in the Te Aroha District
No. 125: Women's Lives in the Te Aroha District
No. 126: Children's Lives in the Te Aroha District
No. 127: Education in the Te Aroha District in the Nineteenth Century
No. 128: Larrikins in the Te Aroha District, mostly in the Nineteenth Century
No. 129: Crime in the Te Aroha District, mostly in the Nineteenth Century

Racial issues:

No. 130: Black Americans and Te Aroha Mining
No. 131: Chinese Involvement in Te Aroha and its Mining

No. 132: Thomas Quoi: a Chinese restauranteur who invested in Te Aroha mining

The lives of a variety of once-prominent residents of the Te Aroha district:

No. 133: Thomas William Carr: a Te Aroha storekeeper and speculator

No. 134: George Devey: a Te Aroha carpenter and his family

No. 135: William Dibsell: a pioneer storekeeper in the Te Aroha district

No. 136: John Allan Dobson: a Te Aroha mine manager

No. 137: Edward Gallagher: a Te Aroha coach proprietor and local body politician

No. 138: James Gerrish: Te Aroha's first bellman

No. 139: James Gordon: A 'useful all-round man' at Te Aroha and elsewhere

No. 140: Charles Gould: a farmer with land near Te Aroha

No. 141: John Bernard Kilian: a Waiorongomai publican and his family

No. 142: Thomas Lawless: a publican at Waiorongomai and elsewhere

No. 143: Thomas Francis Long: a businessman who prospected at Te Aroha

No. 144: Thomas McIndoe: a Te Aroha saddler who became an Auckland businessman

No. 145: Robert and Elizabeth Mackie: a Te Aroha butcher and his family

No. 146: William Buchanan Maxwell: a veteran who became 'Te Aroha's Pet Adornment'

No. 147: Robert John Michael: a Te Aroha labourer

No. 148: James Mills: a carpenter who became Te Aroha's first mayor

No. 149: Bernard Montague: a contractor and farmer in the Te Aroha district

No. 150: Denis Murphy: a miner and farmer in the Te Aroha district

No. 151: William Archibald Murray: a farmer with land near Te Aroha

No. 152: George Stewart O'Halloran: a pioneer publican and storekeeper at Te Aroha

No. 153: Michael Dineen O'Keeffe: president of the Thames Miners' Union

No. 154: Patrick Quinlan: a publican at Te Aroha and Auckland

No. 155: Two Roycroft Brothers and two of their Brothers-in-Law, all miners at Te Aroha

No. 156: John Squirrell: a storekeeper and farmer who mined (briefly) at Te Aroha

No. 157: David McLean Wallace: a Waiorongomai blacksmith who founded an engineering firm

No. 158: Harry and Charles: Henry Ernest Whitaker and Charles Stanislaus Stafford at Te Aroha

No. 159: Alfred Henry Whitehouse: a bootmaker who became a pioneer of New Zealand films

Articles published in the Journal of Australasian Mining History were based on information in several of these working papers and also considered the wider context. The full list of these articles is:

'Maori and Mining: A Case Study of Hone Werahiko and Te Aroha', vol. 1 (September 2003), pp. 79-94 [published before research in the Maori Land Court records for the Rotorua district provided information about his life there, including his first wife].

'Australian Capital in New Zealand: The Te Aroha Silver and Gold Mining Company', vol. 2 (September 2004), pp. 35-53.

'Self-Confidence, Self-Promotion, and Self-Delusion: A Case Study of a Saviour Who Failed' [Joseph Campbell], vol. 3 (September 2005), pp. 138-156.

'The Thames Miners' Union: Defending Miners and the Mining Industry', vol. 4 (September 2006), pp. 139-155.

'M.D. O'Keeffe: Union Leader – and a 'Colourful' Personality', vol. 5 (September 2007), pp. 116-134.

'A Carter [Alexander Jackson], a Businessman [William La Grenade Mitchell], and a Prospector [Edward Ralph Martin] with Several Things in Common', vol. 7 (September 2009), pp. 138-154.

'Joseph Harris Smallman: A Prospector who became a Pakeha Maori', vol. 8 (September 2010), pp. 119-132.

'The New Zealand Exploration Company and Aroha Gold Mines', vol. 10 (October 2012), pp. 112-128.

'Peter Ferguson and his New Era', vol. 12 (October 2014), pp. 98-112.

'Benjamin John Dunsheath and his Auckland Smelting Company', vol. 13 (October 2015), pp. 79-101.

'Those who were there before 1880 and those who came after: the Te Aroha community and mining district', vol. 22 (October 2024), pp. 83-105.

'Who discovered the Martha lode at Waihi? Two rival accounts', vol. 23 (October 2025), pp. 121-132.

'Last Gasps: the end of goldmining at Waiorongomai', vol. 24 (October 2026), pp. 2-18.

'Father and Son: Waiorongomai's most successful mine owner and its last miner', vol. 24 (October 2016), pp. 19-38.

To locate individuals mentioned in these papers, which is often hard to do using Google, check Research Commons :: Search. Or put the name in inverted commas, followed by nz.

Discussion about these papers is encouraged: Over the years, after reading one of these publications or hearing about my research on the grapevine, some family members have contacted me, and sometimes have provided important new information about their ancestors. One of the problems of this pioneering research was that almost all the facts (sometimes 'facts') had to be traced without any guidance apart from some mentions in local histories, which often were incorrect. These working papers are far from being the final word but are works in progress, as since research commenced the internet has made available the indexes to the registers of births deaths and marriages, archival resources are coming online, and with Papers Past providing access to so many newspapers means much more information will be accessible in the future. Accordingly, each paper has a date indicating when it was last revised, and it is hoped that those who wish to add to or to contest the evidence or interpretations will contact me at prhart1940@gmail.com. The only stipulation for using any of my research is that it be acknowledged.

Terminology: Although the use of 'native' has been restricted to quotations, 'half-caste' has been retained as being the contemporary expression and also being an exact description of their genetic inheritance, which mattered a lot at the time. Fortunately New Zealand, unlike America, did not concern itself with quadroons or octoroons.

To ensure uniformity, Mr is used, not Mr. (and so on). Dwt, oz, and lb do not have plurals or full stops; and etc and the like do not have full stops.

Sources: Despite a considerable amount of official records having survived, considerable gaps remain. Notable are the Thames magistrate's court records for the 1860s and 1870s (lost in a flood), some warden's court

records for all mining centres, and particularly many Native Office files, leaving gaps which cannot be filled from other sources. When my research using the Te Aroha warden's office records commenced, the first files I had access to were held by David Bettison, then a professor of sociology at the University of Waikato, who had commenced, and then abandoned, writing a history of the Wairongomai goldfield. This material was passed on to me, unsorted and uncatalogued and dumped in a miscellaneous heap in a tea chest generously seeded with silverfish, which infested the History Department for a very long time. Subsequently more Te Aroha records were found piled indiscriminately in a shed behind the Morrinsville courthouse and, more carefully, in the basement of the Hamilton courthouse. Some Te Aroha warden's court records were already held by the National Archives office in Auckland and others were added to its holdings subsequently. No inventories existed for the material not held by Archives, and after preliminary sorting, accession details and numbers were changed, occasionally resulting in a very few items now being hard to locate. Likewise, all the holdings in the Wellington office of National Archives have been reclassified. Some accession details are still changing, but all the references were correct at the time of writing, and the items can still be located using the earlier details.

Although many newspapers have survived, some are incomplete. The contents of the three published in Te Aroha between 1880 and 1883 are known only from articles reprinted in other newspapers. The *Te Aroha News* from its first issue in June 1883 until early July 1890 is complete, but large gaps in the next two decades were the result of a fire in its office in 1912.[1] And even when issues have survived, the lack of information on some issues of interest to historians is frustrating. Obituaries, for instance, might mention an old-timer's knowledge of the early days of Te Aroha, but would not provide any examples. The obituary of Alice Tierney, daughter of James Mills,[2] mentioned that she

> delighted in telling the lively incidents which broke the monotony of the pioneering days in the settlement. Coming from an English city, she was, of course, able to see the primitiveness and, at the same time, the humour, of New Zealand conditions at the time. Unfortunately for the district, she found no time in her busy life

---

[1] *Te Aroha News*, 8 May 1939, p. 3.

[2] See chapter on his life.

to commit some of the experiences of the early days to permanent record.[3]

And so her memories died with her. When Richard Brenan, a boot and shoemaker,[4] died eight years previously, he was recorded as having had 'very vivid memories of the gold rush days',[5] none of which were given. Fortunately some unexpected snippets throw light on someone's personality, always the most difficult aspect of their lives to trace, and all of these that have survived have been included.

Illustrations

Few plans were made of the mines or even of their precise locations, as in the nineteenth century and later it was not a requirement to provide these to the warden's office. Although a plan of the Waiorongomai tramway was produced, it has not survived (a casualty of the Hope Gibbons fire of 1959 that destroyed so many Lands and Survey files?). It is often difficult to identify the precise location of some Maori land blocks, because although the size and ownership of these was identified in the Maori Land Court, no accompanying maps have survived. Although the names of many blocks are no longer current, these can be traced using the maps appended to the paper on Maori land in Hauraki.

Only a small number of photographs exist to illustrate most of these papers, and there are no pictorial evidence for many of the people covered. Where appropriate, maps, plans, sketches, photographs, and cartoons are appended in appendices to some of the papers. Copyright approval was sought for the illustrations where the owner of the copyright was known, but in some cases where individuals provided material many years ago it has not been possible to trace them to confirm that it could be put online (they all provided it with no restrictions); in at least one case the person has died. Should copyright holders be traced in the future, confirmation of their permission will be sought.

---

[3] *Te Aroha News*, 20 September 1943, p. 3.

[4] See 'Te Aroha', *Observer*, 6 October 1883, p. 16, 13 August 1892, p. 19; *Te Aroha News*, Magistrate's Court, 28 June 1884, p. 2, 11 September 1886, p. 2, 20 March 1900, p. 2, 21 December 1914, p. 3, 9 February 1934, p. 1, 13 September 1935, p. 4; *Ohinemuri Gazette*, 25 January 1896, p. 6.

[5] *Te Aroha News*, 13 September 1935, p. 4.

Archived material: A small collection of material used as the basis for these papers is held in the University of Waikato Library. In addition, there is a typescript of notes taken from a volume, not held in National Archives or any other repository: Armed Constabulary Force, Report of Charges taken at Te Aroha Lock-Up (1880-1903). Plus a series of research notes on notable Maori involved, however briefly, in Te Aroha mining who were not written up in any of the papers.

Stylistic points: To avoid the tedious pedantry of adding '[sic]' when documentary sources or newspapers incorrectly recorded a word or a person's name, such minor mistakes have been silently corrected. Occasionally uncertain readings of names have been indicated in footnotes, as has the best typo, which turned a Goldmining Company into a Godmining one. Nor have '[T]' or '[t]' been used to indicate whether or not a quote commenced at the start or middle of a sentence. And as my computer prefers 'z' to 's' in '–zing' endings, I don't always pick this up and change it; and anyway, z was the earlier usage. A name such as Hoera Te Mimiha was printed in contemporary newspapers as Hoera te Mimiha, but in these papers conform to present day usage (as Te Mimiha).

Footnotes: 'See' means that these references give basic but far from complete information about a person or issue, usually from contemporary sources. Unless information from newspapers or secondary sources is lacking or very scarce, only published sources are included. As a general rule, unpublished sources are listed before published ones.

The *Cyclopedia of New Zealand* has been used to give contemporary summaries of people's lives, invariably positive ones because either they or their friends provided most of the entries. To avoid repetition in the references using the *Cyclopedia*, the place and date of publication is not usually recorded. The Auckland Mining Volume, a special issue later listed as volume 7, was published in Christchurch in 1898. Volume 1 was published in Wellington in 1897, but the remainder were published in Christchurch: vol. 2 in 1902, vol. 3 in 1903, vol. 4 in 1905, vol. 5 in 1906, and vol. 6 in 1908.

The *Appendices to the Journals of the House of Representatives* are always given as *AJHR*. Registers of births, deaths, and marriages are now held by the Department of Internal Affairs, and all the entries cited, apart

from the most recent, are available on BDM Online; all are referenced as BDM.

For archival repositories, ANZ-A means the Auckland Office of National Archives, ANZ-W means the Wellington Office, and so on. Officially, the former is Archives New Zealand/Te Rua Mahara o to Kawanatanga, Auckland Regional Office, and the latter is Archives New Zealand The Department of Internal Affairs Te Tari Taiwhenua, but life is too short to type these names in full, except for illustrations in the appendices to each paper.

To avoid an especially long footnote, *Return of the Freeholders of New Zealand: Giving the name, addresses and occupations of owners of land, together with the area and value in counties, and the value in boroughs and town districts, October 1882, compiled from the assessment rolls of the Property Tax Department* (Wellington, 1884), is abbreviated to: *Return of the Freeholders of New Zealand*.

Thanks are due to the staff of the various institutions holding historical material, in particular those working in the Auckland branch of National Archives, and John Robson of the map library of the University of Waikato Library, who not only helped to find old maps but traced genealogical information through ancestry.co.uk.

Translating old (Imperial) measures into modern equivalents: All currency, distances, and weights are given in the systems then current, rather than trying to give today's equivalents for each one.

The value of **money** is the most difficult to adjust. It is most certainly not the case, as some assume, that £1 equals $2, and the best method of converting values to current levels is to use the Reserve Bank website: www.rbnz.govt.nz/statistics/0135595.

Instead of using pounds, shillings, and pence in the text, the following terms are used:

1d = one penny (half-pennies being 1/2d, farthings being 1/4 or 3/4)
1s = one shilling
2s 6d = half a crown
£1 = one pound (or sovereign)
£1 1s = one guinea.
Note that a sum of £1 10s could be recorded as 30s or 30/-.

According to Brendan Thompson's Inflator Table, £1 in 1880 was equivalent, in 1993, to $89.66.[6]

Conversions from Imperial measures into metrics:

Weights:
The Troy system was used for weighing gold:
1 grain (gr) = 0.064 grams.
24gr = 1 pennyweight (dwt) = 1.5 grams
20dwt = 1 ounce (oz) = 31.1 grams
12oz = 1 pound (lb) = 373.2 grams
1 short ton = 2,000lb = 907 kilograms
The Avoirdupois system was used for weighing other goods:
1oz = 28.35 grams
16oz = 1lb = 453.6 grams
112lb = 1 hundredweight (cwt) = 50.8 kilograms
1 ton = 1.02 tonnes
Lengths:
1 inch (in) = 25.4 millimetres
1 foot (ft) = 30.5 centimetres
1 yard = 0.914 metres
1 chain = 20.1 metres
1 mile = 1.61 kilometres
Power:
1 horsepower (hp) = 0.746 kilowatts
Area:
1 acre = 0.405 hectares
1 square mile = 2.59 square kilometers
Volume:
1 gallon = 4.55 litres

Technical Terms[7]

---

[6] Brendan Thompson, 'Inflator Table' (unpublished manuscript, 1993).

[7] Based on Phil Moore and Neville Ritchie, *Coromandel Gold: A guide to the historic goldfields of Coromandel Peninsula* (Palmerston North, 1996), pp. 189-194; J.B. McAra, *Gold Mining at Waihi, 1878-1952* (Waihi, 1878), pp. 310-337; Philip Ross May, *The West Coast Gold Rushes* (Christchurch, rev. ed, 1967), pp. 526-528; W.B. Kenny and R.B. Hays, *Thames: The first 100 years*, (Thames, 1968), p. 94.

Mining terms:

Adit (also known as a **drive**): Horizontal tunnel driven from the surface; rising slightly to assist drainage and to ease pushing full ore carts out of the mine.

Aerial tramway (also **wire tramway**): Used instead of a ground tramway, especially in steep country. Ore is carried in iron buckets or skips attached to endless steel rope held up by pylons.

Backs: The vertical height of ore above a particular point underground.

Blasting: A face was drilled with holes usually five to six feet deep, appropriately spaced and positioned. Each hole was charged by tamping in several plugs of gelignite, a primer – generally with a safety fuse and a detonator - was placed on top, and sealed with stiff clay. Fuses, about five feet long, were each cut about half-an-inch longer than the one above them to ensure that no holes were over-burdened and would 'blow out' in the wrong direction.

Blende: Zinc sulphide, a black heavy ore often associated with lead sulphide (galena).

Blow: Prominent surface outcrop.

Bonanza: Extremely rich deposit.

Buck reef: Large quartz reef, containing little if any gold or silver.

Claim: A license to mine a specified area was issued by the warden's court for a fixed period, for which an annual rent was charged.

Contracts: A competitive system whereby miners tendered for work above or below ground; the successful then employing wages-men.

Country rock: Rock enclosing or intersected by veins, reefs, and lodes; the predominant rock in a mining area.

Crosscut: A tunnel driven across a reef system, usually to access the latter at right angles, enabling the reef to be driven on in both directions.

Development or **dead work**: Crosscutting and other work to give access to reefs to enable ore to be broken out.

Dip and strike of vein: The strike is the direction in which a vein runs, and the dip is the angle at which it dips into the earth. The line of full dip is at right angles to the strike.

Dirt: The common term for ore.

Drilling: Before the use of mechanical rock drills, one man held a hand drill with both hands, turning it slightly after each strike to prevent its being stuck, while another man (or sometimes two men) struck its end

with eight-pound hammers. Experienced men could drive a four-foot hole in minutes.

Drive: Underground tunnel driven along or alongside a reef, vein, or leader.

Duffer: A failure; an exhausted claim was 'duffered out'.

Face: The end of a tunnel or drive.

Footwall: Underside of an inclined ore vein or reef.

Gangue: The unwanted matrix enclosing valuable minerals.

Hanging wall: The rock above an inclined ore vein or reef. As reefs were usually inclined at an angle, this overhanging wall could be unstable.

Hatter: A solitary miner working alone.

Hopper: Large ore storage bin on the surface (also used to hold ore at the battery before being treated).

Incline or **self-acting tramway**: Constructed on steep slopes, using the weight of a loaded truck going downhill to pull empty ones uphill. Usually had three rails with four rails in a diamond shape at the halfway point to enable trucks to pass. Brakes regulated the speed of the descending trucks.

Jumping: Obtaining someone else's claim by dishonesty.

Leader: A small vein extending from a larger one, useful for tracing lodes.

Levels: The main adits or drives, numbered from the top down and from 20 to 100 vertical metres apart. Linked by shafts, rises, and winzes.

Lode: Otherwise known as a reef, either a large vein of valuable ore or closely spaced veins.

Mullock: Cornish term for waste rock; usually dumped in radiating heaps around a mine entrance, or used to backfill abandoned stopes and tunnels.

New chum: A man mining for the first time.

Old ground: Ground previously mined.

One man's ground: One third of an acre.

Ore reserves: The quantity of ore known to exist in a mine once sampling and assaying was done. These reserves were classed as proven, indicated, and probable.

Ore shoot: Steeply inclined payable ore body within a reef.

Outcrop: Exposed portion of a reef above the ground.

Overhand stoping: Working a stope from the bottom upwards, generally in a series of horizontal slices.

Oxidized zone: Upper part of an ore body, above the permanent water table, altered by weathering with the loss or chemical modification of some of its mineral content. Oxidizing of the iron minerals produced a brown colour instead of the bluish ore below the water level.

Paddock: Area outside a mine entrance to stack ore before taking to the battery.

Passes or **ore chutes**: These conveyed ore to lower levels; chutes could be outside mines as well as inside.

Pegging out: Marking out a claim with a peg at each corner.

Picked stone: Selected high grade quartz.

Portal: Entrance to an adit or tunnel.

Prospect: Yield of gold from roughly reduced quartz.

Pyrite: Iron pyrites = fool's gold.

Reef: A prominent quartz vein, otherwise a lode.

Rise: A vertical or steep shaft, excavated from below but not reaching the surface. Timbered, with three compartments: a ladder at one end, a return airway at the other, with a box in the centre filled with ore used to stand on while drilling the roof.

Sampling: Samples were taken from the faces of drives and from trucks of stone to test whether the ore was payable.

Sets: Basic timbering, such as stope-sets, erected to prevent rock falls.

Shafts: Vertical or near-vertical shafts provided access, using ladders, from the surface to the underground workings and from one level to another. Assisted ventilation, and in larger mines contained winding gear.

Shepherding: Holding a claim either without working it or by doing the minimum amount of work required to satisfy the regulations, whilst waiting to see if neighbouring claims were successful.

Sinking: Excavating shafts from the top down, usually requiring explosives and winches, making them more expensive than rises.

Skip: A small truck mounted on rails used to remove ore and mullock from a mine.

Specimens: Extremely rich pieces of gold-bearing quartz.

Stone: Miners' term for quartz.

Stope: Ore was usually extracted by stoping upwards above a drive. Its shape depended on the width, height, and length of the ore. Timber sets provided working platforms in steeply inclined reefs. Stopes were commonly backfilled with mullock to prevent the collapse of unsupported ground. **Underhand stopes** worked downwards from the level meant having to raise ore in buckets.

Strike: An unexpected, and rich, find.

Stringer: A narrow offshoot from the main reef.

Stulls: Strong round timber usually wedged against the sides of drives or stopes, sometimes used like props for support or for bases of platforms.

Sulphide zone: The unoxidized, deeper part of an ore deposit, usually richer in base metals and therefore more difficult to treat than ore in the oxidized zone near the surface.

Trench: Narrow and shallow trench dug across an outcrop or hillside to test the value of ore.

Tributer: A tribute was let to a miner or miners who worked part or all of a mine, paying the owner an agreed percentage of the value of any ore recovered. Tributers often worked uneconomic sections of mines; companies often revoked tributes if payable ore was found.

Tunnel: Cornish miners referred to an adit or drive as a tunnel, but technically an adit did not become a tunnel until driven completely through a ridge enabling passage from one side to the other. And again technically, miners tunnelled into a lead or reef before driving along the latter.

Vein: General term for narrow body of quartz or mineral.

Winze: An internal inclined shaft excavated downwards from one level to another, usually along the line of a reef.

Battery terms:

Amalgam: By adding mercury to finely crushed ore it amalgamated with the gold and silver to form an amalgam. The precious metals were recovered by heating it in a retort to remove the mercury.

Amalgamating pans: Berdan pans to which mercury had been added.

Amalgamating tables: Metal plates coated with mercury were laid on sloping tables; fine gold was recovered on them by amalgamation with the mercury.

Assays: To determine the gold and silver content of ore, usually about 25 grams of crushed ore was melted, with fluxes, in a furnace, the 'button' formed being cupelled until all base metals had been removed. The bullion left behind was weighed, placed in hot nitric acid to dissolve the silver, and the gold then weighed. A very reliable method, correct to 0.2dwt per ton.

Assay plan: Plan of mine working noting the values contained in the ore. Ore reserves were calculated from assay plans by determining the average value of the four sides of a block and multiplying this by the number of tons in it.

Base metals: Iron, lead, copper, and zinc; gold and silver were noble (or royal) metals.

Berdan: Frame-mounted, inclined, revolving cast-iron basin about four feet in diameter containing a heavy iron weight or a stone. Slow revolutions finely ground the ore or concentrates, and mercury was sometimes added to form an amalgam.

Blanket table: After quartz was crushed it was washed over a table covered with a kind of plush in which the gold was caught.

Bullion: Common term for semi-refined gold and silver cast into bars for further refining.

Concentrates: Finely crushed ore containing a mix of metallic sulphides and gold and silver.

Concentration: This process separated the heavy fraction of the pulverized ore from the lighter material. Pulp was passed over Wilfley concentrating tables, and the heavier particles were discharged into a tub and then removed for treatment.

Crushing: Often three stages of crushing were used: first stonebreakers, then stampers, and finally grinding using berdans or similar machines.

Cyanide process: The McArthur-Forrest cyanide process was patented by Scottish chemists in 1887. Finely pulverized ore was mixed with dilute potassium cyanide and agitated in large tanks for several days before drawing off the 'pregnant cyanide solution' and passing it through wooden boxes where the gold and silver was precipitated on zinc shavings. The cyanide was then recirculated.

Distributor: Distributing boxes were attached to tube mills and Wilfley tables to regulate the quantity of pulp going to each machine.

Flotation: In the oil flotation process of treating concentrates, minerals attached themselves to a stream of air bubbles in the presence of oils and chemicals and rose to the surface as froth, which was skimmed off.

Fluxes: Chemicals used for assaying and smelting.

Head or **sluice head**: water flowing at the rate of one cubic foot per second or 60 cubic feet per minute (one cusec).

Kiln: Large pits or kilns were used to roast ore prior to crushing, thereby removing water and oxidizing the sulphides to assist with treatment. A ton of wood per ton of ore was required, the wood being loaded into the kilns in layers alternating with the ore.

Milling: Crushing ore in stamp mills.

Mortar box: Large cast-iron boxes fitted with heavy iron dies in which stamps were dropped onto the ore to reduce it to fine sand.

Pan amalgamation: To treat complex ores, especially those with a high silver content, finely ground ore was heated in large metal pans with steam to assist amalgamation.

Pelton wheel: A wheel with small replaceable cups or buckets around its circumference, driven by a high-pressure water jet. Provided very cheap power, and was commonly used to power stamper batteries.

Precipitation boxes: Wooden multi-compartmented boxes containing zinc shaving onto which the bullion treated with cyanide was precipitated (as a black sludge).

Race: A water race used open channels and aqueducts to convey water to power batteries.

Refining: Extracting impurities from metals.

Refractory ore: Ore that was difficult to process.

Retort: Heavy cast-iron pot in which amalgam was heated in a furnace to remove the mercury, which was captured in a condensor.

Riffles: Grooves cut across a table or sluice box designed to trap gold as pulverized quartz is washed across them.

Roasting (also **calcining**): Heating, burning, or calcining ore to break it down and burn off unwanted impurities such as sulphides which handicapped amalgamation. Roasted quartz was easier to crush.

Rotary kiln: A revolving ore dryer, usually containing a long iron cylinder similar to a tube mill. Pulverized ore was fed into one end, gradually moving through it by rotation. Heat from a firebox at the lower end rose through it, drying the ore.

Separator: A device to separate the heavy gold from ground quartz.

Slimes: Fine ore pulp produced by crushing and containing minute particles of precious metals.

Sludge: Mud and silt from mining and batteries, usually discharged into streams or rivers, which could be officially designated as **sludge channels**.

Smelting: Extracting metal from ore using furnaces or kilns, requiring the expensive use of fluxes and fuel.

Stamper battery: A mill crushing ore by heavy iron stamps falling onto quartz confined in a cast-iron mortar box; also refers to the building housing the stamps.

Stamp or **stamper**: Heavy iron shaft with replaceable stamping shoe (or hammer head) attached to its lower end and with a tappet at about its

middle point. Each battery contained several stamps, usually five per mortar box, which were raised and lowered by means of a camshaft in the sequence 1-4-2-5-3. Each stamp operated at 110 drops a minute from a height of eight inches, pulverizing ore (already reduced by crushers to minus-two-and-a-half-inches) into a pulp which was mixed with water and passed through mesh screens (with ten holes to the linear inch) on the mortar box.

Tailings: Discarded waste quartz sand considered uneconomic for further treatment. Either pumped into tailings pond or discharged into rivers and streams.

Tube mill: Mechanically powered rotating cylinders in which ore pulp was ground more finely. Each mill was partially filled with flints, steel balls, or scrap iron which reduced to ore to –200 mesh size. Similar to ball mills, but their length was much greater than their diameter.

Vanners: Concentrating machines used before the introduction of Wilfley tables.

Vat: Large wooden, iron, or concrete tank, usually open, for cyanide or other chemical treatments.

Wilfley table: Shaking, slightly sloping, table, used to separate the heavy fraction of pulverized ore from the lighter fraction. A reciprocating action created by a spring-loaded return caused heavy particles of gold, aided by a steady flow of water, to move towards the end of the table every time it was jerked back by the spring.

Appendix

Figure 1: C.H. Pening, 'Sketches of Te Aroha Goldfield', *Illustrated New Zealand News*, 21 January 1884, p. 5.

Figure 2: 'Geology of the Te Aroha goldfield', mapped by Max Oulton, University of Waikato (based on John Henderson, assisted by John Arthur Bartrum, *The Geology of the Aroha Subdivision, Hauraki, Auckland*: *Geological Survey Bulletin No. 16* (Wellington, 1913)), and published in Waitangi Tribunal, *The Hauraki Report: Wai 686* (Wellington, 2006), vol. 2, p. 477 ; used with permission.

Figure 3: G.H.A. Purchas, blueprint of Waiorongomai goldfield, 8 January 1884, part one (from the top of the Fern Spur Incline on the tramway to the top of Butler's Incline), University of Waikato Map Library.

Figure 4: Purchas, blueprint, part two (from Butler's Incline on the tramway to the May Queen Incline).

Figure 5: Purchas, blueprint, part three (from the May Queen Incline to the end of the tramway).

Figure 6: H.G. Graeme, 'Licensed Claims Te Aroha', 1884, University of Waikato Map Library.

Figure 7: Graeme, enlargement of portion of 'Licensed Claims Te Aroha', showing claims near Te Aroha and Waiorongomai, and surveyed township of Waiorongomai.

Figure 8: Graeme, enlargement of portion of 'Licensed Claims Te Aroha', showing remainder of Waiorongomai goldfield.

Figure 9: Henderson, assisted by Bartrum, map showing claims as at 1912, along with reefs and tramways and tracks, in portfolio at end.

Figure 10: 'Waiorongomai mining area', mapped by Max Oulton, University of Waikato, and published in *Hauraki Report*, vol. 2, p. 56; used with permission.

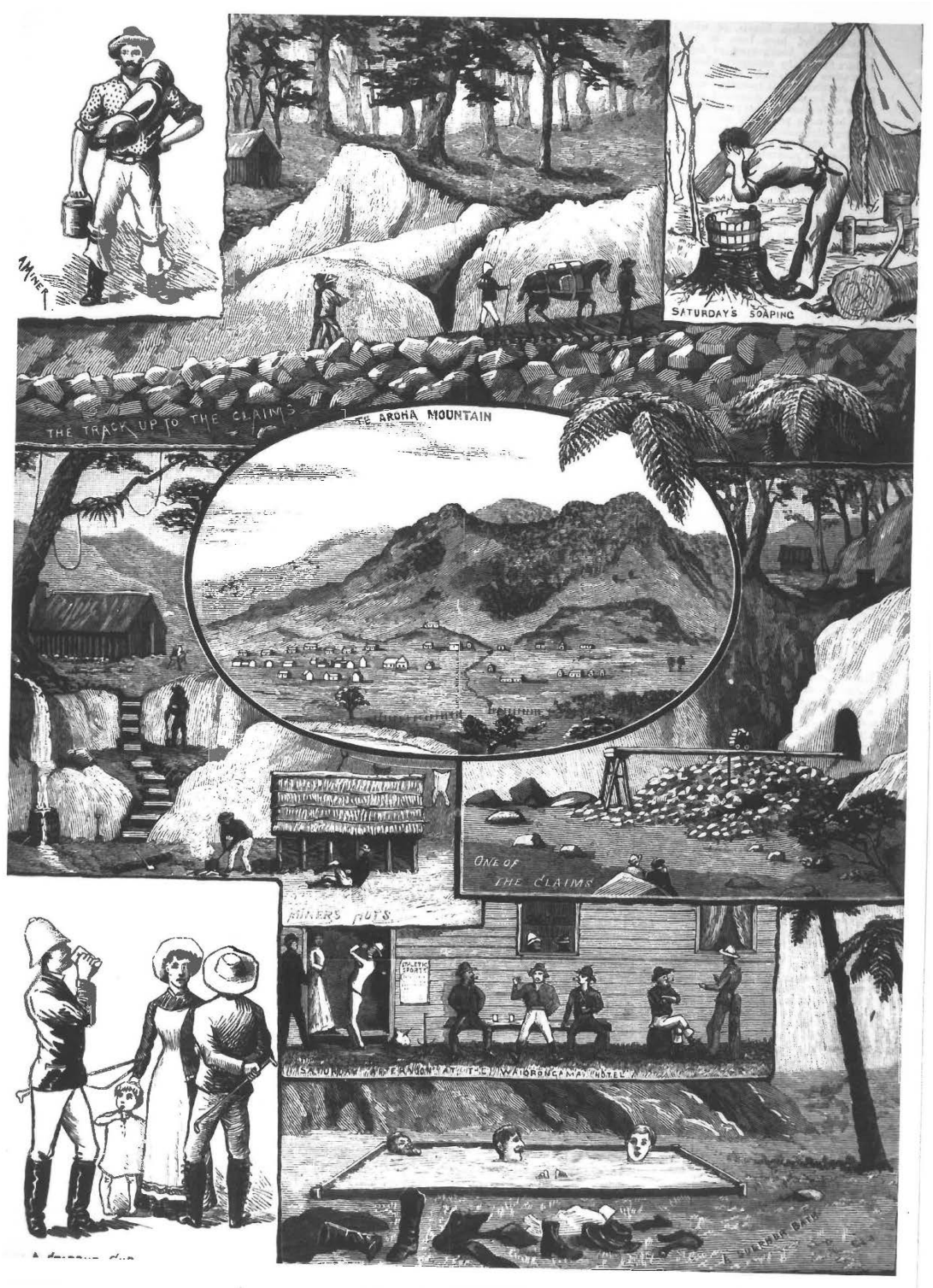


Figure 1: C.H. Pening, 'Sketches of Te Aroha Goldfield', *Illustrated New Zealand News*, 21 January 1884, p. 5.

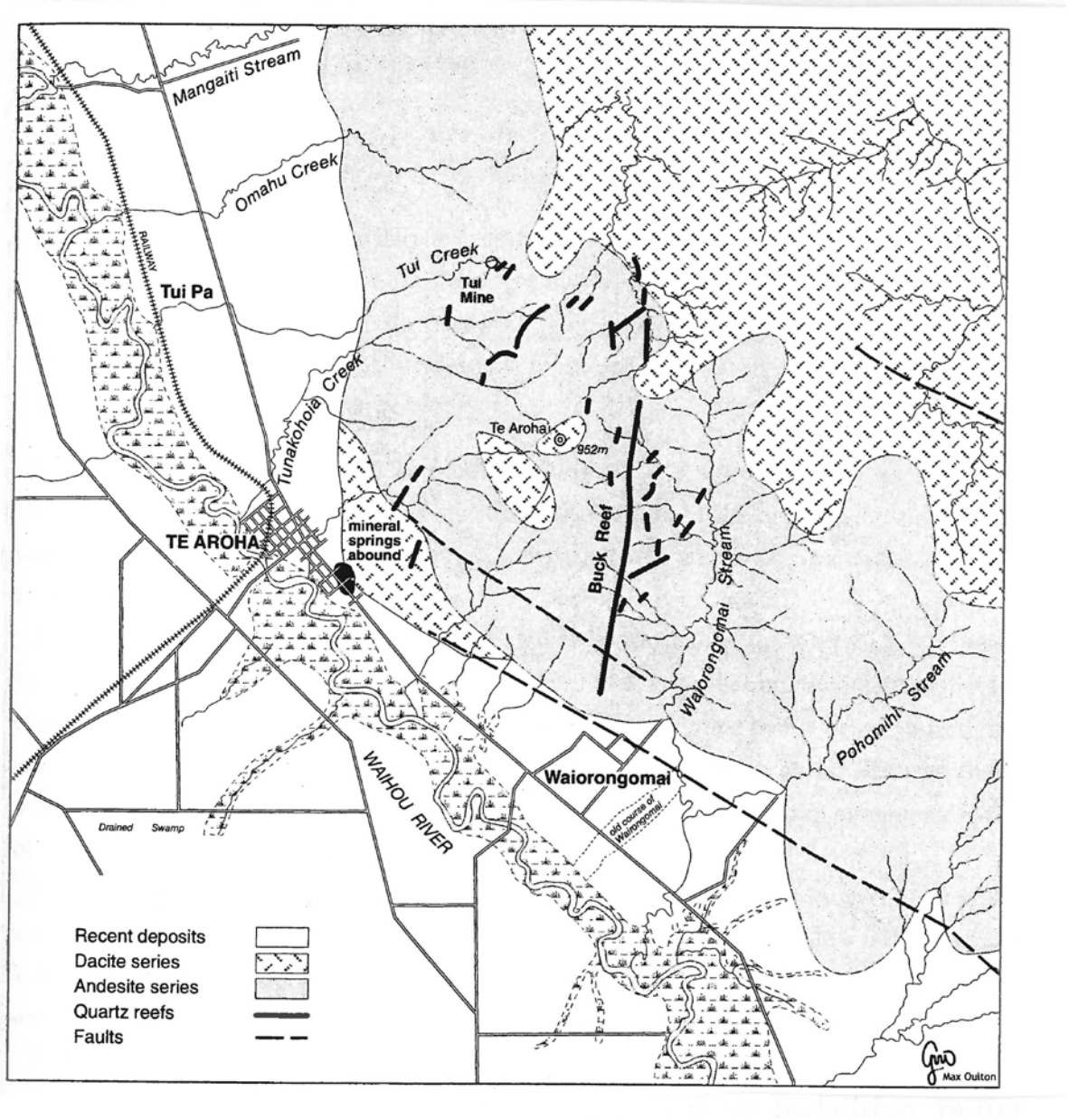


Figure 2: 'Geology of the Te Aroha goldfield', mapped by Max Oulton, University of Waikato (based on John Henderson, assisted by John Arthur Bartrum, *The Geology of the Aroha Subdivision, Hauraki, Auckland*: *Geological Survey Bulletin No. 16* (Wellington, 1913)), and published in Waitangi Tribunal, *The Hauraki Report: Wai 686* (Wellington, 2006), vol. 2, p. 477 ; used with permission.

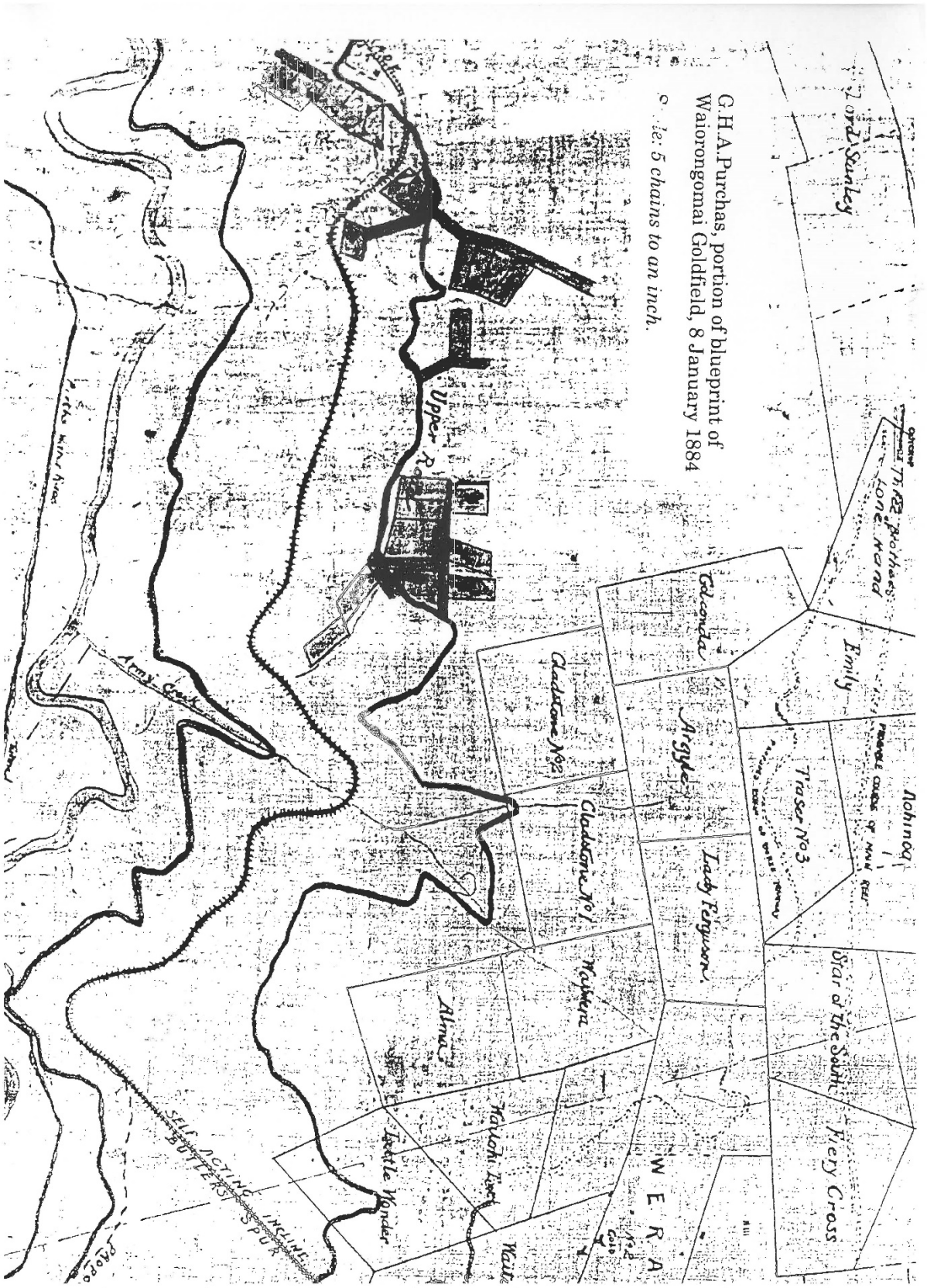


Figure 3: G.H.A. Purchas, blueprint of Waiorongomai goldfield, 8 January 1884, part one (from the top of the Fern Spur Incline on the tramway to the top of Butler's Incline), University of Waikato Map Library.

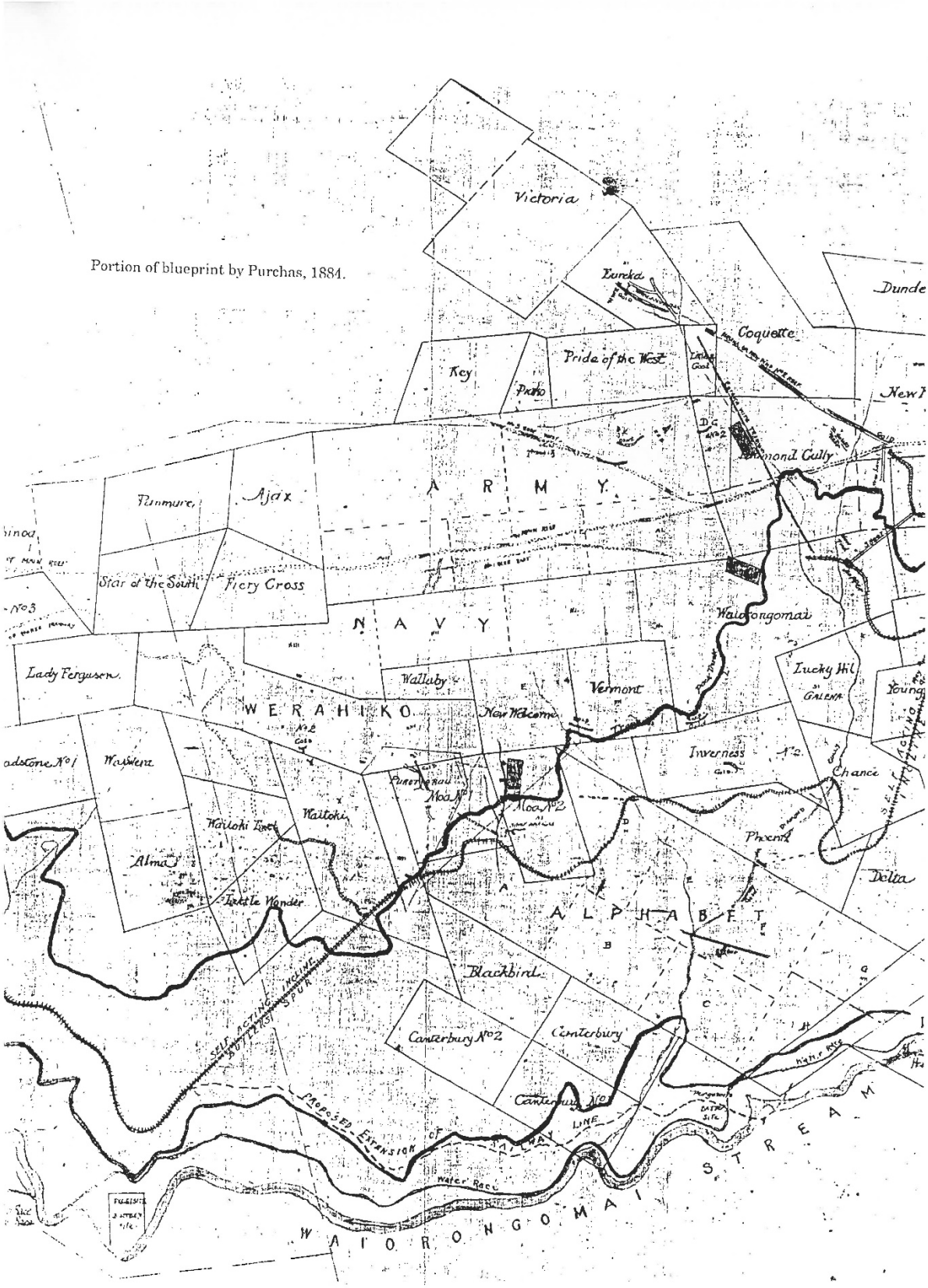


Figure 4: Purchas, blueprint, part two (from Butler's Incline on the tramway to the May Queen Incline).



Figure 5: Purchas, blueprint, part three (from the May Queen Incline to the end of the tramway).

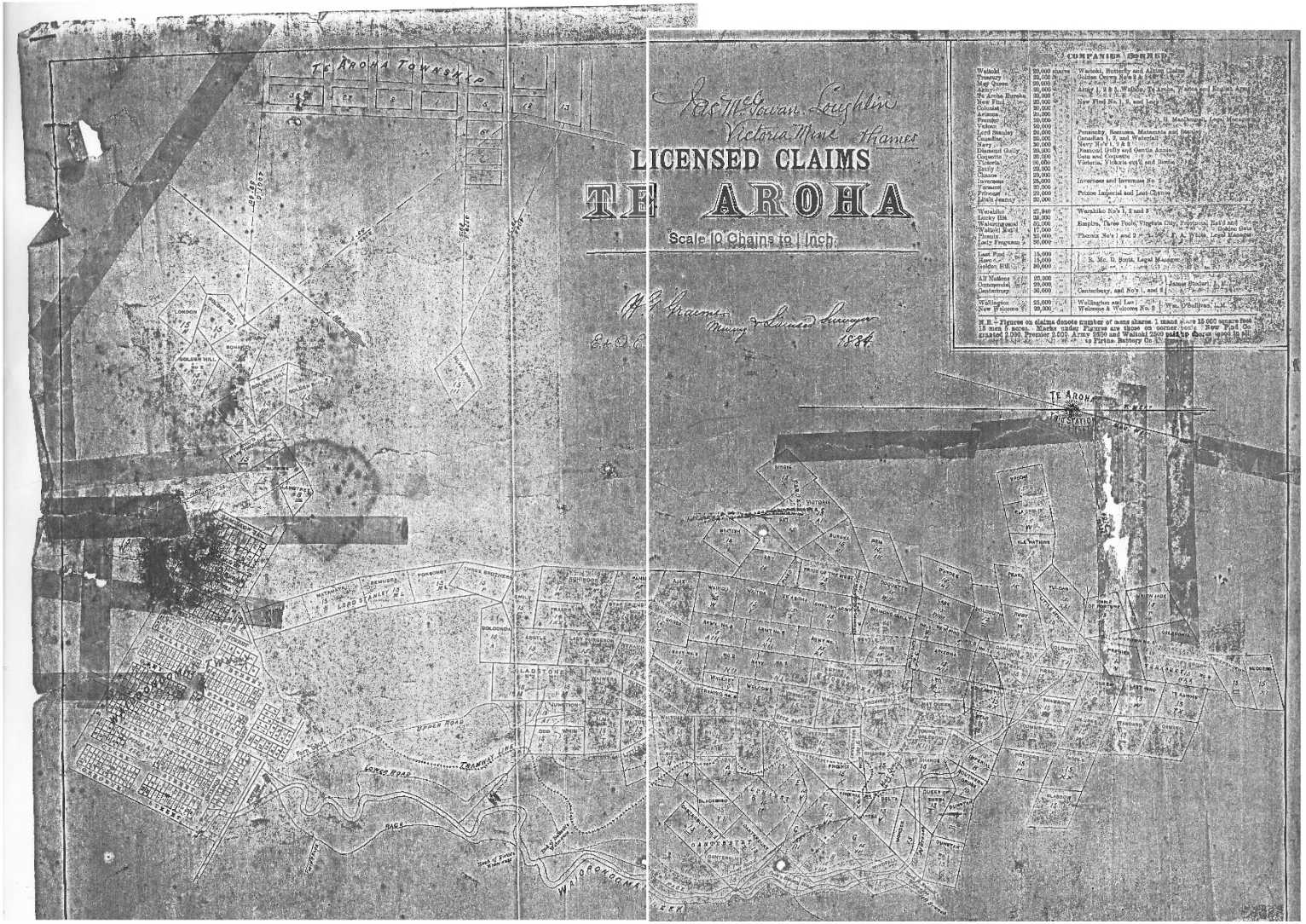


Figure 6: H.G. Graeme, 'Licensed Claims Te Aroha', 1884, University of Waikato Map Library.



Figure 7: Graeme, enlargement of portion of 'Licensed Claims Te Aroha', showing claims near Te Aroha and Waiorongomai, and surveyed township of Waiorongomai.

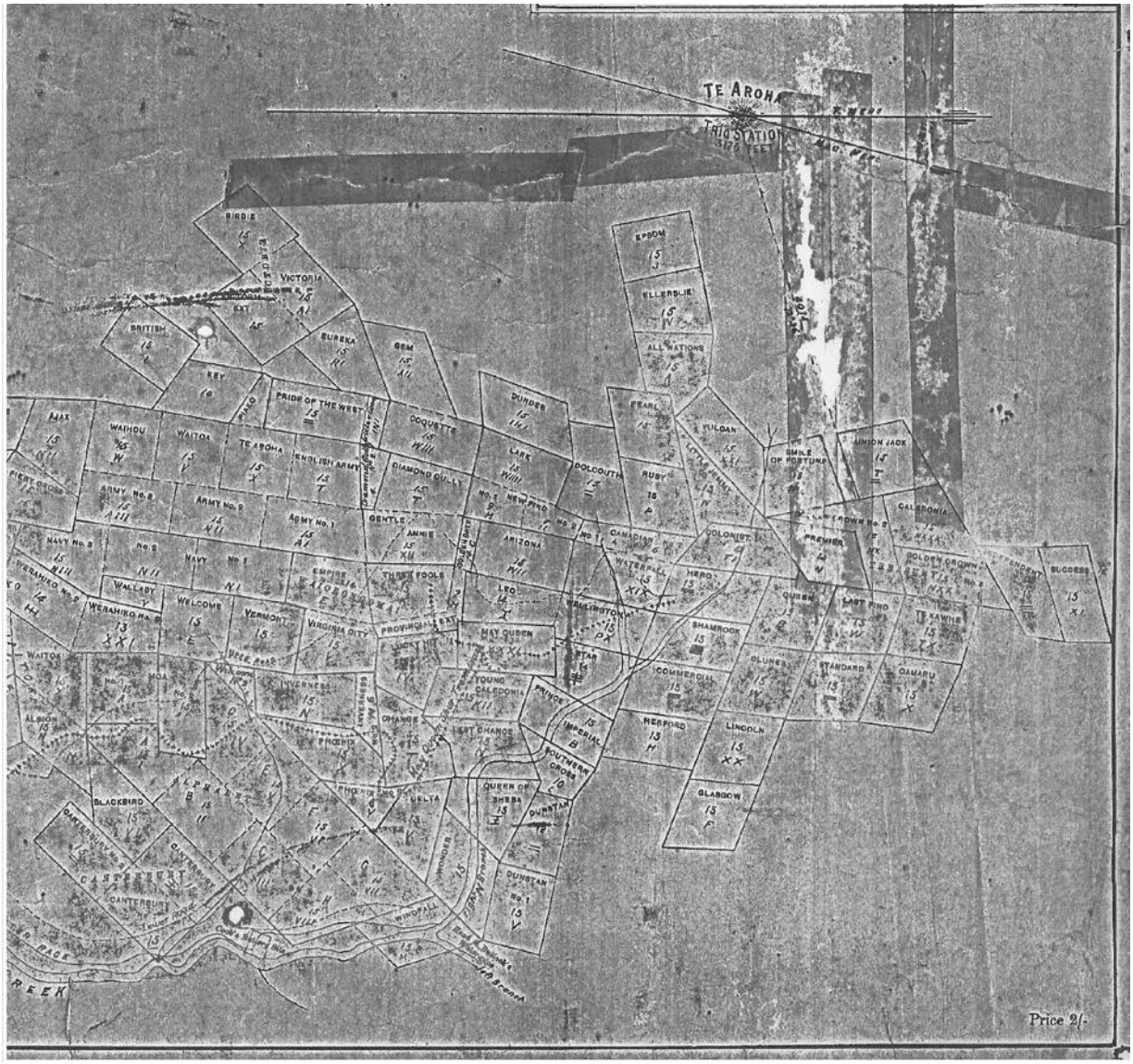


Figure 8: Graeme, enlargement of portion of ‘Licensed Claims Te Aroha’, showing remainder of Waiorongomai goldfield.

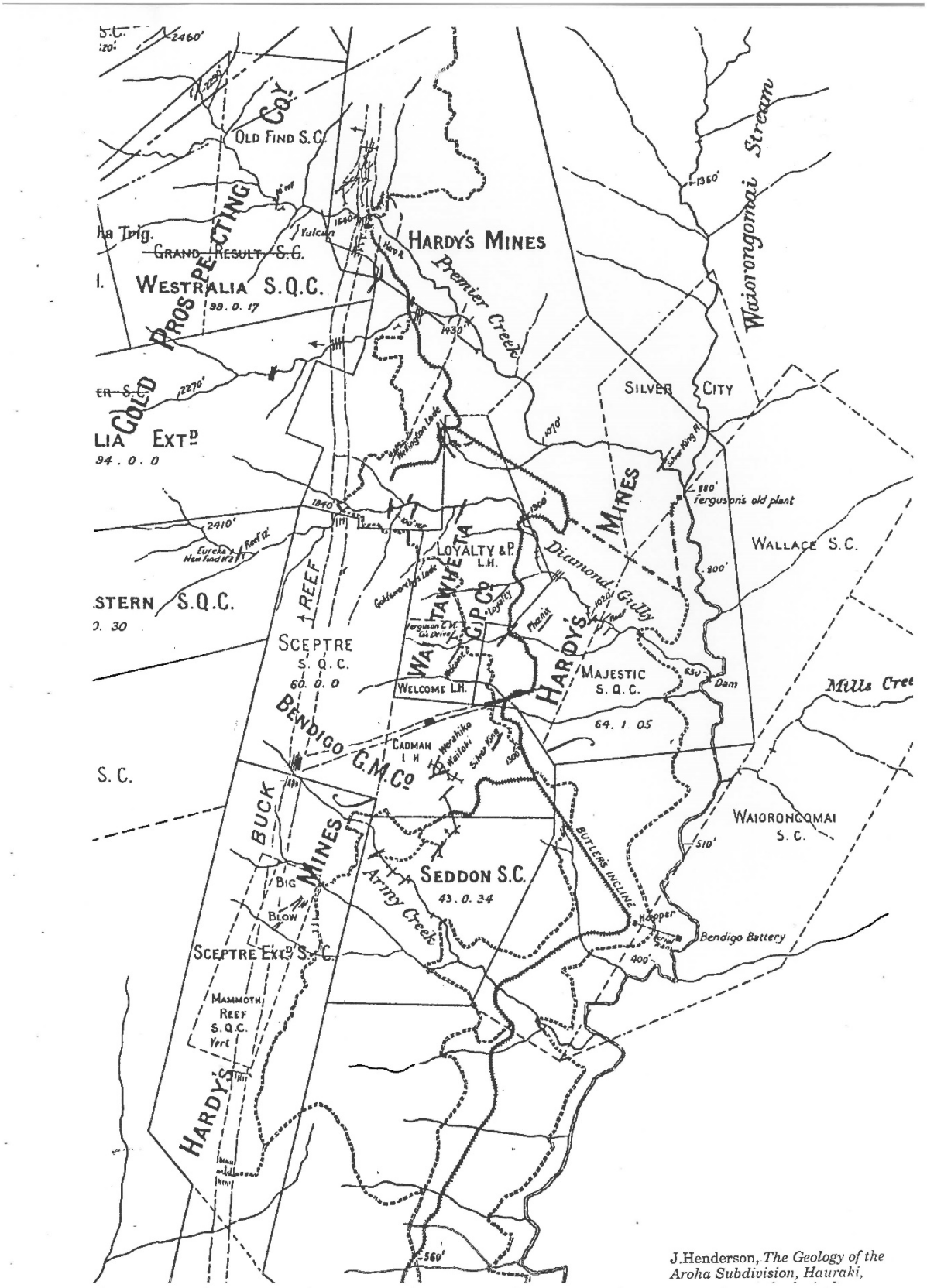


Figure 9: Henderson, assisted by Bartrum, map showing claims as at 1912, along with reefs and tramways and tracks, in portfolio at end.

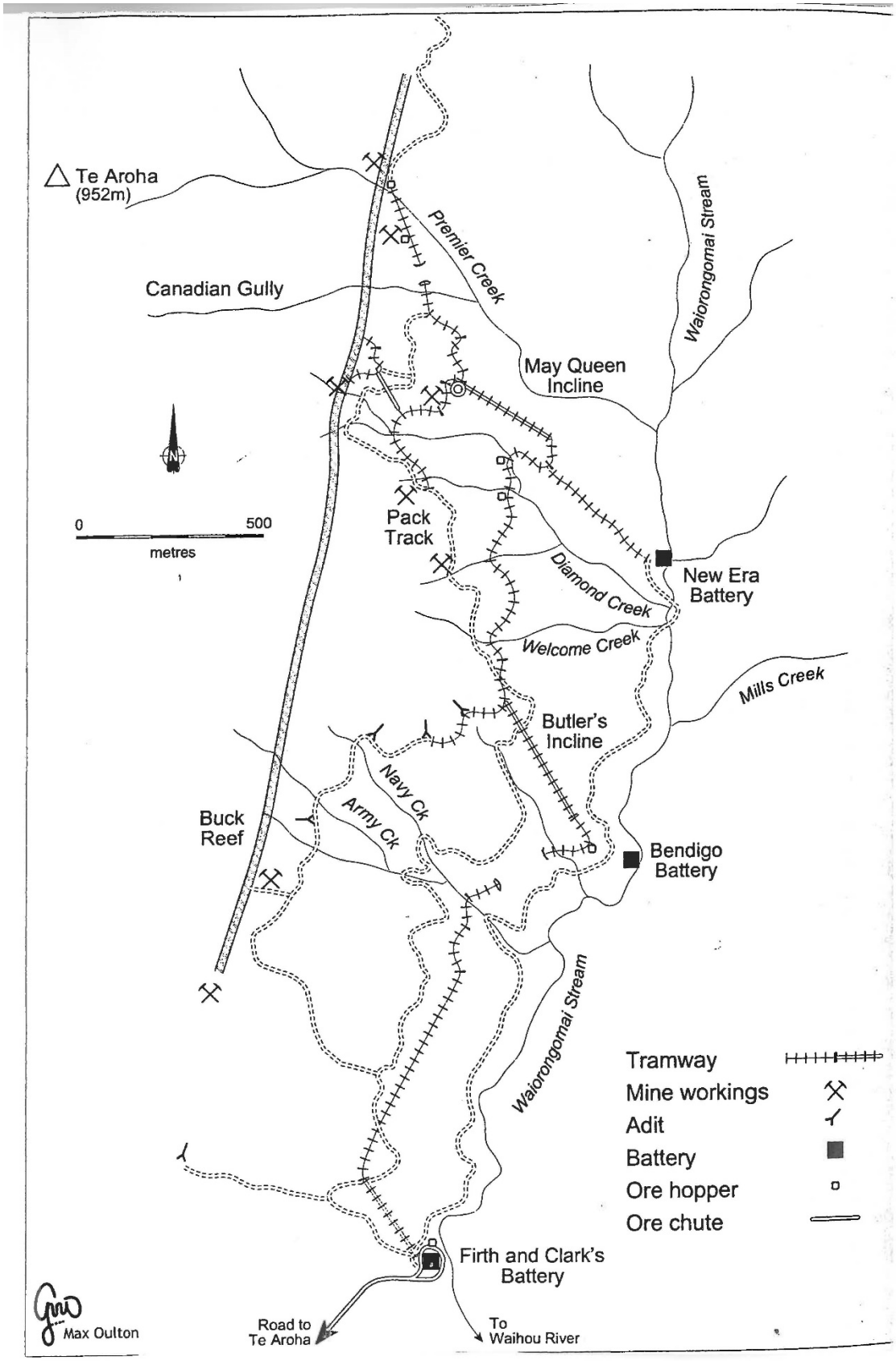


Figure 10: 'Waiorongomai mining area', mapped by Max Oulton, University of Waikato, and published in *Hauraki Report*, vol. 2, p. 56; used with permission.