



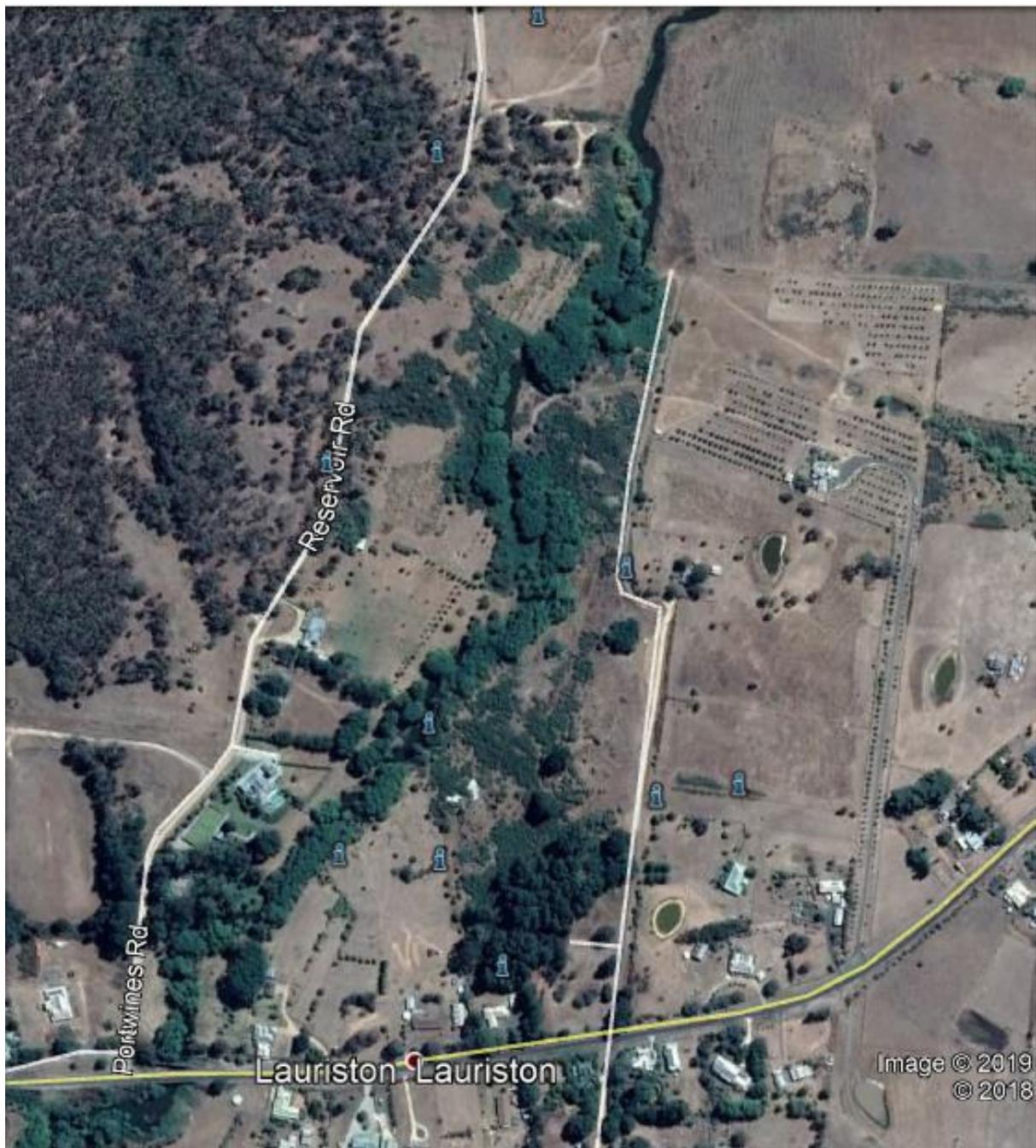
LINKING LAURISTON TO THE RESERVOIR

SITE HISTORY REPORT

PREPARED FOR MALMSBURY DISTRICT LANDCARE GROUP

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On behalf of Malmsbury Historical Society Inc.



All photographs taken by the author unless otherwise acknowledged

Cover Photo: Google Earth image of 16 February 2019, Google Earth Pro. 2019. *Lauriston*. Lat: -37.238601° Long: 144.375851° elevation 475m, viewed 17 September 2019,
<http://www.google.com/earth/index.html>

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Abbreviations used:

MDLG = Malmsbury District Landcare Group

MRSC = Macedon Ranges Shire Council

PROV = Public Record Office Victoria (North Melbourne)

VPRS = Victorian Public Record Series (at PROV)

Glossary¹

Amalgam and Retorting	<p>'Where stamp mills were used to crush gold-bearing ore to fines, a part of the extraction process involved the use of mercury-wetted copper plates, over which the crushed fines were washed. A periodic scraping and re-mercurizing of the plate resulted in amalgam for further processing'.</p> <p>Amalgam obtained by either ore processing or gold extraction 'was then heated in a distillation retort, recovering the mercury for reuse and leaving behind the gold. As this released mercury vapors to the atmosphere, the process could induce adverse health effects and long term pollution.'²</p>
Berdan Pan	<p>A grinding pan. The circular pan was set at an angle, and as the pan revolved, a heavy iron ball rotated in the lowest point, grinding sand or mineral to a fine powder. It was frequently used to grind impurities out of amalgam (gold in mercury), and to grind batch-lots of heavy mineral.³</p>
Blanket strakes and Blanket sand	<p>Blanket strakes 'were cattle hides or heavy blankets of woollen felt placed over wooden boards, over which the finely crushed ore was passed and the fine gold flakes were caught and held by the blanket fibres. The blankets were washed every few hours to collect the gold and crushed sand particles. ... Blanket sand containing gold was placed in the Berdan [pan] with water and mercury and rotated for several hours until the gold had been liberated from the sand</p>

¹ See also: Michael Pearson and Barry McGowan, *Mining Heritage Places Assessment Manual*. Canberra: Australian Heritage Commission, 2000: 79-120.

² Wikipedia contributors, "Amalgam (chemistry)," *Wikipedia, The Free Encyclopedia*, [https://en.wikipedia.org/w/index.php?title=Amalgam_\(chemistry\)&oldid=925466456](https://en.wikipedia.org/w/index.php?title=Amalgam_(chemistry)&oldid=925466456) (accessed 16 December 2019).

³ University of Melbourne. "Berdan Pan." eGold: A Nations Heritage, Cultural Heritage Unit, The University of Melbourne; <http://www.egold.net.au/biogs/EG00031b.htm>, accessed 13 November 2019.

	and amalgamated ... As ore grades dropped during the 1860s, tailings (q.v.) were increasingly sent to specialised concentrators and the use of blankets was phased out'. ⁴
Calcine/Calcining	Heating to high temperatures in air or oxygen to hasten decomposition of minerals. Gold was calcined in a reverberatory furnace with mercury and sal ammoniac. ⁵
Chilean Mill	A circular trench in which two large stones with iron rims rotated around a central axis. The mill was horse-powered and used to crush ore. The process of using a Chilean Mill was described in 1870 as: 'Quartz well burnt at the kilns, thence through the Chilian amalgamating mills, and from thence through an arrastra' (or arrastra - a type of mill). ⁶
Mullock	'Waste, barren or uneconomic rock obtained in the course of mining ... Either deposited in mullock dumps or used to backfill worked out stopes'. ⁷
Pyrites/Iron pyrite	Often referred to as 'fools gold', iron pyrite is a yellow mineral consisting of iron disulphide and can be found in association with real gold. Pyrites can be burned to make sulphur dioxide required for making sulphuric acid, and is also a natural source of arsenic..
Reverberatory Furnace	A metallurgical or process furnace that isolates the material being processed from contact with the fuel, but not from contact with combustion gases. They were, for the first 75 years of the 20th century, the dominant smelting furnace used in copper production, treating either roasted calcine or raw copper sulfide concentrate. ⁸
Tail Race	A race for conveying water away from a point of industrial application.

⁴ Peter Davies, Susan Lawrence and Jodi Turnbull. "Mercury Use and Loss from Gold Mining in Nineteenth-Century Victoria." *Royal Society of Victoria*, 127, 2015: 44 –54.

⁵ Wikipedia contributors, "Calcination," *Wikipedia, The Free Encyclopedia*, <https://en.wikipedia.org/w/index.php?title=Calcination&oldid=928463955> (accessed 7 January 2020).

⁶ "Castlemaine Mining District", *Mount Alexander Mail*, 12 November 1870: 2.

⁷ Pearson and McGowan, *Mining Heritage Places*: 103.

⁸ Wikipedia contributors, "Reverberatory furnace," *Wikipedia, The Free Encyclopedia*, https://en.wikipedia.org/w/index.php?title=Reverberatory_furnace&oldid=917740759 (accessed 1 January 2020).

Tailings	'Rock, earth, gravel or sand etc. that is the residue from the separation or other treatment of washdirt or ore by water. Different types of tailings can indicate different mining processes'. ⁹
Whim	A whim, also called a whim gin or a horse capstan or whip, is a mining device similar to a windlass (q.v.). It is used for hauling materials to the surface. It comprises a capstan or a wide drum with a vertical axle.
Windlass	An apparatus for moving heavy weights, typically consisting of a horizontal cylinder (barrel), which is rotated by the turn of a crank or belt. A winch is attached to the end and a cable (or rope) is wound around the winch, pulling a weight attached to the other end of the cable.

⁹ Pearson and McGowan, *Mining Heritage Places*: 113.

Scope

The aim of this report is to document the mining heritage evident in the Study Area and to provide historical context and some interpretation to this heritage. The results can be used to guide current and future management of the site, including conservation of heritage, revegetating the site for environmental benefits and encouraging the use of the open spaces by residents and visitors.

Introduction

The discovery of gold in Victoria is attributed to William Campbell at Clunes in March 1850.¹⁰ The official recognition of this discovery did not occur until 1851, after the creation of the colony of Victoria (as distinct to being a part of the colony of New South Wales) on 1 July 1851. Gold was discovered in the vicinity of Castlemaine at Barker's Creek in July 1851 although there is evidence its presence was recorded as early as 1847.¹¹

The traditional owners of the Coliban River valley, the Djaara people (Dja Dja Wurrung language group), knew part of this waterway as Kailheban.¹² Following the exploration of the area by Major Thomas Mitchell in 1836, the western side of the Coliban River in the vicinity of Malmsbury and Lauriston was occupied by European settler Alexander Mollison from December 1837 as the *Colliban* run.¹³ The east side of the Coliban was occupied by Charles Ebden from August 1837 as the *Carlsruhe* run.¹⁴

As this land was surveyed, broken up in to varying sized parcels of land, and offered for sale by the Crown from 1850, these runs shrank to the pre-emptive rights *Pemberley* (Henry Adair Orr at Malmsbury) and *St Agnes* (James Donnithorne later Booth and Argyle at Kyneton, in a subdivision of *Carlsruhe*).¹⁵ As a result the surrounding land was redefined as the parishes of Drummond, Edgecombe, Lauriston and Burke, and the townships of Kyneton, Malmsbury and Lauriston.¹⁶ Land

¹⁰ James Flett, *The History of Gold Discovery in Victoria*. Melbourne: Poppett Head Press, 1979: 7.

¹¹ Flett, *History of Gold Discovery*: 180.

¹² John Tully, *Djadja Wurrung Language of Central Victoria: Including Place Names*. Maryborough: Australian Print Group, 1997: 86.

¹³ Bill Callander, "*Colliban*" 1837-1853: *A History of a Squatter's Run With Particular Reference to Alexander Fullarton Mollison*. La Trobe University College of Northern Victoria, Research Study, 1991: 5.

¹⁴ Geoffrey Serle, 'Ebden, Charles Hotson (1811–1867)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/ebden-charles-hotson-2018/text2479>, published first in hardcopy 1966, accessed online 3 October 2019.

¹⁵ "Abstract of Sales by Auction", *Argus* (Melbourne), 18 May 1850: 4; Callander, "*Colliban*": 37–41.

¹⁶ PROV, VPRS 8168/P5, Item DIST 23, Historic Plan Collection, *Plan of the Parishes of Edgecombe, Lauriston, Carlsruhe and Woodend*, G Fleck, April 1855.

on the east side of the Coliban is in the County of Dalhousie, while the west side is in the County of Talbot.¹⁷ Subdivisions within parishes were called Sections or Portions (the former typically applied to townships, the latter to rural land), and in townships these Sections were divided further into Allotments. Thus, all alienated (non-Crown) land could be described in terms of County, Parish, Section (and Allotment). This report frequently refers to land using this system (as opposed to street addresses) as this is the method by which they are referred to in historical records.

Land sales in the parish of Lauriston commenced in 1850, Edgecombe in 1852, Burke and Drummond in 1854, Kyneton township in 1850, and Malmsbury township in 1852.¹⁸ The township of Lauriston was not originally planned as part of this system (see below). The land with the best soils and access to water were typically surveyed and sold first, hence the land with basaltic soils along the Malmsbury-Daylesford Road and north and east of Malmsbury, near the present-day Calder Highway, was sold earlier than other less-fertile or less-watered lands.

Much of the land surrounding the basalt plains remained as Crown land and “commons” until the advent of the 1860s Land Acts which enabled Crown land to be occupied by lease or licence for agricultural and other purposes such as quarrying, market gardens and brickfields.¹⁹ Under some of these acts, land could be occupied by licence for several years and eventually purchased by the occupant. The remaining land, such as that used for infrastructure (e.g. roads, railways and reservoirs), remains Crown land to this day, but may still be occupied under a lease or licence.

Figure 1 shows a parish plan for Lauriston township and the Study Area. It shows the Crown (pink) land adjoining the river, the brown alienated (privately owned) land, reserves (pink allotments or with a green border) and other Crown land (white) which remains as rivers, roads or leased lands. These parish plans were dynamic in nature. As contemporary details were added to a printed and dated plan, it gradually became untidy, and a new one would be drawn up with permanent details (e.g. allotment number and acreage) leaving the old one to be put away for historical reference. Thus, a chronological history of land use can be constructed by examining all current and “put-away” plans and other historic maps.²⁰

¹⁷ PROV, VPRS 8168/P2, Item RAIL 2A, *Counties of Grant, Rodney, Talbot, Dalhousie Bourke*, no date.

¹⁸ “Government Land Sale”, *Argus* (Melbourne), 30 August 1850: 2; “Proclamation”, *Victoria Government Gazette*, 22 September 1852: 990; “Proclamation”, *Victoria Government Gazette*, 3 November 1854: 2437; “Crown Lands’ Sale”, *Argus* (Melbourne), 16 April 1850: 2; “Proclamation”, *Victoria Government Gazette*, 18 February 1852: 161.

¹⁹ Phillipa Nelson and Lesley Alves, *Lands Guide: A guide to finding records of Crown land at Public Record Office Victoria*. Melbourne: Public Record Office Victoria, 2009: 49–53.

²⁰ Peter Cabena, Heather McRae and Elizabeth Bladin. *The Lands Manual: A Finding Guide to Victorian Lands Records, 1836-1983*. Melbourne: Royal Historical Society of Victoria, 1992: 7–14.

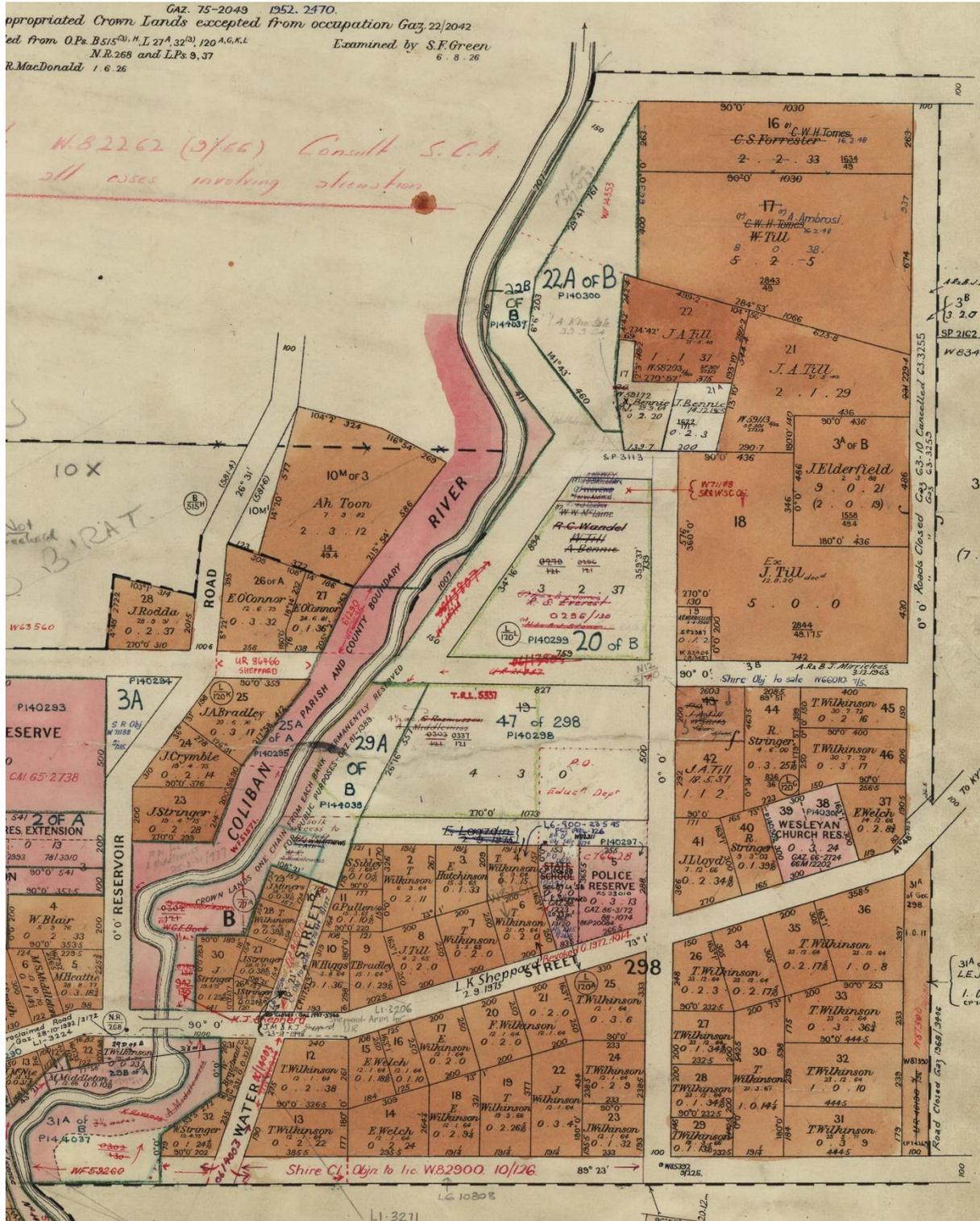


Figure 1. Portion of 1926 Lauriston township plan “Lauriston 42G” showing the Study Area.

Note the Police Reserve on Allotment 5 on the corner of what is now Bennies Lane. The Lauriston township boundary is the black broken line.

Source: W. J. Butson, Township of Lauriston Plan. Melbourne, Department of Lands and Survey, 1926

In parallel to this land management system was the occupation of land for mining. All “royal” minerals (gold and silver) are the property of the Crown and permission to extract them is, and has been, controlled by the issuing of mining leases and miners’ rights.²¹ Initially mining leases could only be issued by the government for Crown land as the owner of alienated land previously had the right to control who could access their land for mining purposes. The *Mines Act 1884* changed this.²² From then on mining leases could be issued by the government for alienated land, with some compensation being due to the landowner. There was also government control over whether licences could be issued for mining on land occupied under licence for farming, or whether land could be occupied for farming (and later purchased) on known auriferous (gold-bearing) land. Applications for occupational and mining leases had to be approved by both the Department of Crown Lands and Survey and the Mines Department if they were in a known goldfield.

In May 2019, works commenced in the Study Area to groom the large infestation of gorse and blackberry present on the Crown land adjoining the Coliban River and north of the Lauriston township. This was undertaken by Malmsbury District Landcare Group (MDLG) via an Upper Coliban Landcare Support Grant as part of the Healthy Coliban Catchment Project. This study is undertaken as part of the second phase of the MDLG project funded via a Regional Riparian Action Plan Grant and forms part of the in-kind contribution to the project.²³

The Study Area is essentially defined as the crown land on the east and west banks of the Coliban River at Lauriston, bounded on the south by the Lauriston (Drummond-Kyneton) Road, on the west by Lauriston Reservoir Road, on the east by Bennie’s Lane and on the north by a line which defines the Lauriston township boundary on the east side of the Coliban. For context, other adjoining land has been included where relevant. This is the area roughly covered by Figure 1 and includes part of the Lauriston township and part of the parish of Burke. More specifically, certain parcels of land within the Study Area can be defined as: township of Lauriston; Section B, Allotments 20, 22A, 22B and 29A and Section 298, Allotment 47 (Bennies Lane, Lauriston) and Parish Of Burke (and Town of Lauriston), Section A, Allotments 10M, 10N, 10Y (Lauriston Reservoir Road)

Early Local Gold Discoveries

Gold was discovered locally adjoining the Coliban River at Lauriston in November 1851, on Kangaroo Reef (adjoining Kangaroo Creek between Lauriston and Drummond) in 1856 and at Frenchman’s

²¹ Ralph Birrell, *Staking a Claim: Gold and the Development of Victorian Mining Law*. Melbourne University Press, 1998: 4, Appendix 1.

²² Birrell, *Staking a Claim*: 103–5.

²³ John Walter, President, Malmsbury District Landcare Group, personal communication.

Reef, on the western shores of what is now Malmsbury Reservoir, also in 1856.²⁴ Other early local gold discoveries were at Taradale in 1852, Yankee Point (South Taradale) 1855, McMillan's Flat north-west of Malmsbury June 1856, Belltopper Reef 1857, and Humboldt Reef at Belltopper Hill in December 1859. The gold diggings adjoining the Coliban River south of Malmsbury were originally known as the Coliban Diggings (later the Old Coliban Diggings) and also the Columbine Diggings since the *Columbine* was a nickname for the Coliban River.²⁵ Eventually a township in the vicinity of these goldfields was surveyed and became known as Lauriston township. Initially the local gold mining was predominantly alluvial (gold present in surface soil or river deposits) but as the alluvial gold ran out local mining evolved into quartz mining (quartz veins or reefs above or below the surface) and deep-lead mining (gold in ancient riverbeds now covered by basalt of ancient volcanic eruptions and flows of lava).²⁶ Early alluvial mining was carried out under licences or miners' rights – a right of one or more persons to occupy Crown land for mining and residential purposes.²⁷ To undertake the more expensive work of reef and deep lead mining, companies formed to raise the funds, and mining leases for defined areas of land were issued for individuals and companies.²⁸ These leases also feature on historic plans, some being especially goldfields maps or for other geological purposes (Figure 2), while others are marked on old put-away parish plans (Figure 3). 'Russell's Quartz Reef' shown in Figure 2 became a major focus of mining at Lauriston.

²⁴ Thomas Turner, *Goldfields Map: Taradale Division of the Castlemaine District*, Taradale, 2 May 1861; Flett, *History of Gold Discovery*: 202–204.

²⁵ "Mount Alexander", *Argus* (Melbourne), 19 January 1853: 5; "Mount Alexander", *Argus* (Melbourne), 24 January 1853: 5.

²⁶ C. J. Davey and P. L. McCarthy, "The Development of Victorian Gold Mining Technology", *Victorian Historical Journal*, 73, No. 1, April 2002: 64–8.

²⁷ Birrell, *Staking a Claim*: 13, 32–34.

²⁸ Birrell, *Staking a Claim*: 2, 98–100.

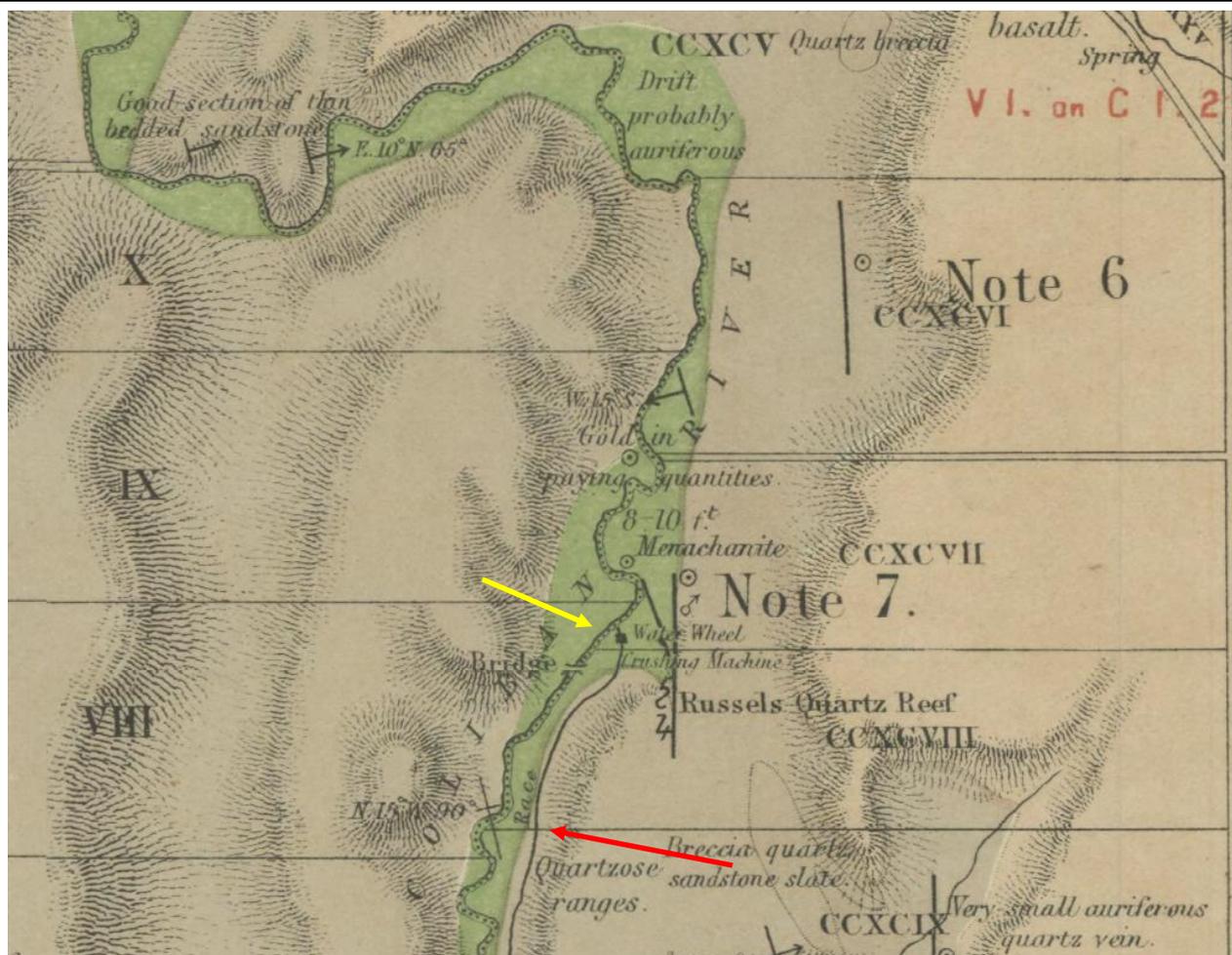


Figure 2. Part of Geological Survey of Victorian Quarter Sheet 9SW (ca1857) which covers the Coliban River in the vicinity of Lauriston township (not surveyed at the time).

Portion 298 (CCXCVIII) on the east bank of the river contains a notation "Russels Quartz Reef" and on the south boundary of Portion 297 (CCXCVII) is a "Water Wheel Crushing Machine" (Yellow arrow) fed by a north-running water race (red arrow). A bridge is shown over the Coliban between Portions 298 of Lauriston and Allotment 8 (VIII) of Section 3 parish of Burke. The township was later partly defined on the east bank by the north boundary of Portion 297.

Source: Aplin and Ulrich, 9 S. W. Quarter Sheet, Geological Survey Office Melbourne, .n.d. (ca1857)

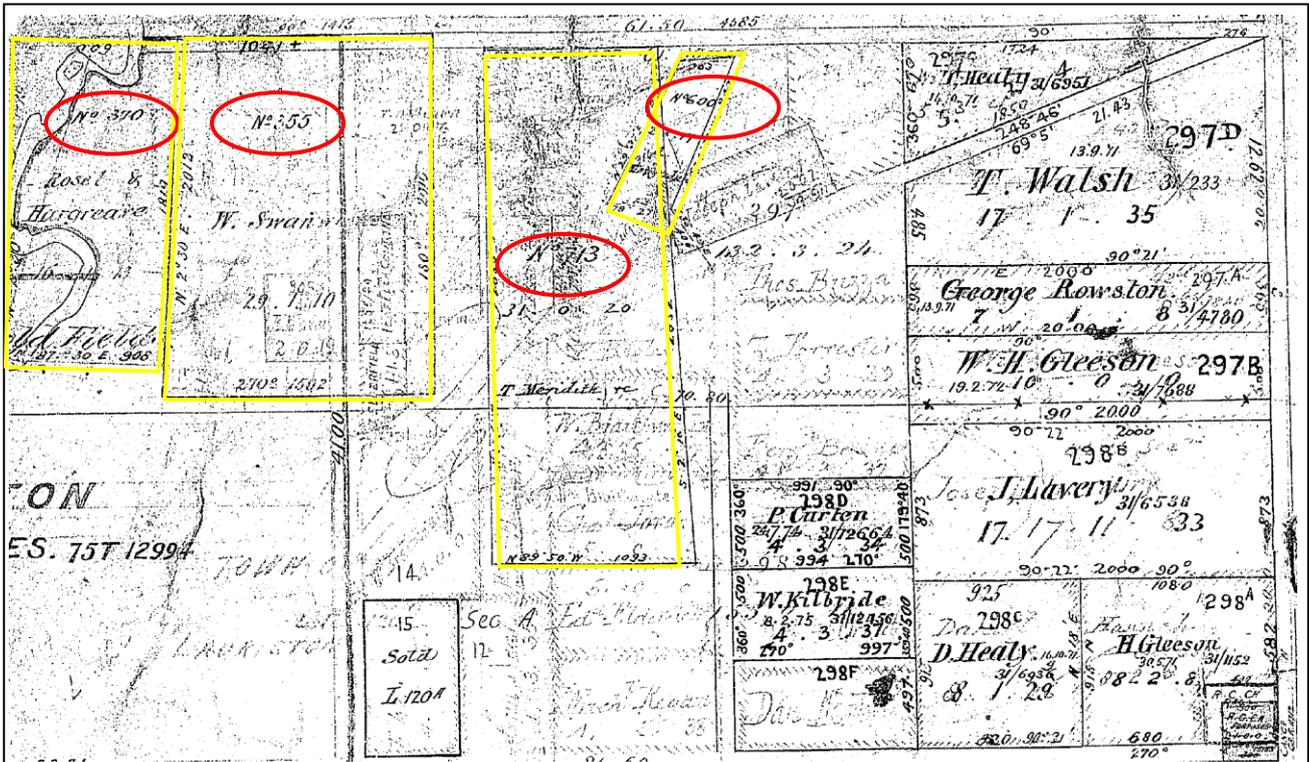


Figure 3. Part of Lauriston Parish Put-away Plan L29.

The plan is annotated "Transferred to Geological Map August 1857" (see Figure 2). Mining leases are bordered in yellow and the lease numbers circled in red. Leases 370 and 355 are in the Study Area.

Source: Gabriel Fleck, Lauriston Plan 1855/84B(?) *Agricultural Land Along the River Coliban*, Put-away Plan L29

Overview of Mining at Lauriston

Early accounts of local mining use a variety of imprecise place and locality names, many of which do not appear on maps. Russell's Claim or Reef, for example (see later) may originally have been known as the Coliban Quartz Reef, or it may have been only one of several early known reefs adjoining the Coliban at Lauriston. Thus, with no detailed and accurate mining history of Lauriston to work with, the information gleaned for this report requires a large amount of interpretation. Place names in the report have been presented as they were found in the records.

There was a significant amount of gold mining and associated activity in and around Lauriston township for many decades from the mid-1850s until at least the 1970s. By February 1864 there were about 150 Chinese miners at the 'Old Coliban' diggings and in April 1864, there was an estimated '400 to 500 persons employed in both alluvial and quartz mining' on the Coliban Diggings.²⁹ As the number of mining leases in the area grew, so too did the equipment required to process the

²⁹ *Kyneton Observer*, 16 February 1864: 2; "Gold Mining Around Malmsbury", *Mount Alexander Mail*, 4 April 1864: 2.

material being extracted. By November 1861 six new puddling machines were being erected and by July 1862 a **Chilean mill** (q.v.) was associated with the water mill at the Coliban Reef diggings.³⁰

As time progressed, boilers powered by firewood were installed, powering engines for winding gear and pumps, and chimneys were erected. Site histories reveal the use of furnaces for pyrites roasting. Intermingled with mining was the use of land for food production and the management of water and timber for both activities. Later still, processes were developed by which mining wastes could be treated, such as the use of cyanide, to extract more gold from already worked land and materials. The next section of this report attempts to outline this history in a roughly chronological order.

There is currently no definitive history written on the gold mines of the Lauriston-Malmsbury-Drummond goldfield from which to draw historical information for this report. Primary research has been undertaken to piece together this site history. Other mines outside of the Study Area have been referred to here to give context and demonstrate proximity to the Study Area (e.g. Glengonner, All Nations and General Wyndham). It is not within the scope of this report to extend this beyond what is needed for clarity. The archival resources used during the research phase can be used to further investigate these peripheral areas as the reader wishes.

³⁰ *Mining Surveyors' Reports: Furnished by the Mining Surveyors of Victoria*, Vol. 3, November 1861, Melbourne: Government Printer: 513; *Mining Surveyors' Reports*, Vol. 4, July 1862: 6.

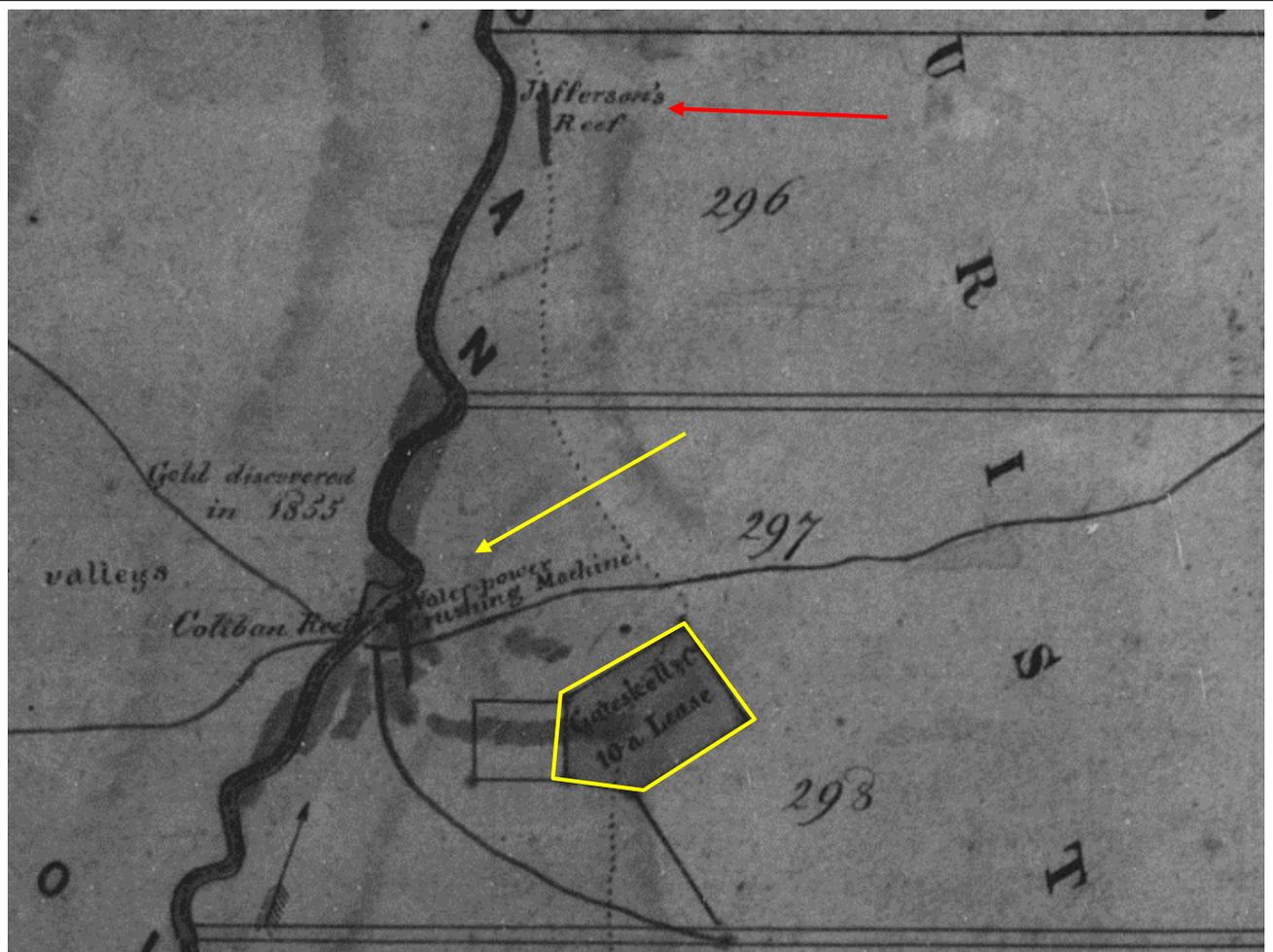


Figure 4. Portion of 1861 Goldfields Map of the Taradale Mining Division showing the Coliban River through what is now Lauriston township.

A gold discovery date of 1855, the “water-power crushing machine” (yellow arrow) and “Jefferson’s Reef” (red arrow) adjoin the river. The tracks leading to and from the river at the “Coliban Reef” equate to the current bridge crossing at Lauriston. John Gateskell’s 10 acre mining lease (yellow outline) on Portion 298 is also shown.

Source: Thomas Turner, *Goldfields Map: Taradale Division of the Castlemaine District*, Taradale, 2 May 1861, State Library of Victoria.

Mining in the Study Area

Figure 3 shows part of an early (1857) Lauriston parish plan with mining lease numbers 355, 370, 600 and 713 marked on it. It is annotated ‘Transferred to Geological Map August 1857’ which suggests it pre-dates Figure 2. Figure 4 shows John Gateskell’s early lease south-east of the river crossing. Both Figures 3 and 4 are centred on Portions 297 and 298 of Lauriston parish which were a focal point for early gold mining. Figure 3 was probably drawn up to record which land had been sold and to plan the Lauriston township while Figure 4 is specifically a goldfield map. Some roads and landowners have

been recorded on the 1857 map as permanent features (e.g. T Walsh's allotment 297D in the top right corner of Figure 3) while others are pencilled in (e.g. Thomas Buzza's allotment to the left of Walsh's).

The Victorian gold fields were divided into distinct mining districts in 1858 to permit better administration of mining activity and establish the system of mining boards and wardens courts. Castlemaine District, which included the Divisions (and goldfields) at Taradale, Malmsbury and Lauriston, was proclaimed and defined in January 1858.³¹ Leases for mining auriferous land were published in the *Victoria Government Gazette (Gazette)* and each mining district had its own set of lease numbers. After an initial numbering system between May and early December 1859 a new set of sequential lease numbers was created in late 1859.³² Castlemaine District leases under the new system did begin at No. 1, but the publication of them in the *Gazette* begins at No. 49 in December 1859, suggesting leases under the earlier system were renumbered. Lease No. 4, for example was recorded and still valid in January 1865.³³

Details of the early mining leases identifiable in Figures 3 and 4 in the vicinity of the Study Area are shown in Table 1, as are other leases identified during the historical research phase.³⁴ Each of these has, in turn, been examined in detail to identify any mining activity that may have left permanent changes to the landscape. With this mining activity came the introduction and establishment of equipment and technology to streamline the mining process. These include water races, water-powered stone crushing machinery (Figures 2, 4 and 8), horse-driven Chilean mills (see Figure 5), and steam-driven machinery, which may also have left visible traces.

³¹ "The Mining District of Castlemaine." *Victoria Government Gazette*, 5 January 1858: 3.

³² "Applications for Leases in the Mining District of Castlemaine." *Victoria Government Gazette* 28 June 1859: 915 begins with No. K4736 and ends with "Applications for Leases in the Mining District of Castlemaine." *Victoria Government Gazette*, 2 December 1859: 2603 in the format of L59/11318; the new sequence began with "Applications for Leases in the Mining District of Castlemaine." *Victoria Government Gazette*, 9 December 1859: 2664 but begins with lease number 49. Leases advertised in May 1859 were unnumbered.

³³ "Notice to Holders of Mining Leases." *Victoria Government Gazette*, 27 January 1865: 196.

³⁴ Lease numbers 600 and 713 were deemed to be external to the Study Area.

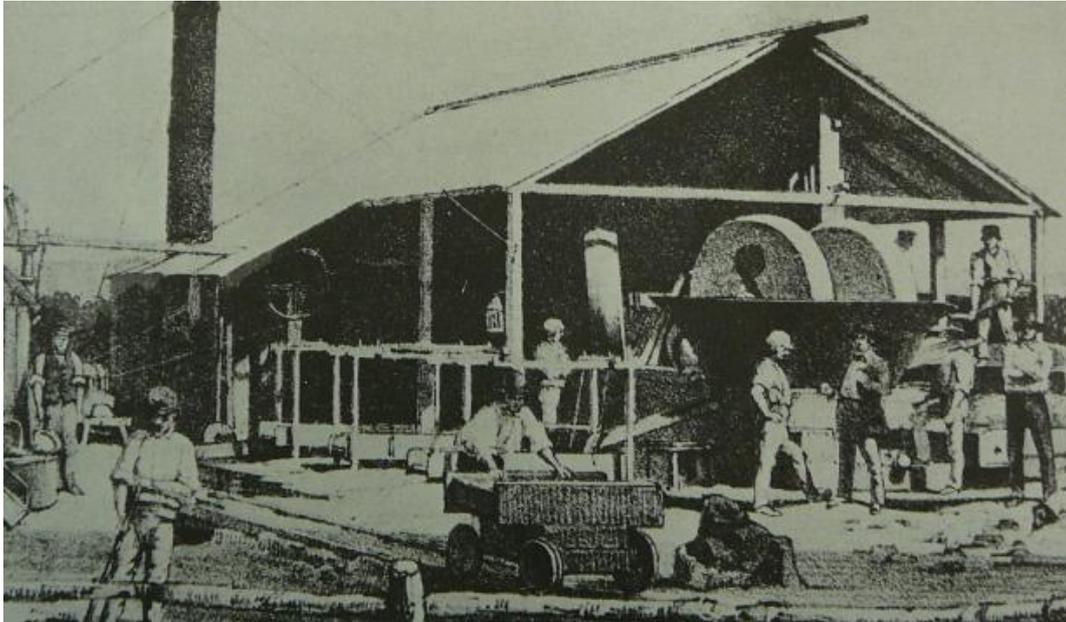


Figure 5. An example of an early crushing machine at Kangaroo Flat, Victoria, in 1857.

Most likely a Chilean Mill, since the pan is horizontal and the large circular stones rotate within the pan, as opposed to a Berdan Pan which had a pan rotating at an angle with spherical iron balls in it.

Source: James Flett. *A Pictorial History of the Victorian Goldfields*. Australia: Rigby Limited, 1977: 44

Table 1. Mining Leases Identified from Maps Covering the Study Area

Lease No.	Figures	Date	Name	Details
U/K	2	c1855	Russell's Claim or Reef	No lease details found. May have been held under Miner's Right.
28	8	1859	Coliban Reef Quartz Mining Association	16.5 acres September 1859, adjoining Russell & Co.'s crushing machine, withdrawn November 1859
74	4 & 9	1860-63	John Gaitskell, Gaitskill, Guitskell, Gaskell or Gateshill: Star Company	Initially 4 acres (date unknown), plus another 10 acres in July 1860.
355	3	1867	William Swanwick	29a 1r 5p (acres, roods, perches). Application made May 1866, refused May 1867.
370	3 & 11	1867	Rosel & Hargreave / Reliance Gold Mining Company	16a 1r 23p. Application made June 1866, refused November 1867.
559	7 & 11	1870-71	Wilkinson and others / South Energetic Company	26a 0r 30p.

Lease No.	Figures	Date	Name	Details
592 & 604	7 & 11	1870-74	L J Gideon / Lauriston Prince of Wales Gold Mining Company	13a 3r 21p 37a 3r 30p (or 24a 0r 9p) [10a 1r 4p plus land in 592?]
606	11 & 13	1870-71	Gregory / Extended South Energetic Quartz and Alluvial Gold Mining Company	8a 1r 8p
650 & 1419	11 & 14	1871-72	Melbourne and Lauriston Company / Duke of Cornwall Company	8a 2r 34p / 8a 0r 26p
664	11 & 15	1871-72	J W Woods / South Sea or South Star Company	21a 2r 2p
2996, 3036, 3037, 3066, 3146, 3147, 3267, 3298, 2264 (PP), 3488 & 5037	16 & 18	1890-93	Russell's Reef Amalgamated	See Table 2 for full details

Russell's Claim or Reef

Scottish-born brothers James, George and William Russell and their brother-in-law David McClure were all involved in local mining. James arrived with his wife and family in 1852, William (and another brother, Alexander) in 1855, George by 1860 and David McClure and family in May 1859.³⁵

In partnership with an acquaintance, Donald Campbell, James acquired a **Berdan pan** (q.v.) with the intention of setting up a commercial quartz crushing plant. After seeing the mining activity of James Williams and John McDonald at Lauriston, Campbell and Russell's initial efforts at Lauriston went unrewarded. After a period of inactivity, and with renewed vigour, they hit a valuable quartz reef (circa 1854) and began crushing highly remunerative amounts (more than £3,000) and erected a **furnace**.³⁶ Keeping their efforts secret for 18 months, the ground was rushed when word finally got out about the

³⁵ PROV, VPRS 947, Fiche 19, Page 3, Unassisted passenger lists (1852-1923), *Ballengeich*, December 1852; *Kyneton Observer*, 4 September 1860: 1; PROV, VPRS 947, Fiche 88, Page 1, Unassisted passenger lists, *Roderick Dhu*, Feb 1855 and followed by his wife and 2 children in 1857 (see PROV, VPRS 14, Book 13, Page 97, Assisted passenger lists (1839-1871), *Medway*, December 1857), PROV, VPRS 947, Fiche 162, Page 3, Unassisted passenger lists, *Marco Polo*, May 1859.

³⁶ "Mines in Malmesbury (*sic*) District." *Argus* (Melbourne), 20 June 1865: 4.

find. This possibly occurred in October 1857.³⁷ Campbell left the party and Russell continued operations with McDonald, 'putting up additional machinery, with a **water wheel** to drive it' sometime before September 1859.³⁸ A **water race** three quarters of a mile in length and 5 foot wide by 3 feet deep was created to feed the machinery. Russell sold his share of Russell's Reef and a quarter share of a claim at nearby Kangaroo Hill to his newly-arrived brother George Russell in 1859. By 1859 James Russell had made sufficient money to return to Scotland, but lost his wife and children and a large amount of gold when the ship in which they were travelling, the *Royal Charter*, was wrecked off the north-east coast of Wales in October 1859.³⁹

The water-powered crushing machine was offered for sale in November 1859 and in August 1860 George Russell advertised for sale a one-third share in the machinery, and a one-third share in the Russell and Co.'s quartz claim.⁴⁰ This was possibly bought by David McClure. By July 1860, Messrs. Russell and Co. were 'trying a quartz reef on Mr. Jefferson's land, crushing the stone by a water-power mill', the operations being 'carried out on the Coliban river, about 3 miles south of Malmsbury'.⁴¹ In December 1860, the company invited tenders for the erection of a 'small weatherboard **cottage** near the quartz-crushing machine'.⁴² By June 1861 a new **puddling machine** was established at Jefferson's, but the vein they were working on ran out.⁴³

This water-powered mill was owned by McClure and party in April 1861 and in September 1861 Russell and Co's. quartz claim had produced about 320 ounces of gold from two month's work.⁴⁴ At that time the claim was being worked by four men, three of whom were shareholders, and they were averaging in excess of £150 per month for each man, or a total of £1200 worth of **amalgamated gold**

³⁷ "Daylesford." *Mount Alexander Mail*, 16 October 1857: 4.

³⁸ "Wrinkle's Mining Letter: No. IX." *Kyneton Observer*, 30 September 1897: 2; PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 28. It was reported in *Mining Surveyors' Reports*, Vol. 2, April 1860: 90.

³⁹ "The Royal Charter." *Times* (London), 9 November 1859: 12; "Arrival of the English Mail." *Mount Alexander Mail*, 13 January 1860: 6; PROV, VPRS 948, August 1859, *Royal Charter*, page 2, Outwards passenger lists; "Wrinkle's Mining Letter." *Kyneton Observer*, 30 September 1897: 2; *Kyneton Observer*, 7 August 1860: 2; "Death of Mr. Jas. Russell." *Kyneton Guardian*, 21 December 1897: 2.

⁴⁰ *Mount Alexander Mail*, 11 November, 1859: 8; *Kyneton Observer*, 12 November 1859: 1; *Kyneton Observer*, 21 August 1860: 3; *Kyneton Observer*, 4 September 1860: 1.

⁴¹ *Mining Surveyors' Reports*, Vol. 2, No. 15, July 1860, Melbourne: Government Printer: 194; The name reported in the Mining Surveyor's Reports varies between Gateshill, Gateskell, Gaitskell, Gateskill.

⁴² *Kyneton Observer*, 4 December 1860: 3.

⁴³ *Mining Surveyors' Reports*, Vol. 3, No. 26, June 1861: 230; "Taradale Mining Surveyor's Report", *Mount Alexander Mail*, 14 June 1861: 5.

⁴⁴ *Mining Surveyors' Reports*, Vol. 3, No. 24, April 1861: 142; *Kyneton Observer*, 21 September 1861: 2.

(q.v.) over two months.⁴⁵ This prompted a minor gold rush on the flats between Russell's tunnel and the river despite there being a general exodus of Victorian miners to the New Zealand goldfields at the time.⁴⁶ In November 1861 quartz, black sand and tailings (q.v.) from the Coliban diggings were being smelted with reasonable results, including quartz from Gaskill (sic) and Russell.⁴⁷ As the number of mining leases in the area grew, so too did the equipment required to process the material being extracted. By November 1861 six new puddling machines were being erected.⁴⁸ By April and June 1862 the water-powered mill was no longer working due to a lack of water.⁴⁹

By July 1862 a **Chilean mill** was associated with the water mill at the Coliban Reef diggings.⁵⁰ A Chilean mill, along with a 10-horse power **steam engine with boiler**, formed part of the plant of the Coliban Quartz Reef in August 1862 (Figure 6).⁵¹ Mr McClure

To QUARTZ MINERS, CAPITALISTS &c
PROFITABLE INVESTMENT.

TO be SOLD, by Private Contract, One Third clear SHARE in a valuable Gold-producing REEF, which has been profitably worked for the last eight years; together with a Third Share of the Plant, consisting of Chilean Mill, 10-horse power Steam Engine, with Boiler complete, now in course of erection.

For particulars apply to the Proprietor, on the ground, Coliban Quartz Reef. G. A. ROBERT.

Figure 6. Plant of the Coliban Quartz Reef in 1862 when a 1/3 share in the operations was offered for sale

Source: *Kyneton Observer*, 5 August 1862: 3

sold half a share in Russell's Reef for £300 in 1863.⁵² Russell and Rosel had erected new quartz crushing machinery by February 1864 and had sunk a shaft to 150 feet. The crusher was a **six-head stamper** with a 12 horse-power engine to run it. In early February 1864, 22 tons of stone from Binnie's claim in Orr's Paddock near Malmsbury was crushed at Russell, Rosel & Co.'s Chilean mill to yield 165 ounces of gold.⁵³

⁴⁵ *Kyneton Observer*, 24 September 1861: 2.

⁴⁶ *Kyneton Observer*, 19 September 1861: 2.

⁴⁷ *Kyneton Observer*, 2 November 1861: 2.

⁴⁸ *Mining Surveyors' Reports*, Vol. 3, No. 31, November 1861: 513.

⁴⁹ "Castlemaine Mining Board", *Mount Alexander Mail*, 11 April 1862: 4; "Mining Board." *Mount Alexander Mail*, 13 June 1862: 4.

⁵⁰ *Abstract of the Mining Surveyors' Reports*, Vol. 4, July 1862: 6.

⁵¹ *Kyneton Observer*, 5 August 1862: 3.

⁵² *Kyneton Observer*, 14 May 1863: 2.

⁵³ *Kyneton Observer*, 16 February 1864: 2; *Kyneton Observer*, 4 February 1864: 2.

In September 1865, Russell's Quartz Reef claim had been working for 11 years, was operating with six miners and was producing 25 tons of ore per week while also charging the public a fee of ten shillings per ton for crushing. Their machinery consisted of 'vertical engine, 10 ½ -inch cylinder, drives [a] 6 ½-inch **lift pump**, and a 6-head battery of 500 pounds stamps; **whim** (q.v.) and horses.'⁵⁴ In October 1865 the shareholders of Russell's claim received a quarterly dividend of £93 per share.⁵⁵ For a number of weeks afterwards the company was stockpiling their quartz while the crushing machine (also described as a battery, or mill) was processing stone from other mines, until some broken cogs delayed work.⁵⁶ George Russell later recorded that the mine shaft was 'about 50 feet west and 35 feet north of the No. 1 shaft of the present Russell's Reef Amalgamated Company' (see later).⁵⁷

Russell's claim was apparently sold to a local Chinese miner and market gardener Ah Toon in December 1867 but the claim was never legally transferred.⁵⁸ Ah Toon worked the claim for a short while then abandoned it. Another Chinese man, Ah Chuck successfully 'applied for and obtained registration of the claim' and began working it, and then discovered 'a rich quartz reef within three feet of the surface'. Ah Toon then professed to have possession of the claim. The case was dealt with in October 1869 in the Taradale Mining Warden's Court with Ah Chuck's right to occupy the site being upheld. Ah Chucks claim and its proximity to Russell's Reef in shown in an 1870 mining map of the district (Figure 7).

"Russell's Reef" in various forms, companies and leases (see also Lease 370, below) continued operations until 1912 (see below).⁵⁹ The return of James Russell to Victoria and the local goldfields in 1884 helped to trigger a resurgence in local mining.⁶⁰ Some of the "Russell" mines were south of the main Lauriston road and therefore out of the Study Area, however the Russell's Reef Amalgamated Gold Mining Company lease, active to at least 1911 is included land in the Study Area.⁶¹ This will be dealt with in more detail later.

⁵⁴ "Mining in the District." *Kyneton Observer*, 14 September 1865: 3.

⁵⁵ *Kyneton Guardian*, 21 October 1865: 2.

⁵⁶ "Mining News." *Kyneton Guardian*, 1 November 1865: 2; "Mining News." *Kyneton Guardian*, 8 November 1865: 2; "Mining News." *Kyneton Guardian*, 22 November 1865: 2; "Mining News", *Kyneton Guardian*, 29 November 1865: 3.

⁵⁷ E. J. Dunn. "The Lauriston-Drummond North Gold Fields." *Bulletins of the Geological Survey of Victoria: No. 19 the Lauriston-Drummond North Gold- Field*. Melbourne: Department of Mines, 1907: 3.

⁵⁸ "Taradale Warden's Court." *Kyneton Guardian*, 16 October 1865: 2.

⁵⁹ "Industrial." *Geelong Advertiser*, 21 March 1912: 3.

⁶⁰ "Death of Mr. Jas. Russell." *Kyneton Guardian*, 21 December 1897: 2.

⁶¹ "Mining." *Weekly Times* (Melbourne), 6 May 1911: 40.

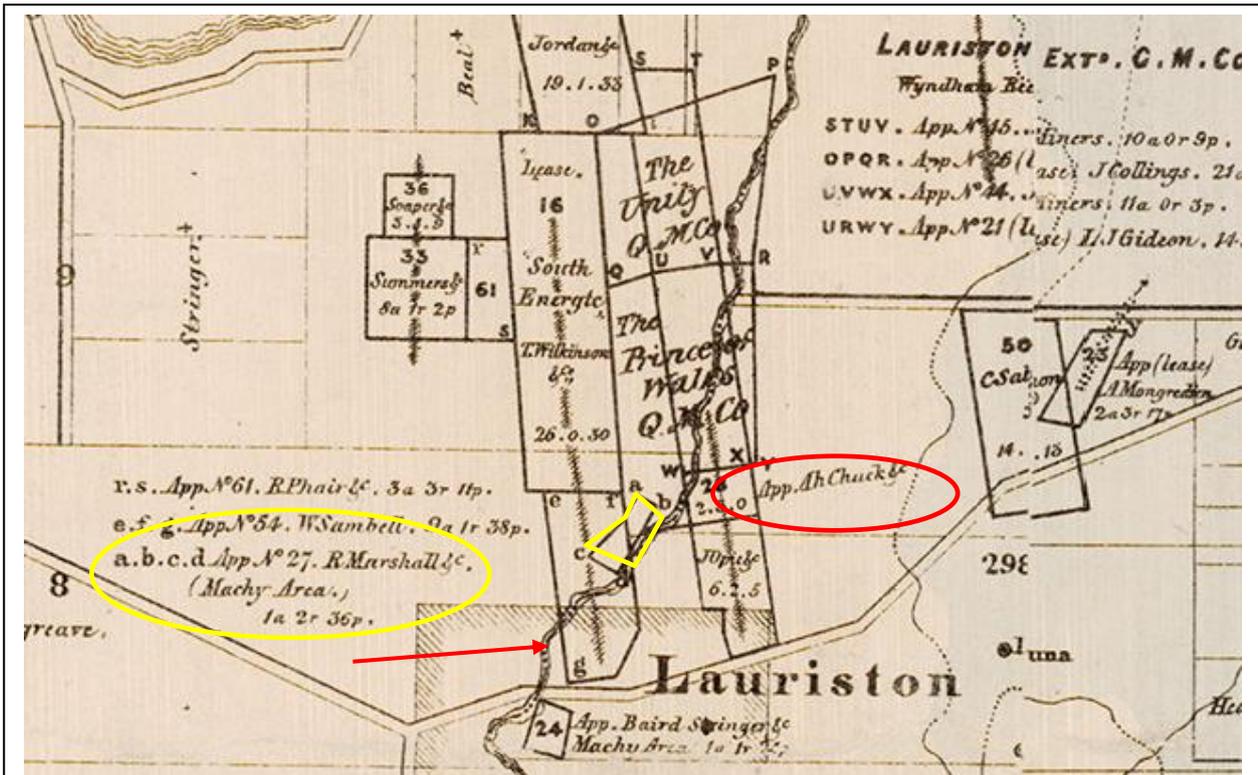


Figure 7. Portion of Archdall's 1870 mining map.

The map shows Ah Chuck's claim (red circle) adjoining the Coliban River (red arrow) and Marshall's machinery area (yellow outline with reference details in yellow circle) along with the Prince of Wales (No. 604), Unity and South Energetic (No. 559) Company lease areas.

Source: Henry Archdall (Mining Surveyor). *The Gold Mines of Taradale, Lauriston and the Coliban* (map). Taradale, 29 August 1870. Geological Survey of Victoria, catalogue reference 1310/M/1.

Lease 28 – Coliban Reef Quartz Mining Association

This association, made up of William Salter, William Padley, Alexander Hunter, William Coubrough and Thomas B Davidson (or Davison) applied for a lease of 16.5 acres in September 1859.⁶² This was on the Coliban River four miles south west of Malmsbury. The association proposed to work the lease with 20 men and a quartz-crushing machine. The lease plan drawn in the application file (Figure 8) shows the lease included the area occupied by Russell's crushing machine and water race. The owners of these structures were assured they would not be interfered with by the applicants, however the application was withdrawn in November 1859.

⁶² PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 28.

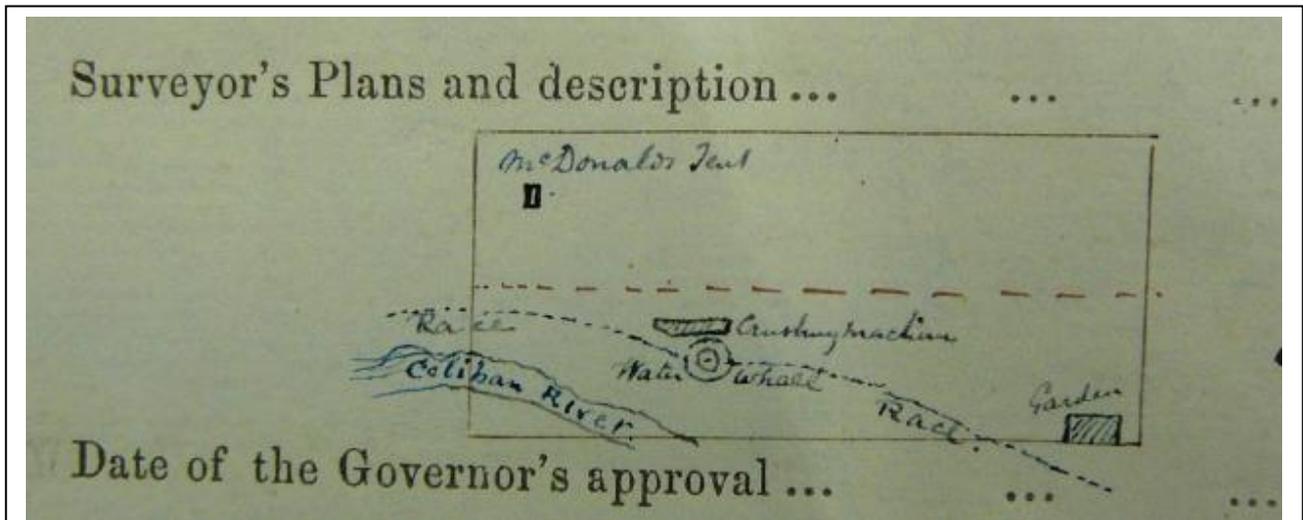


Figure 8. Plan for Mining Lease 28, Castlemaine District, September 1859

The plan shows Russell's water race and crushing machine, a garden, and John McDonalds tent adjoining the Coliban River. The left boundary is facing north.

Source: PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 28

Lease 74 – Gaitskill & the Star Company

Gaitskill's mining activity was reported in July 1860 as:

Malmsbury Diggings. Messrs Gatheshill (sic) and Co. have applied for a lease of 10 acres more ground, they have wrought out a privilege of 4 acres, their mode of operation being tunnelling under a high bank of diluvial formation and **puddling** the auriferous drift through a horse machine ... operations are carried out on the Coliban river, about 3 miles south of Malmsbury.⁶³

Gaitskill's party was comprised of John Gaitskill, Matthew Davidson, John Walker, William Braithwaite and John Davidson. The lease plan of July 1860 (Figure 9, which matches that shown in Figure 4) shows the four acres they already occupied adjoining the new ten-acre lease. The application confirms the group proposed to work with six men, a horse puddling machine and horse and cart but would use steam power if necessary. Several abandoned shafts were already on the ground requested, and the party proposed 'tunnelling into the hill & puddling the auriferous drift'.⁶⁴ This is also probably the mining company described in August 1860 as having 'from fifteen to twenty men [who] are constantly employed in sluicing and puddling' and had purchased 10 acres of land, for mining purposes, at £8 per acre.⁶⁵

⁶³ *Mining Surveyors' Reports*, Volume 2, No. 15, July 1860, Melbourne: Government Printer: 194.

⁶⁴ PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 74.

⁶⁵ *Kyneton Observer*, 7 August 1860: 2.

The mining surveyor reported in September that this party were 'doing well. The system of tunnelling under the bank, and puddling the auriferous earth with a horse machine, proves a profitable speculation'.⁶⁶ By May 1861 Gaitskill's team was known as the Star Company (see Star Lead in Figure 16) although by June the company was extending their tunnel 'which is on the leased ground, the party have lately lost the run of the auriferous drift'.⁶⁷

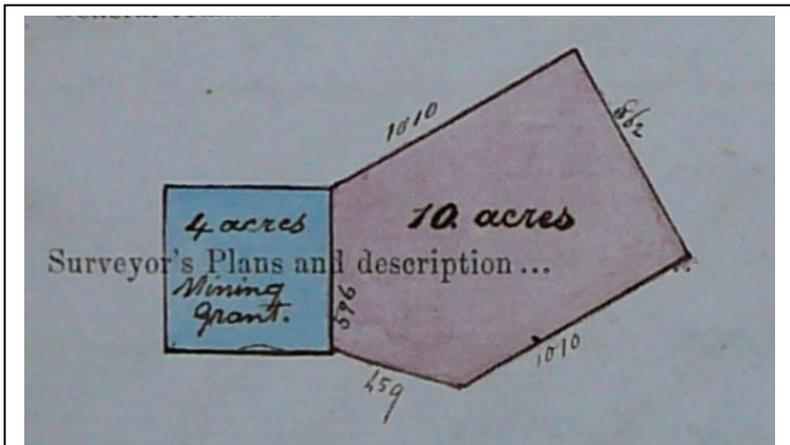


Figure 9. Plan for Mining Lease 74 applied for by Gaitskill in July 1860

Source: PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 74

Tenders were invited by Gaitskill in August 1861 for sinking a 30 foot shaft 'at the 'Colban Reef, near Russell's water-wheel'.⁶⁸

While quartz from Gaskill (sic) was being smelted with reasonable results by 2 November 1861, the Company dissolved their partnership and on 7 November offered the plant and lease for sale, which included a 'Puddling Machine, with **Patent Cradle**, Trucks, Tools &c.' (Figure 10).⁶⁹ Mining on the lease continued however, with their tunnel collapsing in February 1862 and alternative tunnels not being productive by June of that year.⁷⁰ A memorial from the miners at the Coliban was sent to the mining warden in April 1862 requesting the lease be forfeited due to non-compliance with the labour

Figure 10. Star Company advertising their lease and plant for sale in 1861

Source: *Kyneton Observer*, 7 November 1861: 3

⁶⁶ *Mining Surveyors' Reports*, Volume 2, No. 17, September 1860, Melbourne: Government Printer: 270.

⁶⁷ *Mining Surveyors' Reports*, Vol. 3, No. 25, May 1861: 184; "Taradale Mining Surveyor's Report", *Mount Alexander Mail*, 14 June 1861: 5.

⁶⁸ *Kyneton Observer*, 27 August 1861: 3.

⁶⁹ *Kyneton Observer*, 2 November 1861: 2; *Kyneton Observer*, 7 November 1861: 3.

⁷⁰ "Mining Board." *Mount Alexander Mail*, 13 June 1862: 4.

covenants.⁷¹ The warden decided that since this situation had only arisen because of the tunnel collapse, there was no justification for the forfeiture. By this time (June 1862), there were 50 alluvial miners working the Coliban River 3.5 miles south of Malsbury (Lauriston), and 22 working on the nearby Coliban Reef on which there were nine mining claims.⁷² In May 1863 there were over 150 people working at the Coliban goldfield, including Crimble (sic Crymble) and Pullen. Thomas Wilkinson had purchased a share in the Star Company for £60. He kept it for one week, during which time it earned him a bit over £5, then sold it for £71.⁷³

In September 1863 a steam engine at the Coliban Reef was continually pumping water out of mines and at the Star Lead auriferous earth was struck at 200 feet and a new shaft was being prepared.⁷⁴ At that time a fifth-share in the Star claim was offered for sale at £600.⁷⁵ This new shaft is explained by Braithwaite, Gaskell (sic) and Co. sinking a 32-foot shaft at Mr McCarthy's Harp of Erin reef (formerly Jefferson's reef) by September 1863.⁷⁶ Gaitskill was keen to sell a share in a quartz claim (probably the Star Company) to enable him to concentrate on this reef. The mining lease file shows that Pullen had purchased the lease, and Gaitskill's interest in the Company, by September 1863 and submitted a request for the lease to be cancelled.⁷⁷ The lease was declared forfeited in December of that year.⁷⁸

Mining appears to have continued on the site under several mining claims, as opposed to leases. The plant of the Star Company, and the Perseverance Company (see Figure 16), was once again offered for sale in June 1864.⁷⁹ The equipment offered included a puddling machine, cradle, and **sluice boxes**, in addition to the Perseverance claim (adjoining Russell's) with plant, stable and a 100-foot shaft. By September 1864 the mining surveyor reported that 'the miners on the Star Lead find it more advantageous to reduce their wash-dirt in a steam crushing mill, than in a horse puddling machine, cartage [costs] being the same in both cases'.⁸⁰

⁷¹ PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 74.

⁷² "Mining Board." *Mount Alexander Mail*, 13 June 1862: 4.

⁷³ *Kyneton Observer*, 14 May 1863: 2.

⁷⁴ "Malsbury Goldfield", *Kyneton Observer*, 8 September 1863: 2.

⁷⁵ *Kyneton Observer*, 12 September 1863: 2.

⁷⁶ *Kyneton Observer*, 12 September 1863: 2.

⁷⁷ PROV, VPRS 7842/P2, Unit 302, Register of Applications for Gold Mining Leases, Folio 74.

⁷⁸ "Notice to Holders of Mining Leases." *Victoria Government Gazette*, 13 October 1863: 2300.

⁷⁹ *Kyneton Observer*, 7 June 1864: 3.

⁸⁰ *Reports of the Mining Surveyors and Registrars, Quarter Ending 30th September, 1864*. Victorian Parliamentary Papers, 1864, No. 13: 66.

In addition to the Star Company (Claim No. 1), by July 1865 the Luna Company (Claim No. 2), the Lauriston Company (Claim No. 3), the Hit or Miss Company (Claim No. 4) and the Dalhousie Company (Claim No. 5) were also operating on the Star Lead.⁸¹

The Luna Company (see Figure 7, just to the east of Lauriston township) was operating by March 1865 when its claim and plant were offered for sale.⁸² The Lauriston Gold Mining Company was established on the Star Lead in late 1864.⁸³ Tenders for a new shaft of 80 feet for that Company were invited in November 1864 at which point water was continually entering the old shaft.⁸⁴ In September and October 1865 they were erecting machinery, consisting of a ten horse-power engine, with ten inch cylinder, they had purchased from the Garibaldi Company Daylesford and winding gear purchased from Castlemaine.⁸⁵ Masons laying stone for the engine bed quit their contract in November causing delays in the erection of the engine and machinery house.⁸⁶ The Hit or Miss Company had machinery erected by November 1864, consisting of a 10 horse-power steam plant.⁸⁷ Their activities were still remunerative in April 1865 with the company leasing adjoining private land in anticipation of future success.⁸⁸ The Dalhousie Gold Mining Company was in operation by October 1864.⁸⁹ A new reef crossing the Star Lead was struck by April 1865, resulting in mining claims taking up all of the adjoining Crown Land.⁹⁰

In May 1865, the proprietors of Braithwaite and Co.'s claim at the Coliban and three others met to form and register a new mining company to erect machinery and work the Harp of Erin (Jefferson's) quartz reef in Lauriston, based north-east of the Study Area.⁹¹ These proprietors were William Braithwaite, Maurice Healy, Thomas Heatlie, John Gaitskell, Matthew Middleton, and John Irwin.⁹² The new company was named the General Wyndham and offered 1000 shares worth £10 each. By

⁸¹ "Lauriston." *Mount Alexander Mail*, 22 July 1865: 2.

⁸² "Auction Sales." *Kyneton Observer*, 25 March 1865: 2.

⁸³ *Kyneton Guardian*, 2 September 1865: 3; *Kyneton Observer*, 24 November 1864: 2.

⁸⁴ "Tenders", *Kyneton Observer*, 29 November 1864: 3; *Kyneton Observer*, 17 December 1864: 2.

⁸⁵ "Mining News." *Kyneton Guardian*, 23 September 1865: 3; "Mining News." *Kyneton Guardian*, 21 October 1865: 2; "Mining News." *Kyneton Guardian*, 6 December 1865: 2.

⁸⁶ "Mining News." *Kyneton Guardian*, 1 November 1865: 2; "Mining News." *Kyneton Guardian*, 8 November 1865: 2.

⁸⁷ *Kyneton Observer*, 24 November 1864: 2; *Reports of the Mining Surveyors and Registrars, Quarter Ending 30th December, 1864*. Victorian Parliamentary Papers, 1864-65, No. 32: 68.

⁸⁸ "Mining at Malmsbury and Taradale." *Kyneton Guardian*, 26 April 1865: 3.

⁸⁹ *Kyneton Observer*, 1 October 1864: 3.

⁹⁰ "Mining at Malmsbury and Taradale." *Kyneton Guardian*, 26 April 1865: 3.

⁹¹ "Local Intelligence." *Kyneton Guardian*, 3 May 1865: 2.

⁹² *Kyneton Guardian*, 10 May 1865: 3.

August 1865 their machinery was being erected and their shaft had reached a depth of 74 feet.⁹³ In October of that year they had three shafts and were erecting their 30-Horse power, 14.5 inch cylinder engine, a 12-head stamping battery for crushing and a whim.⁹⁴ The company anticipated employing 30 men and milling 140 tons of stone per week when in full operation. While the machinery was initially anticipated to be operating by early November, by the 8th of that month the engine shaft was being sunk and the pumps were expected to be in place the following week.⁹⁵ The machinery successfully started in late November and they were crushing by early December.⁹⁶

By November 1870, the General Wyndham Company was intending to commence crushing for the public, which was deemed a 'great convenience, as there is more stone obtained in the district that can be crushed by the present crushing power'.⁹⁷ When the Wyndham Paddock (portion 296 Lauriston) was offered for sale in 1871 the property included the quartz crushing plant, engine, boiler and buildings.⁹⁸

Lease 355 – William Swanwick

William Swanwick (as Swanwick & Co.) was involved in local mining by February 1865.⁹⁹ Swanwick and Dingle both lodged an objection in December 1865 to an application by Highmore and party to register a mining lease at Lauriston on the road south of Glass's paddock (i.e. portion 296, see Figure 4).¹⁰⁰ Swanwick's subsequent application in May 1866, on behalf of the Kyneton Company, for a mining lease of 29 acres, 1 rood and 5 perches north of the township of Lauriston was refused in May 1867.¹⁰¹ Thus while the land applied for is shown in Figure 3, there is currently no evidence that Swanwick was engaged in mining on the land.

⁹³ "Mining News." *Kyneton Guardian*, 30 August 1865: 2.

⁹⁴ "Mining News." *Kyneton Guardian*, 21 October 1865: 2; "Mining News." *Kyneton Guardian*, 25 October 1865: 2.

⁹⁵ "Mining News." *Kyneton Guardian*, 8 November 1865: 2; "Mining Intelligence", *Kyneton Observer*, 2 November 1865: 2.

⁹⁶ "Mining News", *Kyneton Guardian*, 29 November 1865: 3; "Mining News." *Kyneton Guardian*, 6 December 1865: 2.

⁹⁷ "Mining Registrar's Report", *Kyneton Observer*, 22 February 1870: 3.

⁹⁸ *Kyneton Observer*, 21 January 1871: 3.

⁹⁹ "Malmsbury Borough Council." *Kyneton Observer*, 16 February 1865: 2; "Shire Council", *Kyneton Observer*, 28 November 1865: 2.

¹⁰⁰ *Kyneton Observer*, 16 December 1865: 2; "Malmsbury Warden's Court", *Kyneton Observer*, 6 January 1866: 2; "Shire Council", *Kyneton Observer*, 23 January 1866: 2; "Kynetonshire Council." *Kyneton Guardian*, 14 May 1879: 3.

¹⁰¹ PROV, VPRS 7842/P2, Unit 303, Register of Applications for Gold Mining Leases, Folio 355; "Application for Mining Lease Refused." *Victoria Government Gazette*, 28 May 1867: 957; *Kyneton Observer*, 1 June 1867: 2.

Lease 370 – Rosel and Hargreave and the Reliance Gold Mining Company

Augustus Rosel, a Kyneton businessman, was involved in Russell's claim (and its quartz crushing machinery) as part of a co-operative company by 1864 and in 1865 received quarterly dividends of £140 and £90 for that claim.¹⁰² In August 1865 he was the manager of the Comet Gold Mining Company, located in Pook's paddock at Lauriston, and in October 1865 the manager of North Wyndham Gold Mining Company.¹⁰³

Rosel and Thomas Hargreaves, as manager and agents for the Reliance Gold Mining Company, applied in June 1866 for a mining lease.¹⁰⁴ The 25 acres of land applied for included the parishes of Burke and Lauriston on the Coliban Reef, with the river running through the claim and the ground already being held by the shareholders under a miner's right.¹⁰⁵ At that point there were six men working the claim and it was anticipated that 12 men would be employed when the company was in full swing. Rosel and Thomas Hargreaves advertised for a legal manager for the mine in July 1866 and in August the *Kyneton Observer* reported that the Reliance Company had amalgamated with Russell's claim.¹⁰⁶ In addition to Rosel and Hargreaves, G Russell, W Swanwick, D McClure were among the original shareholders of the 22,000 shares issued.¹⁰⁷

The claim of the Reliance Gold Mining Company and its plant were advertised for sale in mid-October 1867, the items offered included a 10 horse-power steam engine with boiler and two batteries of stampers with five heads each.¹⁰⁸ An advertisement in December 1867, by Rosel and Co. for Russell's Claim, requested teams of horses or oxen for cartage to Alexandra, loading at Lauriston.¹⁰⁹ This suggests some of the plant was destined for the former town. The application by Rosel 'and another' (i.e. Thomas Hargreaves) for mining lease number 370 (Figure 3) of just over 16 acres of ground was refused in November 1867.¹¹⁰ Given that this lease is bisected by the Coliban River, and the absence of any other application by Rosel during this period, it is highly likely that this is the same lease applied for in 1866. There appears to be no further activity from this Company.

¹⁰² *Kyneton Observer*, 16 February 1864: 2; *Kyneton Observer*, 8 August 1865: 3; "Mining News." *Kyneton Guardian*, 14 June 1865: 2; *Kyneton Observer*, 21 October 1865: 2.

¹⁰³ *Kyneton Observer*, 5 August 1865: 3; *Kyneton Observer*, 21 October 1865: 3. Pook's paddock is most likely land in Lauriston parish or township of Lauriston owned by Ambrose Pullen and occupied by Pook— See *Kyneton Observer*, 7 June 1864: 3 and *Kyneton Guardian*, 19 March 1873: 3

¹⁰⁴ PROV, VPRS 7842/P2, Unit 303, Register of Applications for Gold Mining Leases, Folio 370.

¹⁰⁵ "Notice of Application for a Gold Mining Lease." *Victoria Government Gazette*, 15 June 1866: 1281.

¹⁰⁶ *Kyneton Observer*, 14 July 1866: 3; *Kyneton Observer*, 14 August 1866: 2.

¹⁰⁷ "Private Advertisements." *Victoria Government Gazette*, 27 July 1866: 1608.

¹⁰⁸ *Kyneton Observer*, 19 October 1867: 3.

¹⁰⁹ *Kyneton Observer*, 12 December 1867: 3.

¹¹⁰ "Application for a Mining Lease Refused." *Victoria Government Gazette*, 15 November 1867: 2219.

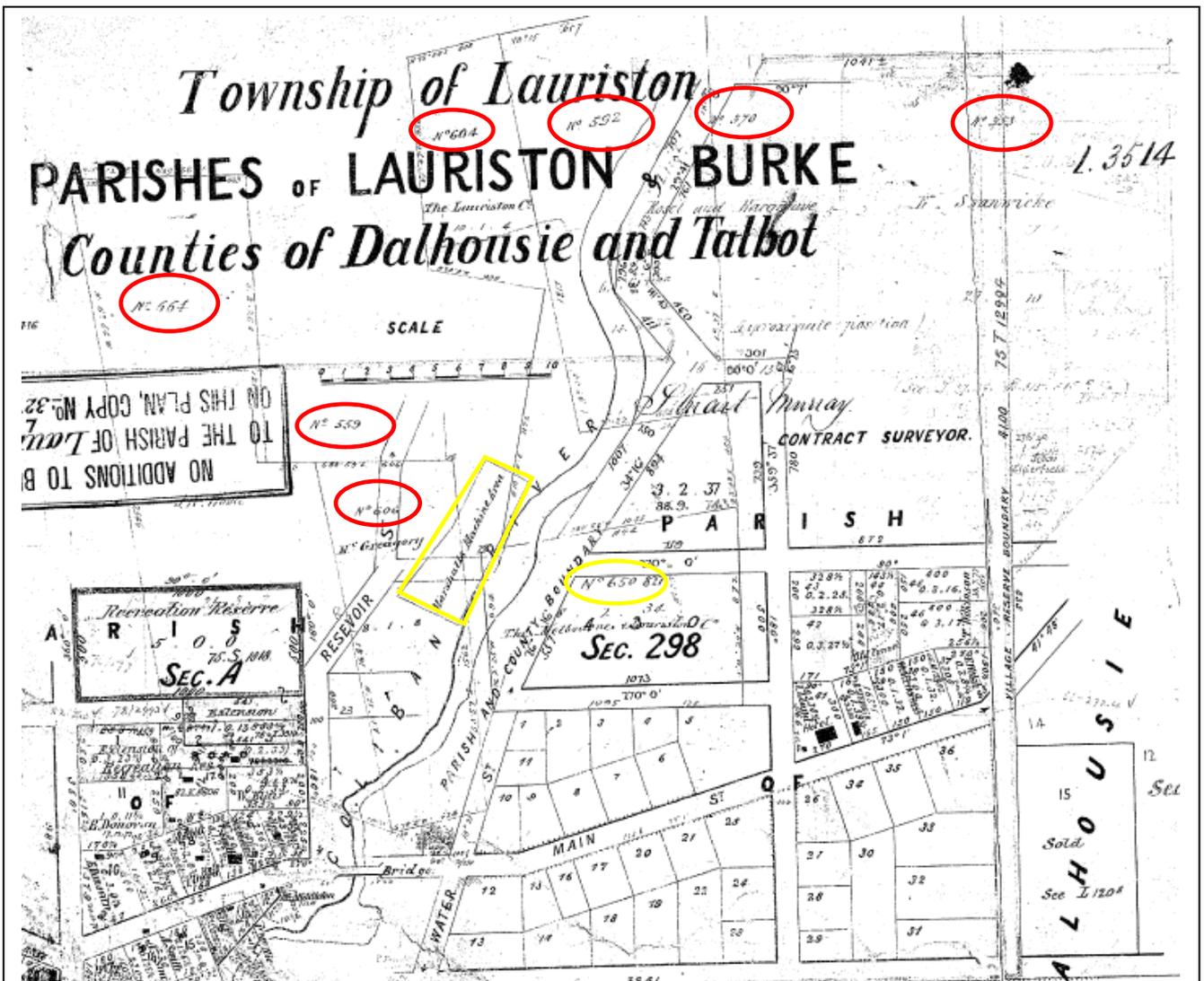


Figure 11. Portion of Lauriston parish Put-away Plan L120G, possibly dating from 1866 with amendments which post-date this.

On the west bank is marked "Marshalls Machine area" (yellow outline) and on the east bank the "Melbourne and Lauriston Company has mining lease No. 650 of 8 acres, 2 roods and 34 perches (yellow circle). Other identifiable mining leases on the plan are: No. 355 "Swanwick", No. 370 "Rosel and Hargreave", No. 559 (Wilkinson); No. 592 (L J Gideon) 14a, 0r and 32p, No. 604 "The Lauriston Company" 10a, 1r and 4p, No. 606 "Mr Gregory" 8a, 1r and 8p and No. 664 "J W Wood" 21a, 2r and 2p (all circled red).

Source: Lauriston Plan 66/384, Township of Lauriston, Put-away Plan L120G

Lease 559 – Wilkinson and Others & the South Energetic Gold Mining Company

Thomas Wilkinson, John Crymble, William Braithwaite, Charles McIntosh, William Beare and five others applied in December 1869 for a 15-year mining lease of 26 acres, 0 roods and 30 perches at Lauriston for the South Energetic Quartz and Alluvial Gold Mining Company.¹¹¹ The ground applied for (Figure 11, Lease No. 559) was located on the west side of the Coliban River (Burke parish) near the Energetic Reef (Figure 12) and extended into the Study Area. The Company itself had issued in March 1870 a notice to become a registered company, the principal local shareholders being the above-named men and Mark Hurdell, James Fryers, John Stringer, James Dower & Thomas Buzza and the place of operations being in the 'parish of Bourke (sic Burke) near the township of Lauriston'.¹¹²

Mining Lease 559 was issued to the company in June 1870. The lease was recommended for approval provided the lessees met imposed conditions regarding preventing 'sludge or refuse matter from these workings to flow into or pollute the water sources within the Coliban Drainage area'. The conditions also prevented the destruction of timber and trees and the soil in which they grew, while the track through the lease was to be kept open and the land would not be exempt from occupation for non-mining purposes (e.g. cultivation or cropping) so long as the occupants would not interfere with any 'shaft, tramway, machine or other property' required for mining.¹¹³ Tenders were called for the sinking of a shaft in the same month.¹¹⁴

By the end of July the shaft was 114 feet deep and by November they had struck gold-bearing stone.¹¹⁵ A year later it was suggested that the company would amalgamate with the nearby All Nations and the Gold Mines Company but this does not appear to have gone ahead.¹¹⁶ The lease was declared void in July 1871.¹¹⁷ No record of any specific plant and machinery for his company has been found.

¹¹¹ PROV, VPRS 7842/P2, Unit 305, Register of Applications for Gold Mining Leases, Folio 559; "Applications for Mining Leases." *Victoria Government Gazette*, 1 April 1870: 541.

¹¹² *Kyneton Observer*, 12 March 1870: 3.

¹¹³ PROV, VPRS 7842/P2, Unit 305, Register of Applications for Gold Mining Leases, Folio 559; "Mining Leases." *Victoria Government Gazette*, 15 July 1870: 1002.

¹¹⁴ *Kyneton Observer*, 4 June 1870: 3.

¹¹⁵ *Kyneton Observer*, 23 July 1870: 2; "Mining News." *Kyneton Observer*, 1 November 1870: 2.

¹¹⁶ "Mining Notes." *Kyneton Guardian*, 15 November 1871: 2; "Mining Notes." *Kyneton Guardian*, 29 November 1871: 2.

¹¹⁷ "Mining Leases Declared Void." *Victoria Government Gazette*, 21 July 1871: 1167.

A subsequent company, the South Energetic Quartz Mining Company was formed by Charles McIntosh and Robert McBratney and a lease of land 'south of and adjoining the All Nations Company's ground' at Lauriston was applied for in 1873.¹¹⁸

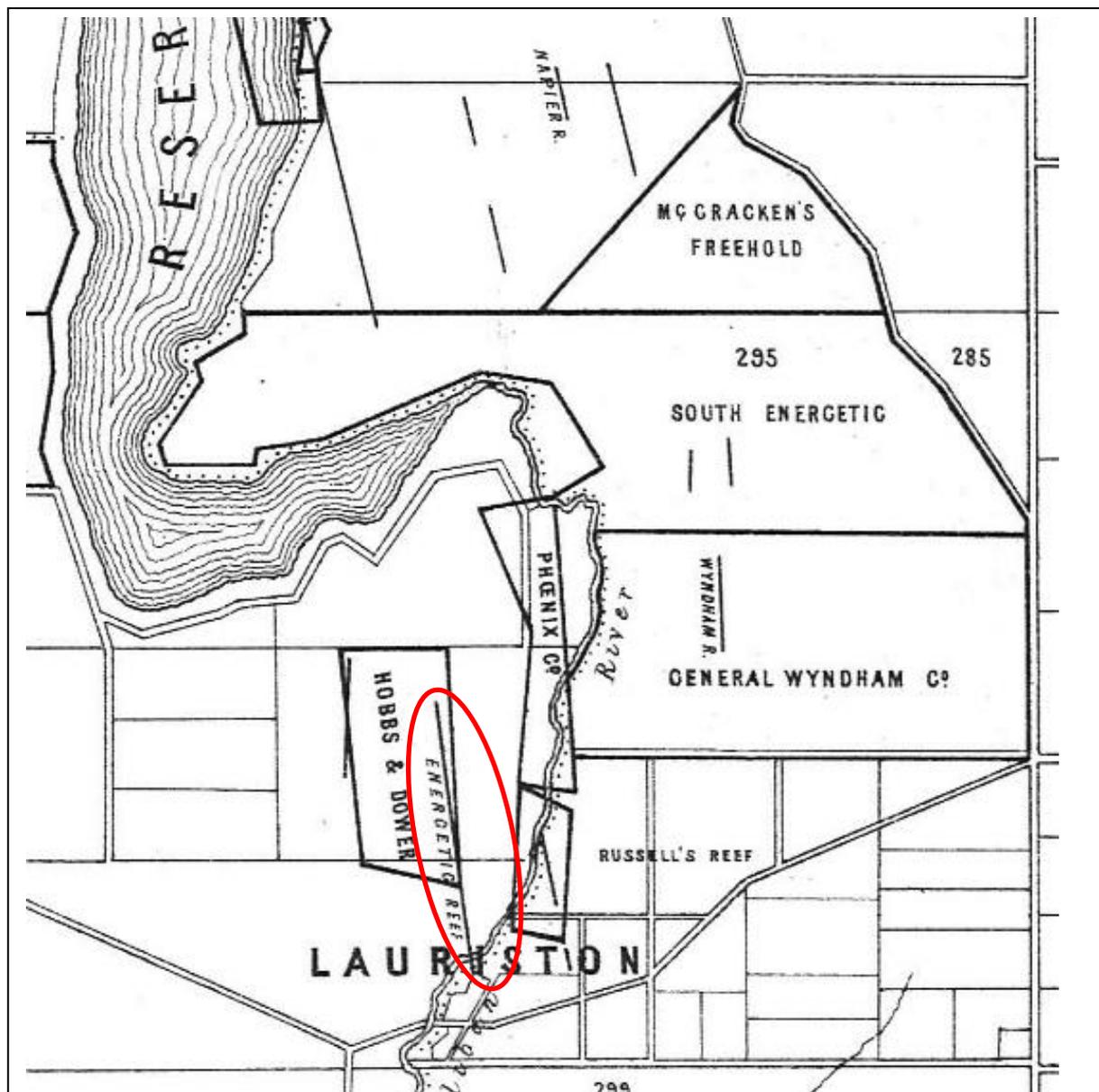


Figure 12. Portion of an 1884 mining map showing the Energetic Reef at Lauriston.

Located on the west bank of the Coliban and leading into the Study Area the reef (circled) aligns with the South Energetic Quartz and Alluvial Gold mining lease (No. 559). The Phoenix Company's lease extends into the northern part of the Study Area.

Source: Victoria: *The Gold-Fields Of Victoria: Reports of the Mining Registrars for the quarter ended 30th September, 1884*, including folding map "Plan Showing Gold Mining Leases & Claims at Taradale, Malmsbury & Lauriston" Melbourne: Government Printer; 1884.

¹¹⁸ *Kyneton Guardian*, 5 October 1872: 3; "Applications for Mining Leases." *Victoria Government Gazette*, 21 February 1873: 360.

Leases 592 and 604 – Lauriston Prince of Wales Gold Mining Company

Application for a 15-year mining lease number 592 of 13 acres, 3 roods and 21 perches of land for the Lauriston Prince of Wales Gold Mining Company was made by Lewis John Gideon of Melbourne in April 1870.¹¹⁹ The land applied for included the Coliban River, a site for a tail race (q.v.) a track a hut, a garden and a small part of Portion 297 Lauriston parish. The application to register the company was advertised in June of that year at which time the *Kyneton Observer* announced that the Company had 'purchased the adjoining or Chinaman's claim on Russell's reef, and are about to set vigorously to work'.¹²⁰ Of the 30 shareholders, only eight were residents of Lauriston or Malmsbury district. The application was modified in September 1870 for a lease of 37 acres, 3 roods and 30 perches of land, which included the 13 acres previously applied for, and became lease number 604.¹²¹ The ground requested was not to include the site of 'Marshall's machine' (see Figure 11). Lease 604 was issued in November 1870 for only 24 acres, 0 roods and 30 perches.¹²²

Tenders were called for the supply of a 'small engine, not less than 10 horse power, with or without winding and pumping gear' for the mine in July 1870, but this was repeated in August as a request to 'let' the same type of equipment.¹²³ A meeting was scheduled to be held in February 1871 to authorise the directors to borrow money and give any security needed to 'complete contracts entered into for the purchase of machinery and plant' for the mine.¹²⁴ In early January 1871, tenders were called by the Company for the 'taking down at Yandoit, and erecting at Lauriston, the Machinery and Plant (a ten-head battery and winding and pumping gear) now on the Sardine Reef Company's claim at Yandoit'.¹²⁵ In the same month the Prince of Wales company's shaft was reported as being 'about 250 feet from the south-west boundary of the claim' and they later re-opened the 'old shaft on the ground to the eastward of the former one'.¹²⁶ The proximity of the shaft to the Russell's Reef Amalgamated's No. 1 shaft was shown in a 1907 Mines Department bulletin.¹²⁷ By April 1871 'the

¹¹⁹ PROV, VPRS 7842/P2, Unit 305, Register of Applications for Gold Mining Leases, Folio 592; "Applications for Mining Leases." *Victoria Government Gazette*, 12 August 1870: 1181.

¹²⁰ *Kyneton Observer*, 4 June 1870: 3; *Kyneton Observer*, 7 June 1870: 2.

¹²¹ PROV, VPRS 7842/P2, Unit 305, Register of Applications for Gold Mining Leases, Folio 592; PROV, VPRS 7842/P2, Unit 306, Folio 604; "Applications for Mining Leases." *Victoria Government Gazette*, 30 September 1870: 1449.

¹²² "Mining Leases, etc." *Victoria Government Gazette*, 9 December 1870: 1808.

¹²³ *Kyneton Observer*, 30 July 1870: 3; *Kyneton Observer*, 13 August 1870: 3.

¹²⁴ *Kyneton Observer*, 19 January 1871: 3.

¹²⁵ *Kyneton Observer*, 28 January 1871: 3; *Kyneton Guardian*, 14 January 1871: 3; "Mining Notes." *Kyneton Guardian*, 8 July 1871: 2; "Mining Notes." *Kyneton Guardian*, 27 September 1871: 2.

¹²⁶ "Mining Notes." *Kyneton Guardian*, 18 January 1871: 2.

¹²⁷ Dunn, E. J. "Lauriston Mines." *Bulletins of the Geological Survey of Victoria: No. 19 the Lauriston-Drummond North Gold- Field*. Melbourne: Department of Mines, 1907: Plate 3.

excavations for site of machinery' were complete and 'the stonework foundations for boiler laid'.¹²⁸ In June the erection of the battery was approaching completion, and expected to commence crushing in a few weeks and a tramway from the shaft to the battery was being installed.¹²⁹ Crushing commenced at the battery in mid-July 1871 at which point the Company was 'erecting an additional pump, supplied from the Coliban river', to feed the crushing plant.¹³⁰ The *Kyneton Guardian* also reported that warm water was being used for crushing. The yields from the Company were good to poor in late 1871.¹³¹

In September 1871, a miner by the surname of Isaacs employed at the mine, had a finger crushed by a fall of stone.¹³² This person is probably related to *Isaac's Lane* situated west of the Colban River and near where this mine was located.

Tenders were called in January and April 1872 to sink the main shaft further (100 and 50 feet respectively) and as work progressed some promising results were achieved.¹³³ Stone from the South Glengonner Company was being crushed at the Prince of Wales' battery in September 1872 and damage by a fire was done to the engine house, but not the machinery, in October.¹³⁴ In November 1872 operations were suspended and tenders were requested from anyone willing to work the claim on 'tribute'.¹³⁵

A meeting was scheduled for March 1873 to re-organise the company and increase the capital, however another meeting was called for June to consider increasing the Company's capital by issuing new shares, or winding up the Company.¹³⁶ An offer had been made by the adjoining Duke of Cornwall Company for the Prince of Wales to take the ground and property of the former company in exchange for 2000 shares of the latter.¹³⁷ The company agreed to accept the offer however in October and November 1873 the Company's lease of 24 acres, 0 roods and 7 perches (i.e. No. 604) , 10 head revolving battery, 25 horse-power engine, Cornish boiler and winding and pumping gear

¹²⁸ "Mining Notes." *Kyneton Guardian*, 12 April 1871: 2.

¹²⁹ *Kyneton Observer*, 10 June 1871: 2; *Kyneton Observer*, 17 June 1871: 2.

¹³⁰ "Mining Notes." *Kyneton Guardian*, 19 July 1871: 2.

¹³¹ "Mining Notes." *Kyneton Guardian*, 4 October 1871: 2; "Mining Notes." *Kyneton Guardian*, 29 November 1871: 2.

¹³² "Local and General News." *Kyneton Guardian*, 27 September 1871: 2.

¹³³ *Kyneton Guardian*, 6 January 1872: 3; *Kyneton Guardian*, 6 April 1872: 3; "Mining News." *Kyneton Observer*, 21 September 1872: 2.

¹³⁴ "Mining Gossip." *Kyneton Observer*, 26 September 1872: 2; *Kyneton Observer*, 8 October 1872: 2.

¹³⁵ "Mining News." *Kyneton Observer*, 30 November 1872: 2; *Kyneton Guardian*, 30 November 1872: 3.

¹³⁶ *Kyneton Guardian*, 15 February 1873: 3; *Kyneton Guardian*, 14 May 1873: 3.

¹³⁷ "Lauriston Prince of Wales Co." *Kyneton Observer*, 28 June 1873: 2.

were offered for sale.¹³⁸ Tenders were called for the purchase of the Company's brickstack and stone wall of the boiler, the engine-house, poppet-heads tramway, scaffolding, and smith's shop in January 1874.¹³⁹ The lease (No. 604) was declared void in July 1874 however the battery was again offered for sale in December of that year.¹⁴⁰

Some miners, put out of work by a strike at the Glengonner mine, recommenced work at the Prince of Wales ground in July 1875, and probably applied for a lease under the name of the Lord Clyde Gold Mining Company in October of that year.¹⁴¹

Unknown Lease- Marshall's Machine Site (Application Number 27)

Based on Figure 7 and the application for mining lease 604 (Prince of Wales Gold Mining Company), Marshalls machinery site was in existence by June 1870.¹⁴² The notation on Figure 7 states the machinery site (defined by points a.b.c.d) correlates to Application Number 27 for 1 acres, 2 roods and 36 perches by Marshall & Co. for a machinery area on the west bank of the Coliban, north of the bridge. The register for mining lease applications however, shows that Application 27 was for Lease 604 which is the first known lease application which records this machinery area.¹⁴³ Marshall and Baird had a mining lease by February 1870 (the Band of Hope) located near the Kangaroo Creek (west of Lauriston township), but this does not correlate with the machine site shown in Figures 7 and 11, nor the proximity of Marshall's machine to a Chinese garden in 1871.¹⁴⁴ The "Marshall" involved was probably Robert Marshall, a miner of Lauriston in 1872 who was also involved in the Pioneer Quartz Gold Mining Company 18 acre lease at Lauriston in 1872.¹⁴⁵

No other details regarding the fate of this lease, nor the nature of the machinery erected on it, has been found to date.

¹³⁸ "For Sale." *Kyneton Observer*, 11 October 1873: 3; *Kyneton Observer*, 2 November 1873: 3.

¹³⁹ *Kyneton Observer*, 13 January 1874: 3.

¹⁴⁰ "Mining Leases Declared Void." *Victoria Government Gazette*, 3 July 1874: 1424; *Kyneton Guardian*, 5 December 1874: 3.

¹⁴¹ *Kyneton Observer*, 17 July 1875: 2; *Kyneton Guardian*, 20 October 1875: 3.

¹⁴² PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 604.

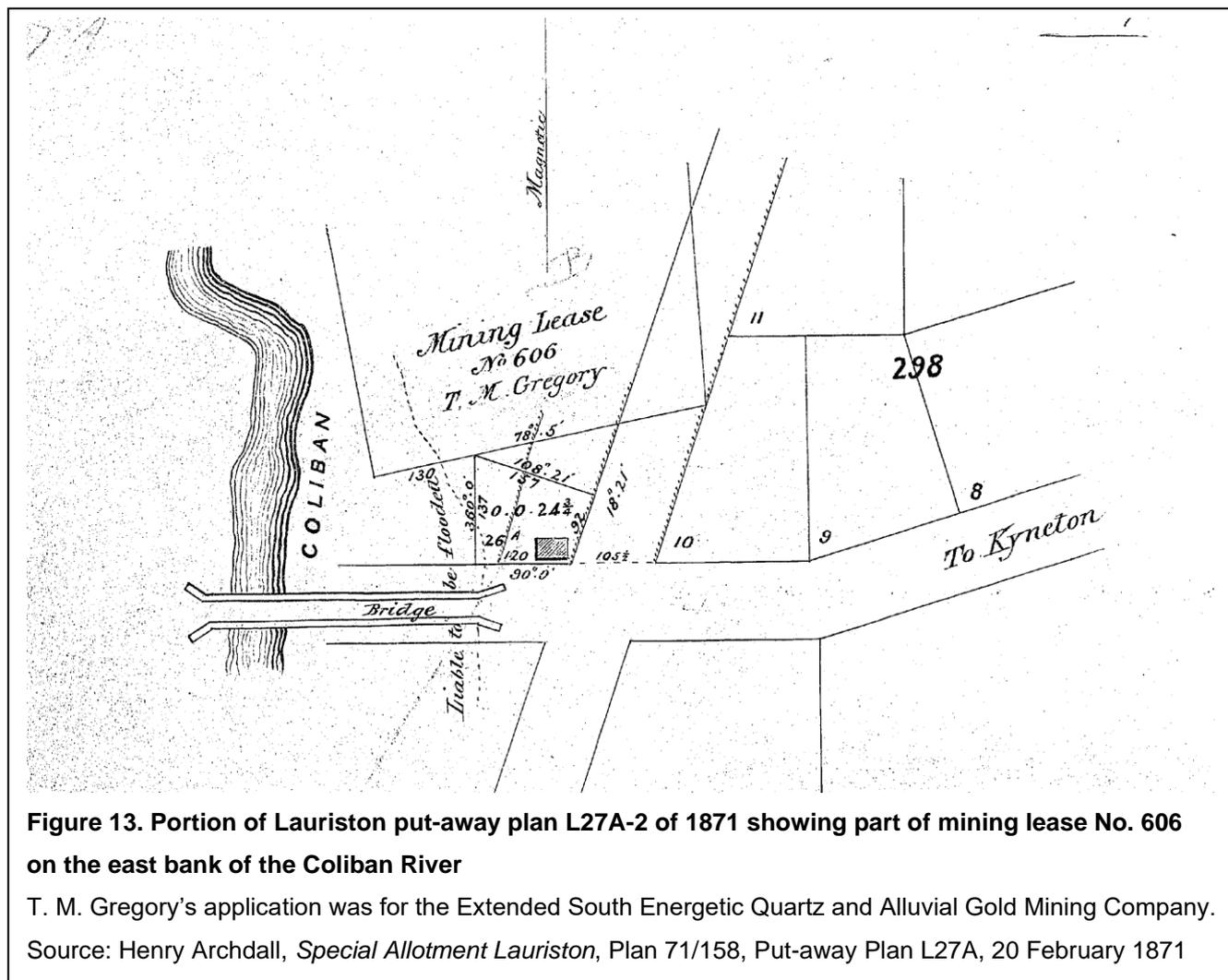
¹⁴³ *Ibid.*

¹⁴⁴ *Kyneton Observer*, 12 February 1870: 2; *Kyneton Observer*, 14 March 1871: 2. For information on the location of the Chinese gardens adjoining the Coliban River in Lauriston, see also Susan Walter. *Gold'n Greens: A History of the Chinese of Malmsbury and District*. Malmsbury: Malmsbury Historical Society, 2010: 42-62.

¹⁴⁵ *Kyneton Guardian*, 12 October 1872: 3; *Kyneton Guardian*, 18 November 1871: 3; "Applications for Mining Leases." *Victoria Government Gazette*, 19 January 1872: 114; "Mining Leases." *Victoria Government Gazette*, 29 April 1872: 853; "Mining Leases Declared Void." *Victoria Government Gazette*, 26 July 1872: 1383.

Lease 606 - Extended South Energetic Quartz & Alluvial Gold Company

A meeting of promoters of the Extended South Energetic Quartz and Alluvial Gold Mining Company was called by T Gregory for July 1870 with the intention of registering the company.¹⁴⁶ Thomas Gregory applied in June 1870 on behalf of that Company for mining lease number 606 for 15 years for 8 acres, 1 rood and 8 perches of ground at Lauriston (Figure 11 and Figure 13).¹⁴⁷ This was located to the south of the South Energetic Company (Lease 559) and included land on both sides of the Coliban River and overlapped with Marshall's machinery area.¹⁴⁸ The lease was issued in December 1870 however it was declared void in August 1871 due to the Company being in arrears with their fees.¹⁴⁹ No activity appears to have taken place on the ground.



¹⁴⁶ *Kyneton Observer*, 5 July 1870: 3.

¹⁴⁷ PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 606; "Applications for Mining Leases." *Victoria Government Gazette*, 30 September 1870: 1449; "Mining Leases." *Victoria Government Gazette*, 9 December 1870: 1808.

¹⁴⁸ *Kyneton Observer*, 14 June 1870: 2.

¹⁴⁹ PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 606; "Mining Leases Declared Void." *Victoria Government Gazette*, 18 August 1871: 1359.

Leases 650 and 1419 – Melbourne and Lauriston Company (Duke of Cornwall Company)

An application for the Melbourne and Lauriston Gold Mining Company to be registered was made in April 1870 and tenders were called for the sinking of a shaft in the same month.¹⁵⁰ The Company applied for a 15 year mining lease of 8 acres, 0 roods and 26 perches of ground at Lauriston, adjoining the Prince of Wales Company, in December 1870, the land applied for overlapping Marshall's machine area (above) and a Chinese garden and included a water race.¹⁵¹ The lease was issued in July 1871 with the overlap excised (Figure 14) and standard conditions regarding sludge control were imposed.¹⁵²

By July 1871 their shaft was down 60 feet, however due to the influx of water into the mine, the Company was utilising the pumping machinery of the Prince of Wales mine in October 1871.¹⁵³ A gold-bearing quartz vein was struck in November 1871 however the rewards were short-lived.¹⁵⁴ The lease was declared void in August 1872, and due to debts the Company ordered to be wound up in September.¹⁵⁵ The Company was reported to be in liquidation in August 1873.¹⁵⁶

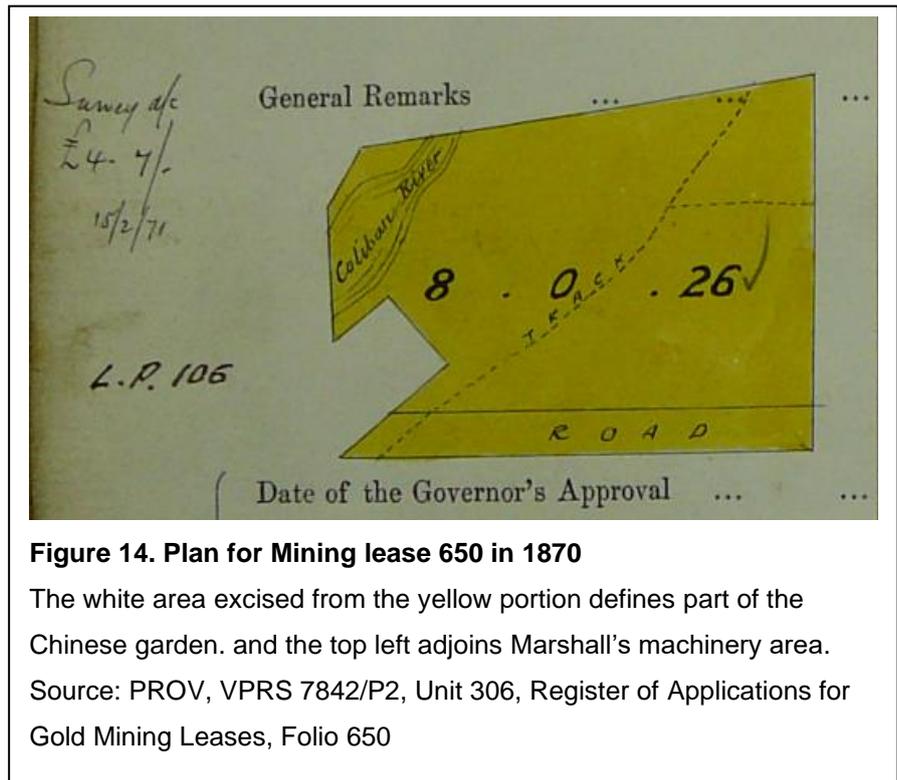


Figure 14. Plan for Mining lease 650 in 1870

The white area excised from the yellow portion defines part of the Chinese garden. and the top left adjoins Marshall's machinery area. Source: PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 650

¹⁵⁰ *Kyneton Observer*, 14 April 1870: 3; *Kyneton Observer*, 28 April 1870: 3.

¹⁵¹ PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 650; "Applications for Mining Leases." *Victoria Government Gazette*, 10 March 1871: 401.

¹⁵² "Mining Leases." *Victoria Government Gazette*, 14 July 1871: 1128, "Mining Notes." *Kyneton Guardian*, 14 October 1871: 2.

¹⁵³ *Kyneton Observer*, 29 July 1871: 2; *Kyneton Observer*, 26 October 1871: 2.

¹⁵⁴ "Mining News." *Kyneton Observer*, 9 November 1871: 2.

¹⁵⁵ "Mining Leases Declared Void." *Victoria Government Gazette*, 16 August 1872: 1530; *Kyneton Guardian*, 14 September 1872: 3.

¹⁵⁶ "Kyneton Court of Mines." *Kyneton Guardian*, 16 August 1873: 2.

In August 1872 a Captain (J.) Davies applied for lease No. 1419 which covered the former Company's claim, with the intention of calling the new company the *Duke of Cornwall*.¹⁵⁷ Benjamin George Davis (*sic* Davies), a member of the Victorian Legislative Assembly, and Joseph Davies of Lauriston were two of eight shareholders when an application was made to register the new Company in September.¹⁵⁸ Work was taking place in the mine in November 1872, shortly before the lease was granted in December, and prospects were looking good in April 1873.¹⁵⁹ In May, however, a meeting was called to consider selling the claim to the adjoining Prince of Wales Gold Mining Company and wind up the company.¹⁶⁰ The Duke of Cornwall's lease of 8 acres, 0 roods and 26 perches (Lease No. 1419) was declared void in July 1875.¹⁶¹

Lease 664 – South Star Company

In May 1871 James William Woods was the manager of the South Star Quartz Mining Company based in Lauriston when an application was made to have the company registered.¹⁶² James W Woods had applied

for a 15-year mining lease of 21 acres, 2 roods and 2 perches at Lauriston in February 1871.¹⁶³ The very south-eastern part of the lease included land on both sides of the the Coliban River, just north of the Coliban River Bridge and adjoined leases 559 and 606 (Figures 11 and 15). The lease was issued

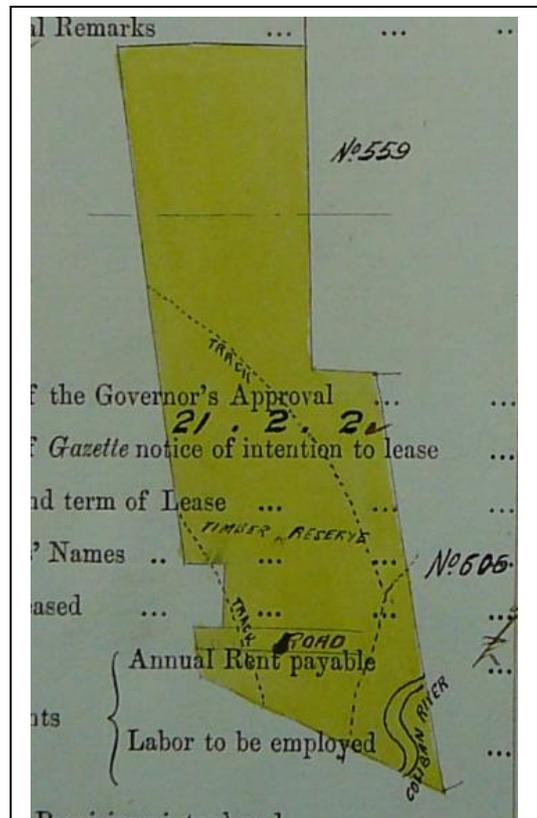


Figure 15. Plan of Mining lease 664 from 1871

A hut was also located on the land.

Source: PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 664

¹⁵⁷ *Kyneton Observer*, 22 August 1872: 2; "Applications for Mining Leases." *Victoria Government Gazette*, 4 October 1871: 1847.

¹⁵⁸ *Kyneton Guardian*, 28 September 1872: 3; Parliament of Victoria, *Re-member* (Former Members) database, Benjamin George Davies. <https://www.parliament.vic.gov.au/about/people-in-parliament/re-member/details/24/450> (accessed 10 December 2019).

¹⁵⁹ "Mining Notes." *Kyneton Guardian*, 13 November 1872: 2; "Mining Leases." *Victoria Government Gazette*, 13 December 1872: 2246; "Mining Notes." *Kyneton Guardian*, 5 April 1873: 2.

¹⁶⁰ *Kyneton Guardian*, 31 May 1873: 3.

¹⁶¹ "Mining Leases Declared Void." *Victoria Government Gazette*, 9 July 1875: 1327.

¹⁶² "Private Advertisements." *Victoria Government Gazette*, 19 May 1871: 807.

¹⁶³ PROV, VPRS 7842/P2, Unit 306, Register of Applications for Gold Mining Leases, Folio 664; "Applications for Mining Leases." *Victoria Government Gazette*, 2 June 1871: 867.

to Woods in August 1871 but was recorded as being issued to the *South Star Quartz Mining Company* when it was declared void in April 1872 for non payment of rent.¹⁶⁴ To date no details of any specific work being done on the lease have been located.

Russell's Reef Amalgamated - Leases 2235, 2629, 2703,2751, 2839, 2996, 3036, 3037, 3066, 3146, 3147, 3267, 3246, 3298, 3488, 5037 and 2264 (Private Property)

Russell's Reef Amalgamated Gold Mining Company evolved from a number of earlier mining leases and the surrendering, merging and issuing of new mining leases.

No. 2235. Russell's Reef Gold Mining Company

Mr. E H Wedgwood, on behalf of the Russell's Reef Gold Mining Company first applied for a quartz mining lease of 13 acres, 3 roods and 20 perches on Russell's Reef in November 1882.¹⁶⁵ A condition of the lease (No. 2235), issued in May 1883, was to excise any sold land and respect the 'rights of the **Chinese sluicers**'.¹⁶⁶

Work quickly commenced. By September 1884 a blacksmith's shop had been erected, a machinery site marked out and ready to be excavated and the legs for the poppet head were due to be delivered.¹⁶⁷ In March 1885 the company had 40 tons of stone ready for crushing.¹⁶⁸ In June of that year the shareholders voted that machinery would not be bought by the Company unless under authority of a 'special meeting called for the purpose' however when such a meeting was called in July, permission to purchase machinery was not granted, primarily because of the associated financial risk.¹⁶⁹

At a meeting held in September 1885, it was reported that two trial crushings had been made, one of 49 tons through the battery of the Lauriston Consolidated company, and another at the battery of the Aroona Company (at Drummond), both of which yielded one ounce of gold to the ton.¹⁷⁰ The first

¹⁶⁴ "Mining Leases." *Victoria Government Gazette*, 11 August 1871: 1300 (erroneously as South Sea Quartz Mining Company); "Mining Leased Declared Void." *Victoria Government Gazette*, 19 April 1871: 775.

¹⁶⁵ "Warden's Court." *Kyneton Observer*, 23 November 1882; "Applications for Mining Leases." *Victoria Government Gazette*, 13 April 1883: 808.

¹⁶⁶ "Mining Leases." *Victoria Government Gazette*, 8 June 1883: 1182.

¹⁶⁷ "Mining." *Kyneton Observer*, 26 August 1884: 2; "Mining." *Kyneton Observer*, 6 September 1884: 2.

¹⁶⁸ "Mining." *Kyneton Observer*, 24 March 1885: 2.

¹⁶⁹ "Mining." *Kyneton Observer*, 14 July 1884: 2.

¹⁷⁰ "Russell's Reef." *Kyneton Observer*, 12 September 1885: 2.

crushing had 'produced 122oz of **amalgam** (q.v.) which upon being **retorted** (q.v.), yielded ... 61oz of gold'.¹⁷¹ Despite this, permission had still not given to purchase machinery, until after the retirement of two directors and further delays.¹⁷² Permission to purchase winding and pumping gear was eventually given however the purchase and freight costs were initially prohibitive and the Company's efforts to purchase the Lauriston Consolidated's battery was unsuccessful.¹⁷³ At that point there was 120 tons of stone ready for crushing. By December 1885 the company was erecting plant, supposedly purchased from the Blackwood district for £120, consisting of winding gear, puddling plant and a battery with 5-head of stampers with provision being made for a further five heads.¹⁷⁴ With erection nearing completion in February 1886, at a total cost of £1100, there had also been delays in obtaining the copper for the plates for the battery.¹⁷⁵ Crushing began in March 1886 and operations were running smoothly in June.¹⁷⁶

By August 1886 Russell's Reef was stated to contain 'the third richest reef opened out in the colony of Victoria' and the Company was paying a dividend, but more powerful machinery was required to fully exploit the reef.¹⁷⁷ In a report to shareholders in September, it was announced that the company had purchased, and was erecting, the boiler and engine purchased from the Humboldt Company (near Belltopper Hill, Drummond) to enable it to sink the engine shaft whilst also removing water.¹⁷⁸ Another five head of stampers was being constructed for the company in March 1887, along with a stamper box, and in July crushing with all ten heads had commenced.¹⁷⁹ Twenty tons of iron pyrites (q.v.) from the mine was treated in Sandhurst (Bendigo) in September of that year which yielded 32 oz of gold.¹⁸⁰ In the half-year ending in September 1887, just over 293 oz of gold had been taken from the mine and 248 oz in the March 1888 half-year.¹⁸¹

¹⁷¹ "Mining." *Kyneton Observer*, 9 April 1885: 2.

¹⁷² "Russell's Reef." *Kyneton Observer*, 12 September 1885: 2.

¹⁷³ *Kyneton Observer*, 9 May 1885: 3.

¹⁷⁴ "Mining." *Kyneton Observer*, 3 September 1885: 2; "Mining." *Kyneton Observer*, 1 December 1885: 2;

"Mining." *Kyneton Observer*, 15 December 1885: 2; "Mining." *Kyneton Observer*, 6 May 1886: 3.

¹⁷⁵ "Mining." *Kyneton Observer*, 23 February 1886: 2; "Mining." *Kyneton Observer*, 6 May 1886: 3.

¹⁷⁶ "Russell's Reef G. M. Co., Lauriston." *Kyneton Observer*, 23 March 1886: 2; "Mining." *Kyneton Observer*, 26 June 1886: 2.

¹⁷⁷ "Correspondence." *Kyneton Observer*, 14 August 1886: 3; "Mining." *Kyneton Observer*, 24 August 1886: 2.

¹⁷⁸ "Russell's Reef G.M. Company." *Kyneton Observer*, 18 September 1886: 2.

¹⁷⁹ "Russell's Reef Gold Mining Company." *Kyneton Observer*, 22 March 1887: 3; "Mining." *Kyneton Observer*, 28 June 1887: 2; "Mining." *Kyneton Observer*, 30 July 1887: 2.

¹⁸⁰ "Mining." *Kyneton Observer*, 15 September 1887: 2.

¹⁸¹ "Russell's Reef G. M. Co." *Kyneton Observer*, 17 September 1887: 2; "Russell's Reef G. M. Co." *Kyneton Observer*, 24 March 1888: 2.

The Company's battery was used by other mining companies, including the Golden Crown Co-operative Company (Lauriston) and North Golden Crown in 1888.¹⁸² The *Kyneton Guardian* reported in November 1888 that James Dower had 'entered into an agreement with the Russell's Reef Co. for the treatment of their tailings', and was using child labour in the process.¹⁸³ A case in the Kyneton police court in November 1888, in which Dower accused Ah Woon, a Chinese gardener, of damaging a **dam** (on Crown land) at the Russell's Reef Mine when he was 'endeavouring to irrigate his garden' from the dam, suggests Dower was processing the tailings on the west side of the river (see later).¹⁸⁴

Despite seemingly good prospects, the company proposed to hold a meeting in August 1888 to 'pass a resolution requiring that the Company be voluntarily wound up' and 'determine the mode of disposal of any surplus of the Company's property'.¹⁸⁵ This was followed by a meeting called to 'pass a resolution or resolutions to amalgamate the claims, leases, and property of the Company' with those of the North Russell's Reef Gold Mining Company.¹⁸⁶ The shareholders voted to approve the amalgamation, which thus formed the Russell's Reef Amalgamated Gold Mining Company.¹⁸⁷ It was not until March 1889 that work at the mine recommenced, the first action being to pump out the water that had accumulated while it was inactive.¹⁸⁸ In August 1891 the amalgamation was being formalised and it was proposed to acquire machinery and place it 'on the Royal Standard main shaft', suggesting that a mine of this name was formerly on or near the lease ground.¹⁸⁹

During the period lease 2235 was active, James Russell had supposedly returned to Victoria in 1884 and re-opened Russell's reef in Lauriston.¹⁹⁰ His presence in the district is confirmed when he offered his farm for sale in March 1885: the J Russell who applied in June 1885 for a mining lease (No. 256 Private Property) over 189 acres of private land in the parish of Burke in 1885 is probably the same

¹⁸² "Mining." *Kyneton Observer*, 14 February 1888: 3; "Mining." *Kyneton Observer*, 21 February 1888: 2.

¹⁸³ "Mining Intelligence." *Kyneton Guardian*, 3 November 1888: 2.

¹⁸⁴ "Kyneton Police Court." *Kyneton Guardian*, 28 November 1888: 2.

¹⁸⁵ *Kyneton Observer*, 16 August 1888: 3.

¹⁸⁶ *Kyneton Observer*, 1 November 1888: 3. This company held lease Nos. 1221PP, 1352PP and 214 Reserves, located north of the Study Area, see *malmsdata*, "Mining Leases Index", Malmsbury Historical Society Inc.

¹⁸⁷ "Russell's' Reef G. M. Company." *Kyneton Observer*, 20 November 1888: 2; "Mining." *Kyneton Observer*, 20 April 1889: 2; "The Quartz Reefs of Lauriston." *Kyneton Observer*, 2 August 1898: 2.

¹⁸⁸ "Mining." *Kyneton Observer*, 9 March 1889: 2.

¹⁸⁹ "Mining at Lauriston and Drummond." *Kyneton Observer*, 8 August 1891: 2.

¹⁹⁰ "Death of Mr. Jas. Russell." *Kyneton Guardian*, 21 December 1897: 2; Born in 1823, James would have been about 60 years of age. The arrival, unassisted, on the *Orient* in January 1884, of a James Russell aged 58 and without a family, would confirm this. See PROV, VPRS 947 Unassisted Passenger Lists, Fiche 429, January 1884, *Orient*, page 19.

man.¹⁹¹ James Russell's direct involvement in mining lease 2235, however, has not been established. In 1891 it was reported that he had invaluable experience in coal mining in Scotland but it is not stated whether this was before or after his first arrival in Australia.¹⁹²

Lease numbers 2235, 2751 and 2839 (see below) were then surrendered in December 1889 and replaced by Lease number 2996 (62 acre, 0 roods and 30 perches) which had been applied for in September 1889 and issued in November that year.¹⁹³

Nos. 2629 and 2703

Mr E T Gregory applied for leases 2629 in August 1885 (13 acres, 1 rood and 20 perches and issued November 1885) and 2703 in June 1886 (24 acres, 0 roods and 10 perches and issued August 1886).¹⁹⁴ These leases (2629 and 2703) were surrendered in June 1887 and replaced by Lease number 2751 (36 acres, 1 rood and 12 perches) (see below) which had been applied for in February 1887.¹⁹⁵

Nos. 2751 and 2839

Mr E. T. Gregory applied for lease number 2751 in February 1887 (36 acres, 1 rood and 1 perches and issued in May 1887) and 2839 in April 1888 (11 acres, 3 roods and 33 perches and issued in July 1888).¹⁹⁶ Both of these leases, along with 2235, were surrendered in December 1889 for Lease 2996.¹⁹⁷

¹⁹¹ *Kyneton Guardian*, 4 March 1885: 3; "Russell's Reef Consols Gold Mining Co." *Kyneton Observer*, 16 November 1889: 2; "Applications for Mining Leases." *Victoria Government Gazette*, 12 June 1885: 1698; "Mining Leases Declared Void." *Victoria Government Gazette*, 11 December 1885: 3473.

¹⁹² "Mining Meetings." *Kyneton Observer*, 23 April 1891: 3.

¹⁹³ "Gold Mining Leases Surrendered." *Victoria Government Gazette*, 6 December 1889: 4090; "Mining Leases." *Victoria Government Gazette*, 6 December 1889: 4019.

¹⁹⁴ "Applications for Mining Leases." *Victoria Government Gazette*, 14 August 1885: 2250; "Mining Leases." *Victoria Government Gazette*, 27 November 1885: 3162; "Applications for Mining Leases." *Victoria Government Gazette*, 11 June 1886: 1724; "Mining Leases." *Victoria Government Gazette*, 20 August 1886: 2419.

¹⁹⁵ "Gold Mining Leases Surrendered." *Victoria Government Gazette*, 3 June 1887: 1511; "Applications for Mining Leases." *Victoria Government Gazette*, 4 February 1887: 378.

¹⁹⁶ "Applications for Mining Leases." *Victoria Government Gazette*, 4 February 1887: 378; "Mining Leases." *Victoria Government Gazette*, 3 June 1887: 1510; "Applications for Mining Leases." *Victoria Government Gazette*, 27 April 1888: 1217; "Mining Leases." *Victoria Government Gazette*, 27 July 1888: 2414.

¹⁹⁷ "Gold Mining Leases Surrendered." *Victoria Government Gazette*, 6 December 1889: 4090.

Russell's Reef Amalgamated had at least five head of battery and two boilers in August 1889.¹⁹⁸ One correspondent to the *Kyneton Observer* suggested in September of that year that the Company would improve its returns if 'the quartz were calcined (q.v.) and then passed through fine gratins at the battery to plates, well, etc., direct to a Chilian (*sic*) mill, and from that over a large cradle. All the appliances could be easily driven, and the Russell's machinery is beautifully situated for this inexpensive mode of treating quartz.'¹⁹⁹ The Company directors decided in January 1890 to add ten additional stampers to the existing ten head of battery, a new boiler and a Chilian mill at an estimated cost of £1,200 to the Company' assets.²⁰⁰ Contractors had begun the work of 'cutting out' for the new battery by February and construction was still underway in March, including the foundations for a furnace.²⁰¹ This was described as being the Company's 'pyrites works' when it commenced operations in April, there being a 'large amount of payable pyrites' originating from the mine.²⁰² At the time of the April 1890 half-yearly company meeting, the new furnace was described as a 'reverberatory' furnace (q.v.) and during the previous six months the company had won 4,012 ounces of gold worth £15,000.²⁰³ In May 1890, when this mine was described as being 'the leading mine' at Lauriston, the first return from the treatment of pyrites yielded 22.5 ounces of gold from 8.5 tons and the Chilean mill was processing the amalgam produced from the blanket sand (q.v.) generated by the battery.²⁰⁴

Nos. 2996, 3036, 3037 and 3066

John Barker, on behalf of the Russell's Reef Amalgamated Gold Mining Company applied for lease 2996 in September 1889 (62 acres, 0 roods and 30 perches, issued December 1889).²⁰⁵ This was followed in March 1890 by an application by E T Gregory on behalf of the Company for leases 3036 and 3037 (13 acres, 1 rood and 33 perches issued May 1890 and 8 acres, 0 roods and 7 perches

¹⁹⁸ "Mining." *Kyneton Observer*, 24 August 1889: 2.

¹⁹⁹ "Mining Mems." *Kyneton Observer*, 21 September 1889: 2.

²⁰⁰ "Mining." *Kyneton Observer*, 18 January 1890: 2; "Russell's Reef Amalgamated Company." *Kyneton Observer*, 29 April 1890: 2.

²⁰¹ "Mining." *Kyneton Observer*, 15 February 1890: 2; "Mining." *Kyneton Observer*, 15 March 1890: 2.

²⁰² "Mining." *Kyneton Observer*, 12 April 1890: 2; "Mining." *Kyneton Observer*, 24 April 1890: 2; "Mining." *Kyneton Observer*, 26 April 1890.

²⁰³ "Russell's Reef Amalgamated Company." *Kyneton Observer*, 29 April 1890: 2.

²⁰⁴ "Mining." *Kyneton Observer*, 17 May 1890: 2; "Mining." *Kyneton Observer*, 10 May 1890: 3; "Mining." *Kyneton Observer*, 31 May 1890: 2.

²⁰⁵ "Applications for Mining Leases." *Victoria Government Gazette*, 27 September 1889: 3191; "Mining Leases." *Victoria Government Gazette*, 6 December 1889: 4019.

issued June 1890 respectively).²⁰⁶ An additional lease of 4 acres, 0 roods and 0 perches was applied for by E T Gregory (No. 3066, also on behalf of the Company) in May 1890, and issued in November 1890.²⁰⁷

An inspection of the Company's **sludge dams** in May 1890 revealed they were intact and 'giving no cause for complaint of polluting the source of supply for the Malmsbury Reservoir'.²⁰⁸ The Company's 20-head of battery would have required an ongoing supply of water to keep it operating. In June 1890 Russell's Reef Amalgamated reported that a dam had been completed and pipes were laid on, although the battery could only operate with 15 of the heads due to the dam not being full when processing commenced.²⁰⁹ The water removed from one of the mine tunnels via a syphon and hand pump permitted 'continuous crushing' in 1891.²¹⁰ In the six months prior to the April 1891 company meeting, a 'powerful double cylinder steam-winch and a Worthington pump' had been erected to permit steam power to be taken down the shaft to the 310 foot level.²¹¹ A new shaft (later to be called the No. 2 shaft) was being sunk in mid-1891 which required the erection of another poppet head and an engine bed for further machinery, including a boiler and winding engine.²¹²

In August 1891 the above four mining leases (2996, 3036, 3037 and 3066) were surrendered and two new leases issued – 3146 and 3147.²¹³ The first new lease was for 67 acres, 3 roods and 5 perches and the second was only for 19 acres, 3 roods and 25 perches.

Nos. 3146 and 3147

In October 1889, John Barker Jnr., legal manager of Russell's Reef Amalgamated Gold Mining Company, notified shareholders that the directors of the Company had 'resolved to transfer about 20

²⁰⁶ "Applications for Mining Leases." *Victoria Government Gazette*, 14 March 1890: 1033; "Mining Leases." *Victoria Government Gazette*, 23 May 1890: 1835; "Mining Leases." *Victoria Government Gazette*, 20 June 1890: 2530; "Mining." *Kyneton Observer*, 18 March 1890: 2.

²⁰⁷ "Applications for Mining Leases." *Victoria Government Gazette*, 30 May 1890: 2031; "Mining Leases." *Victoria Government Gazette*, 21 November 1890: 4489.

²⁰⁸ "Lauriston." *Kyneton Observer*, 10 May 1890: 3.

²⁰⁹ "Mining." *Kyneton Observer*, 21 June 1890: 2; "Mining." *Kyneton Observer*, 28 June 1890: 2.

²¹⁰ "Mining Meetings." *Kyneton Observer*, 23 April 1891: 2.

²¹¹ "Mining Meetings." *Kyneton Observer*, 23 April 1891: 2.

²¹² "Mining." *Kyneton Observer*, 30 May 1891: 2; "Mining." *Kyneton Observer*, 6 June 1891: 2; "Mining." *Kyneton Observer*, 20 June 1891: 2; "Mining." *Kyneton Observer*, 27 June 1891: 2.

²¹³ "Gold Mining Leases Surrendered." *Victoria Government Gazette*, 28 August 1891: 3715; "Applications for Mining Leases." *Victoria Government Gazette*, 15 May 1891: 2034; "Mining Leases." *Victoria Government Gazette*, 28 August 1891: 3717.

acres of the northern portion of the Company's lease to a company to be styled Russell's Amalgamated No. 1 Gold Mining Company' (not to be confused with the No. 1 shaft).²¹⁴ No direct evidence of a transfer before 1891 has been found however an application to register the company was made in November 1889.²¹⁵ The issuing of the two new leases (3146 and 3147) in the name of Russell's Reef Amalgamated, suggests that preparations for separating the new company were being made in May 1891, considering 3147 (issued August 1891) was for only 19 acres compared to the 67 acres in Lease 3146. Figure 16 (the map is dated 1894) shows lease number 3147 in the name of Russell's Reef Amalgamated.²¹⁶

The first sod of this new Company's mine was turned in January 1890 to create a shaft that was located 'about half a mile from the shaft of the parent company, and in a line slightly west of north from that point'.²¹⁷ James Russell was present at that event. In November 1890, the Company sent about one ton of sand down to the Footscray Smelting Company for treatment which returned 5 oz of gold.²¹⁸ There is scant information on the activity of this mine in the Kyneton newspapers.

Returning to lease 3146, the original No. 1 shaft was described in October 1891 as being 'on the line of reef 290 ft from the south boundary of the lease'.²¹⁹ A detailed description of the mine and its workings in the *Kyneton Observer* that month stated that:

The machinery (No.1 shaft) comprises 5 engines with an aggregate of 80 h.p., battery of 20 heads, 3 boilers with an average steaming power of 60lbs, and a Chilian [sic] mill, which latter reduces 30 tons of sand and pyrites per month after being burned in a furnace. No. 2 shaft is located 1420ft north on the line ... machinery and applicances costing £1,300, and comprising an 80 h.p. double cylinder link motion winding engine Cornish flue boiler, steel plated 26ft. x 6ft. 6in., and substantial poppet heads 55ft hgh &c., were in readiness on the 19th inst., to enable sinking to be resumed ... The company's lease (Crown lands) embraces an area of 67 acres, and gives a length of 2,500ft. on the line of reef ... The company employ 90 hands at the mine.²²⁰

In 1898 the original shaft was described as being '334 feet from the south boundary' of the lease while the new shaft was located 'on the opposite bank of the river, 1460 feet further north - 2298 feet from the north boundary'.²²¹

²¹⁴ *Kyneton Observer*, 29 October 1889: 3.

²¹⁵ "Private Advertisements." *Victoria Government Gazette*, 29 November 1889: 4057.

²¹⁶ E. Lidgley, "Report on the Malmsbury and Lauriston Gold-Field," *Geological Survey of Victoria Progress Report No. 8*. (Victoria: Department of Mines, 1894), 20–27. (Including the "Malmsbury & Lauriston Gold Field" Map, 1894).

²¹⁷ "Russell's Amalgamated No. 1 Co." *Kyneton Observer*, 7 January 1890: 3.

²¹⁸ "Mining." *Kyneton Observer*, 16 November 1889: 2.

²¹⁹ "The Lauriston Mines." *Kyneton Observer*, 31 October 1891: 2.

²²⁰ *Ibid.*

²²¹ "The Quartz Reefs of Lauriston." *Kyneton Observer*, 2 August 1898: 2.

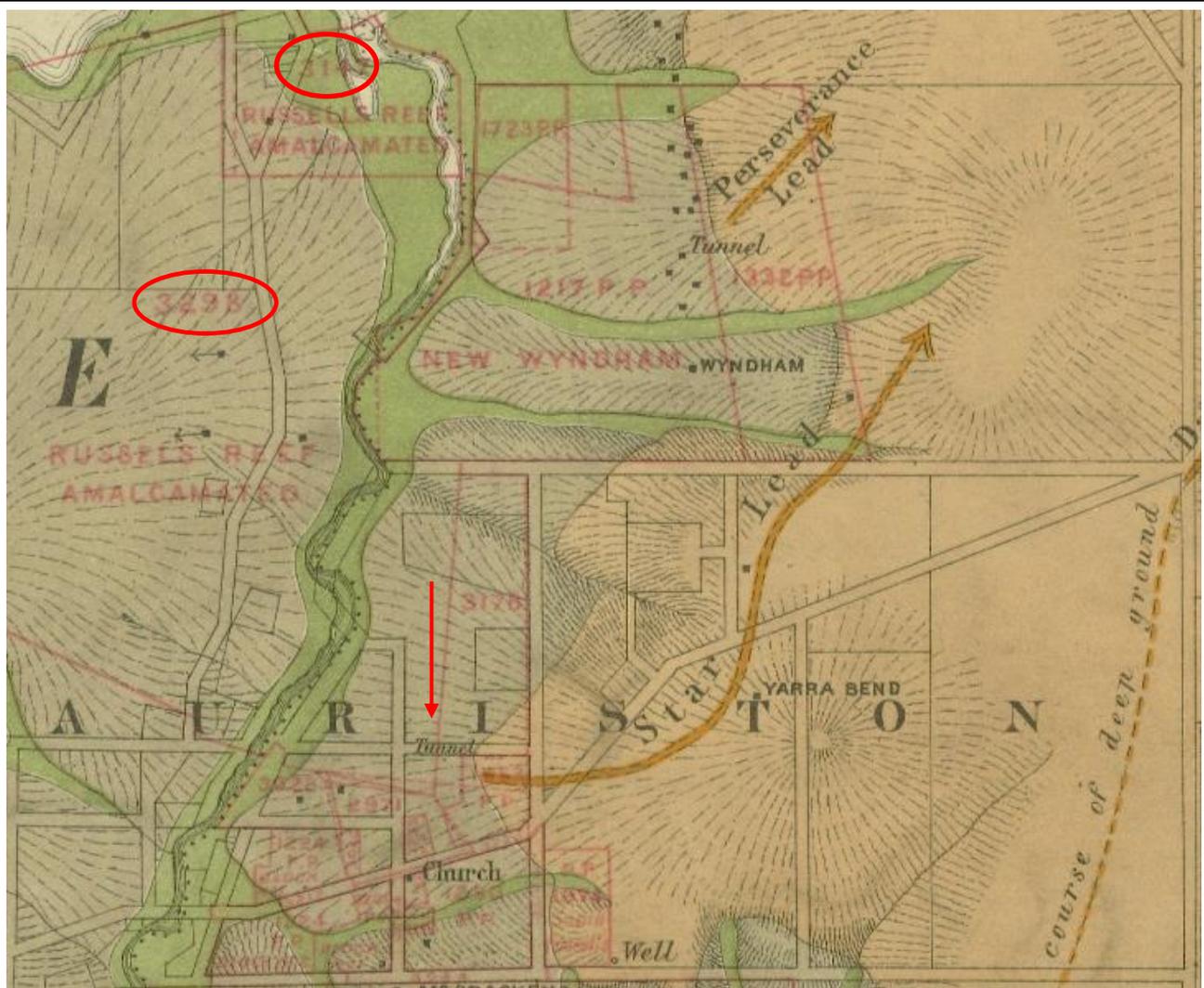


Figure 16. Portion of Lidgely’s 1894 Malmsbury and Lauriston Gold Field Map showing the Study Area.

A tunnel (red arrow), possibly Gaitskills, is recorded south of Section 298 near the west end of the Star Lead. Leases 3147 and 3298 (Russell’s Amalgamated) are circled.

Source: E. Lidgely, “Report on the Malmsbury and Lauriston Gold-Field,” *Geological Survey of Victoria Progress Report No. 8*. (Victoria: Department of Mines, 1894), 20–27. (Including the “Malmsbury & Lauriston Gold Field” Map, 1894).

Despite being one of the most profitable local mines, by June 1892 the yields from the mine were no longer covering the expenses and sixteen men were retrenched from the mine.²²² By July matters had improved somewhat but in August the board of directors proposed to either work the mine’s No. 1 shaft under contract (tribute), rather than by wages, or cease work in that shaft.²²³ The majority of the

²²² “Lauriston.” *Kyneton Observer*, 16 June 1892: 2.

²²³ “Mining at Lauriston.” *Kyneton Observer*, 26 July 1892: 2; “Mining at Lauriston.” *Kyneton Observer*, 2 August 1892: 2.

workers were discharged in mid-August, tenders called for driving and stoping the mine by contract and work in No. 1 shaft ceased except for pumping out water and repairing boilers.²²⁴ Even under contract, the yield from this shaft was insufficient to pay wages in November.²²⁵ The mine continued to work through 1893, with the No.2 shaft being worked under wages.²²⁶

Nos. 3246, 3267 and 3298

In December 1892, E T Gregory applied for a lease of 3 acres, 2 roods and 30 perches (No. 3246) which was issued in January 1893.²²⁷ In August 1893 the lease was transferred to the Russell's Reef Amalgamated Gold Mining Company.²²⁸ In the meantime James Russell, on behalf of the Company, applied for lease 3267 in April 1893 (81 acres, 3 roods and 0 perches, issued June 1893).²²⁹ At a shareholders' meeting in October 1893 it was reported that the Company had obtained an 83 acre lease (No. 3267) west of the 'old lease' and which covered 'the line of the Energetic Reef, and any westerly deviation of any of the Russells Reef'.²³⁰ In the same month the Company's battery, engine and machinery were in bad condition and were being repaired by their blacksmith. In November 1893 another new lease was applied for (No 3298, see Figure 16) of 153 acres, 0 roods and 35 perches for which leases 3146, 3246 and 3267 were surrendered.²³¹

Questions were raised at the April 1894 Russell's Reef Amalgamated Company's shareholders' meeting regarding the No. 1 Amalgamated Company and the lease (3147) it held adjoining the Russell's Reef. The Chairman stated that the lease had never been transferred from the old (Amalgamated) company and any gold in it would belong to the Company.²³² In May 1895, the mining warden's court dealt with an application by William Holmes to have the lease declared forfeited

²²⁴ "Mining News." *Kyneton Observer*, 13 August 1892: 2; "Mining Managers' Reports." *Kyneton Observer*, 13 August 1892: 2.

²²⁵ "Mining News." *Kyneton Observer*, 26 November 1892: 2.

²²⁶ "Mining at Lauriston." *Kyneton Observer*, 20 May 1893: 2; "Mining Managers' Reports." *Kyneton Guardian*, 27 May 1893: 2.

²²⁷ "Applications for Mining Leases." *Victoria Government Gazette*, 9 December 1892: 4727; "Mining Leases." *Victoria Government Gazette*, 24 January 1893: 1035.

²²⁸ "Licenses to Transfer, Etc., Mining Leases." *Victoria Government Gazette*, 4 August 1893: 3402.

²²⁹ "Applications for Mining Leases." *Victoria Government Gazette*, 28 April 1893: 1916; "Mining Leases." *Victoria Government Gazette*, 30 June 1893: 2861.

²³⁰ "Russell's Reef Amalgamated." *Kyneton Observer*, 31 October 1893: 3; "Mining News." *Kyneton Observer*, 2 November 1893: 2.

²³¹ "Mining News." *Kyneton Observer*, 7 November 1893: 2; "Applications for Mining Leases." *Victoria Government Gazette*, 3 November 1893: 4353; "Mining Leases." *Victoria Government Gazette*, 22 December 1893: 5037; "Gold Mining Leases Surrendered." *Victoria Government Gazette*, 22 December 1893: 5036.

²³² "Mining Meeting." *Kyneton Observer*, 24 April 1894: 2.

arguing that the 10-man work covenant (minimum level of work to be carried out under the terms of a lease) was not being complied with.²³³ The warden concurred and the lease was forfeited and granted to Holmes as lease No. 3475.²³⁴

No. 2264 Private Property

E. T Gregory, on behalf of the Russell's Reef Gold Mining Company, applied for a 15 year mining lease on private property in October 1894, for an area of 4 acres, 1 rood and 0 perches.²³⁵ This lease (2264PP) was granted in November that year.²³⁶

Doubts over the Amalgamated Company's long-term profitability remained in early 1894 however the Company remained financially viable, albeit barely, through to April 1898.²³⁷ Tenders were called in March 1894 for the purchase of a 'large heap of rich tailings' from the Company.²³⁸ These tailings were stated to have resulted 'from the crushing of about 16,000 tons of stone' but do not appear to have been sold (see below).²³⁹ All work at the No. 1 shaft was suspended in November 1894, except for two men tasked to 'prospect the reef at the 190ft level', however some work had recommenced by February 1895.²⁴⁰ The Company issued contracts in March 1895 for additional works and machinery for the No. 2 shaft, including the purchase and building in of a Cornish boiler (26ft 6in x 6ft 6in) and a third plunger pump and the sinking of a shaft for a well associated with the pump.²⁴¹ Purchase of 'an efficient air compressor' was approved in November 1895 and by April 1896 a residence for the mine

²³³ "Warden's Court." *Kyneton Observer*, 16 May 1895: 2.

²³⁴ "Mining Leases Declared Void." *Victoria Government Gazette*, 14 June 1895: 2371; "Applications for Mining Leases." *Victoria Government Gazette*, 28 June 1895: 2503; "Mining Leases." *Victoria Government Gazette*, 16 August 1895: 2978. NOTE: Holmes forfeited the lease in 1899, it was re-issued to Patrick Fitzgerald as lease 4513. In 1901 Fitzgerald forfeited the lease and it was re-issued to Holmes as Lease 4875.

²³⁵ "Applications for Mining Leases." *Victoria Governmet Gazette*, 5 October 1894: 3813.

²³⁶ "Mining Leases." *Victoria Government Gazette*, 16 November 1894: 4248.

²³⁷ "The Russell's Reef Mine." *Kyneton Observer*, 1 February 1894: 2; "Mining Meeting." *Kyneton Observer*, 21 April 1894: 2; "Russell's Reef Company." *Kyneton Observer*, 16 October 1894: 3; "Russell's Reef Amalgamated Co". *Kyneton Observer*, 27 October 1896: 2; "Russell's Reef Amalgamated G.M. Co." *Kyneton Observer*, 26 April 1898: 2.

²³⁸ "Mining Notices." *Kyneton Observer*, 15 March 1894: 3.

²³⁹ "Mining Notices." *Kyneton Observer*, 22 March 1894: 3.

²⁴⁰ "Mining at Lauriston." *Kyneton Observer*, 3 November 1894: 2; "Mining Managers' Reports." *Kyneton Observer*, 16 February 1895: 2.

²⁴¹ "Mining Managers' Reports." *Kyneton Observer*, 1 March 1895: 2; Ralph Winter Birrell, "The Development of Mining Technology in Australia, 1801-1945" (PhD thesis, University of Melbourne, 2005): 28, 162, 342; "Mining Meeting." *Kyneton Observer*, 30 April 1895: 2.

manager had been 'purchased and erected on the mine'.²⁴² The compressor supplied 'power to drive two winches, besides rock drills, and enabling the work of raising and winning the stone to be carried on more economically and expeditiously'.²⁴³

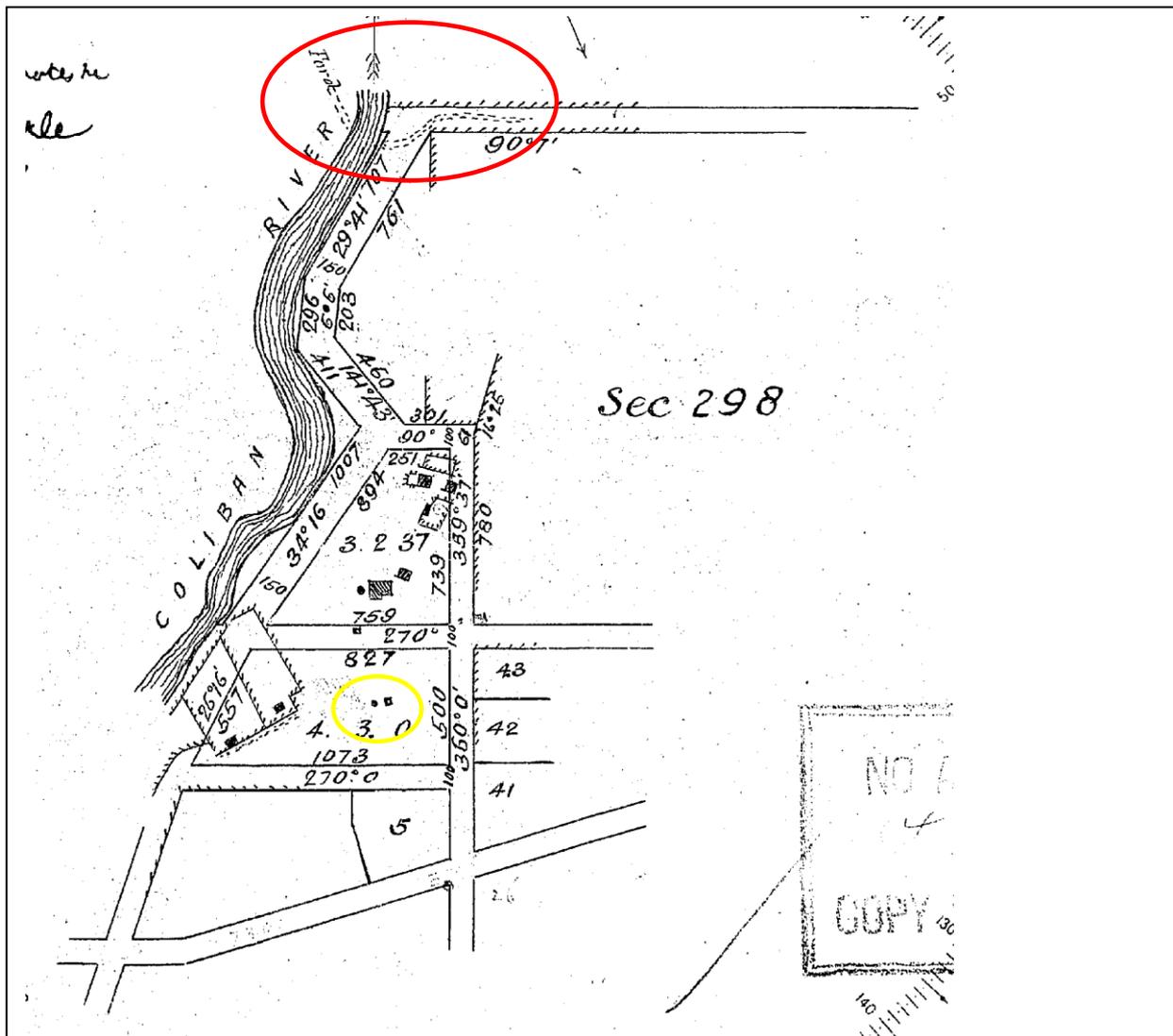


Figure 17. Parish of Lauriston, Put-away Plan L120L.

Marked on the plan is a ford over the Coliban River (red circle), structures (solid squares) several fences (ticked lines) and round black dots are probably shafts (yellow circle). Drawn up in January 1889 for Shire Council's application for a road under the *Land Act 1884*. The land is described as: Geological Form: Varied; Physical Form: Rangy; Soil: Medium; Vegetation: Lightly grassed There are two fenced enclosures covering parts of Allotment 29A of Section B and Allotment 47 of Section 298, both of which have a structure on them. There are also structures and more small enclosures on Allotment 20 of Section B.

Source: Parish of Lauriston, *Application of Shire Council for Road*, Put-away Plan L120L, 1889

²⁴² "Mining Meetings." *Kyneton Observer*, 2 November 1895: 3; "Russell's Reef G.M. Co." *Kyneton Observer*, 28 April 1896: 2; "Mining News." *Kyneton Observer*, 16 May 1906: 2.

²⁴³ "Russell's Reef Amalgamated Co". *Kyneton Observer*, 27 October 1896: 2.

No. 3488

Mr W H Hill applied for a 15-year mining lease of 16 acres, 2 roods and 30 perches in September 1895.²⁴⁴ The lease was issued in the name of Russell's Reef Amalgamated Gold Mining Company in November 1895.²⁴⁵

Suggestions of the Company erecting a processing plant for treating pyrites by the chlorination process were reported in December 1896, with comments that a chlorination plant was required in the district.²⁴⁶ Treating the sand, produced by the crushing processes, using a cyaniding process was also suggested, especially as all the equipment required was already held by the Company and the tailings heap could yield '2dwts. 10 ½ grs. per ton' by cyaniding.²⁴⁷ In the meantime attempts were made in 1897 to sell the tailings heap in the hope of raising income and someone else being able to extract the gold it contained. A syndicate from Melbourne proposed to establish a cyaniding plant at the mine, purchase the 14,000 tons of tailings and pay a royalty to the mine for the gold extracted.²⁴⁸ By April 1898 it was clear the whole proposal had fallen through.²⁴⁹ A sudden improvement in the success of the mine in August 1898 reinvigorated the local mining industry.²⁵⁰ At this point the No. 2 shaft had reached a depth of 780 feet, while the old (No. 1) shaft, which had not been worked for some time, was 500 ft deep and work in it recommenced. The 20-head battery was located at the old shaft and stone from No. 2 shaft was carted across the Coliban River to be crushed.²⁵¹ This was not via the river ford (shown in Figure 17), however. In September 1898 the road from the bridge over the Coliban to the No.2 shaft (now Reservoir Road) was in such poor condition that very little stone could be carted to the battery. Further problems had been faced in August that year when difficulties in obtaining a supply of water for the battery and boilers forced the Company to use the South Russell's Company's battery for crushing for a month while a new system was installed.²⁵²

²⁴⁴ "Applications for Mining Leases." *Victoria Government Gazette*, 20 September 1895: 3280.

²⁴⁵ "Mining Leases." *Victoria Government Gazette*, 15 November 1895: 3849.

²⁴⁶ "Chlorination Works." *Kyneton Observer*, 24 December 1896: 2; "Mining News." *Kyneton Observer*, 9 January 1897: 2.

²⁴⁷ "Mining News." *Kyneton Observer*, 13 May 1895: 2; "Russell's Reef Amalgamated G.M. Co., N.L." *Kyneton Observer*, 26 October 1897: 3.

²⁴⁸ "The Russell's Reef Amalgamated." *Kyneton Observer*, 20 January 1898: 3.

²⁴⁹ "Russell's Reef Amalgamated G.M. Co." *Kyneton Observer*, 26 April 1898: 2.

²⁵⁰ "Mining News." *Kyneton Observer*, 2 August 1898: 2; "The Quartz Reefs of Lauriston." *Kyneton Observer*, 2 August 1898: 2.

²⁵¹ "Kyneton Shire Council." *Kyneton Observer*, 6 September 1898: 2; "Mining News." *Kyneton Observer*, 20 September 1898: 2.

²⁵² "Mining News." *Kyneton Observer*, 30 August 1898: 2; "Russell's Reef G.M. Co." *Kyneton Observer*, 25 October 1898: 2.

At the close of the nineteenth century, the focus of the Company was on extending the depth of No. 1 shaft and creating a cross cut from the main working level of No. 2 shaft over to the No. 1 shaft to permit better ventilation.²⁵³ By August 1900 No. 1 shaft was 885 feet deep.²⁵⁴ A new boiler was acquired in late 1899 to replace two smaller boilers.²⁵⁵ The mining during this period did, however, have limited success, and by April 1900 the company's bank account was overdrawn by £730.²⁵⁶ A new winding engine for the No. 1 shaft was added over the 1901–02 period.²⁵⁷

No. 5037

In November 1901, the Russell's Reef Amalgamated Gold Mining Company applied for a mining lease (No. 5037) for 15 years for 9 acres, 1 rood and 4 perches.²⁵⁸ The lease was issued in December 1901.²⁵⁹ Following the failed attempt in 1896, in April 1902 another proposal was made to establish a cyaniding plant at the mine to treat the battery sand heap.²⁶⁰ This time their efforts were successful and by July of that year the plant had a 'clean up' from its first trial to determine the effectiveness of the process.²⁶¹ The running of the plant was contracted out to a local Chinese man, Ah Shae (also spelt Ah Sha) and his business partner Wong Lye Toon of Ballarat.²⁶² The plant consisted of 4 large wooden vats, 2 galvanised iron vats, 1 sluice box, 2 pumps, 4 water taps, 3 small wooden tubs, 1 galvanised iron tub, 1 set of scales and 2 buildings erected 'near' the Company.²⁶³ The plant was offered for sale in May 1904, due to a dispute over the partnership and wages owed to David Guthrie Spence for managing the plant, however the plant had been able to extract £600 worth of gold between June 1903 and March 1904.²⁶⁴ After this the plant appears to have been run by Messrs Hill and Morris (sometimes spelt Maurice) between February and August 1905 until tenders

²⁵³ "Mining Managers' Reports." *Kyneton Observer*, 22 April 1899: 2; "Mining Meeting." *Kyneton Observer*, 21 October 1899: 2; "Mining Managers' Reports." *Kyneton Observer*, 16 December 1899: 2.

²⁵⁴ "Mining Managers' Reports." *Kyneton Observer*, 4 August 1900: 2.

²⁵⁵ "Mining News." *Kyneton Observer*, 12 October 1899: 2.

²⁵⁶ "Mining Meeting." *Kyneton Observer*, 26 April 1900: 2.

²⁵⁷ "Mining Intelligence." *Kyneton Guardian*, 28 December 1901: 2; "Mining Intelligence." *Kyneton Guardian*, 18 January 1902: 2; "Mining Intelligence." *Kyneton Guardian*, 25 January 1902: 2.

²⁵⁸ "Applications for Mining Leases." *Victoria Government Gazette*, 20 November 1901: 4334 (note, the name of the company was erroneously recorded as Russell's Creek Amalgamated).

²⁵⁹ "Mining Leases." *Victoria Government Gazette*, 22 January 1902: 390; "Mining Intelligence." *Kyneton Guardian*, 25 January 1902.

²⁶⁰ "Mining Intelligence." *Kyneton Guardian*, 8 April 1902: 2.

²⁶¹ "Mining Intelligence." *Kyneton Guardian*, 26 July 1902: 2.

²⁶² "Mining Intelligence." *Kyneton Guardian*, 9 September 1902: 2.

²⁶³ *Kyneton Guardian*, 19 May 1904: 3.

²⁶⁴ *Kyneton Guardian*, 28 May 1904: 3; "A Question of Partnership." *Kyneton Guardian*, 14 July 1904: 2.

were called in November 1905 for the cyaniding of the Company's tailings.²⁶⁵ No further mention of the plant after this date has been located, however by 1912 the only cyaniding plant operating at Lauriston was at the Glengonner mine.²⁶⁶

Nos. 6048, 6173 and 6339

Further improvements to the Company's mine were made in 1905. Poppet legs were purchased from the Maldon Goldfields Gold Mining Company in late 1904 and re-erected at the Russell's Reef Amalgamated mine's No. 1 shaft in 1905.²⁶⁷ This also involved installing a new poppet head, tramway to the battery and a mullock (q.v.) tramroad.²⁶⁸ By November 1905 the No. 1 shaft was 1034 feet deep, and the No. 2 shaft 770 feet.²⁶⁹ A report on the Company submitted to the Mines Department suggested the most efficient means of mining Russell's Reef would be to commence a new shaft to focus on the Energetic Reef, capable of being worked to a depth of 5,000 feet, getting the mines adjoining the Amalgamated Company's No. 1 shaft to merge and work as one mine from that shaft, and having 'No. 2 shaft cut off, and another mine worked from it'.²⁷⁰ Some of this advice may have been heeded but additional capital works required more funds and in April 1906 the Company began discussions with the Minister for Mines for 'an advance of money under the Mines Development Act', an action that was to have serious consequences in later years.²⁷¹ Despite a desire to deepen a shaft by 600 feet at an estimated cost of £6000, an amount of £1,500 was granted to the Company, on a pound-for-pound basis, for deepening No. 1 shaft another 150ft from the existing 1040ft depth.²⁷² Russell's Reef Amalgamated Company was given permission in June 1906 to transfer mining lease numbers 3298, 2264PP, 3488 and 5037 for the purposes of mortgaging their right and title to the leases to the treasurer of the Victorian Government.²⁷³

²⁶⁵ "Mining Intelligence." *Kyneton Guardian*, 7 February 1905: 2; "Mining Intelligence." *Kyneton Guardian*, 21 March 1905: 2; "Mining Intelligence." *Kyneton Guardian*, 18 April 1905: 2; "Mining Intelligence." *Kyneton Guardian*, 8 August 1905: 2; "Mining Intelligence." *Kyneton Guardian*, 22 August 1905: 2.

²⁶⁶ "Tenders." *Kyneton Guardian*, 16 November 1905: 3; "Coliban Water." *Mount Alexander Mail*, 17 January 1912: 2, the company is erroneously reported as the Glengorman.

²⁶⁷ *Mount Alexander Mail*, 3 December 1904: 3 (advertisement); "Mining Intelligence." *Kyneton Guardian*, 25 February 1905: 2.

²⁶⁸ "Mining Intelligence." *Kyneton Guardian*, 11 March 1905: 2.

²⁶⁹ "Mining Intelligence." *Kyneton Guardian*, 25 November 1905: 2.

²⁷⁰ "Mining Intelligence." *Kyneton Guardian*, 25 November 1905: 2; Dunn, E. J. "Lauriston Mines." *Bulletins of the Geological Survey of Victoria: No. 19 the Lauriston-Drummond North Gold-Field*. Melbourne: Department of Mines, 1907: 14.

²⁷¹ "Mining Intelligence." *Kyneton Guardian*, 5 April 1906: 2.

²⁷² *Mount Alexander Mail*, 19 May 1906: 3 (advertisement); "Mining Intelligence." *Kyneton Guardian*, 21 June 1906: 2.

²⁷³ "Licenses to Transfer." *Victorian Government Gazette*, 11 June 1906: 3106.

During this time a dispute began between the South Russell's Reef and the Russell's Reef Amalgamated companies over the costs of pumping water out of the former company's ground.²⁷⁴ The Amalgamated Company was working much deeper ground, some of it right on the boundary of the South Russell's lease (Figure 18).²⁷⁵ The former's pumping was thus helping to keep the latter's ground drained and as it was doing the pumping work, Russell's Amalgamated expected financial recompense, which the South Russell's Company was not paying. South Russell's Company had been seeking exemptions from the labour covenants on their lease No. 3394 since 1901, partly to enable them to sell forfeited shares, seek further capital from London (1901) and to resume work and 'the protection of the company's lease pending the issue of a geological surveyor's report' (1905).²⁷⁶ The dispute over drainage and pumping emerged by July 1906 although early reports suggested the companies would resolve the matter by merging.²⁷⁷ By August 1906 two of the miners employed at South Russell's instigated legal action to recover unpaid wages and the plant and machinery of the mine, at that time mortgaged to the government for a mining development loan, was sold to recover the debt.²⁷⁸ Russell's Reef Amalgamated then successfully applied in September to have South Russell's leased forfeited on the grounds the latter's company had failed to comply with the labour covenants.²⁷⁹ After an appeal by South Russell's, the original decision was upheld.²⁸⁰ This left Russell's Reef Amalgamated with a greater lease area, and larger labour covenants to manage and comply with, but a recent strike of gold in the mine, which was now down to 1166 feet deep, suggested prospects were positive although it was thought more efficient machinery might need to be purchased.²⁸¹

²⁷⁴ "Mining Gossip." *Australasian* (Melbourne), 15 September 1906: 41.

²⁷⁵ Dunn, E. J. "Lauriston Mines." *Bulletins of the Geological Survey of Victoria: No. 19 the Lauriston-Drummond North Gold-Field*. Melbourne: Department of Mines, 1907: 6.

²⁷⁶ "Mining Intelligence." *Kyneton Guardian*, 19 December 1901: 2; "Mining Intelligence." *Kyneton Guardian*, 8 July 1905: 2; "Mining Intelligence" *Kyneton Guardian*, 5 September 1905; "Mining Intelligence." *Kyneton Guardian*, 17 October 1905: 2 (the lease number is incorrectly recorded as 3393); "Mining Intelligence." *Kyneton Guardian*, 7 November 1905: 3.

²⁷⁷ "Mining Intelligence." *Kyneton Guardian*, 5 July 1906: 2; "Russell's Reef Amalgamated v. South Russell's Co." *Kyneton Guardian*, 31 July 1906: 2.

²⁷⁸ "Sale of a Mining Plant." *Kyneton Guardian*, 16 August 1906: 2.

²⁷⁹ "Mining Intelligence." *Kyneton Guardian*, 6 September 1906: 2.

²⁸⁰ "South Russell's Forfeiture Case." *Kyneton Guardian*, 8 September 1906: 2.

²⁸¹ "Mining Intelligence." *Kyneton Guardian*, 6 September 1906: 2; "South Russell's Forfeiture Case." *Kyneton Guardian*, 8 September 1906: 2; "Mining Intelligence." *Kyneton Guardian*, 11 September 1906: 2; "Mining Intelligence." *Kyneton Guardian*, 25 October 1906: 2.

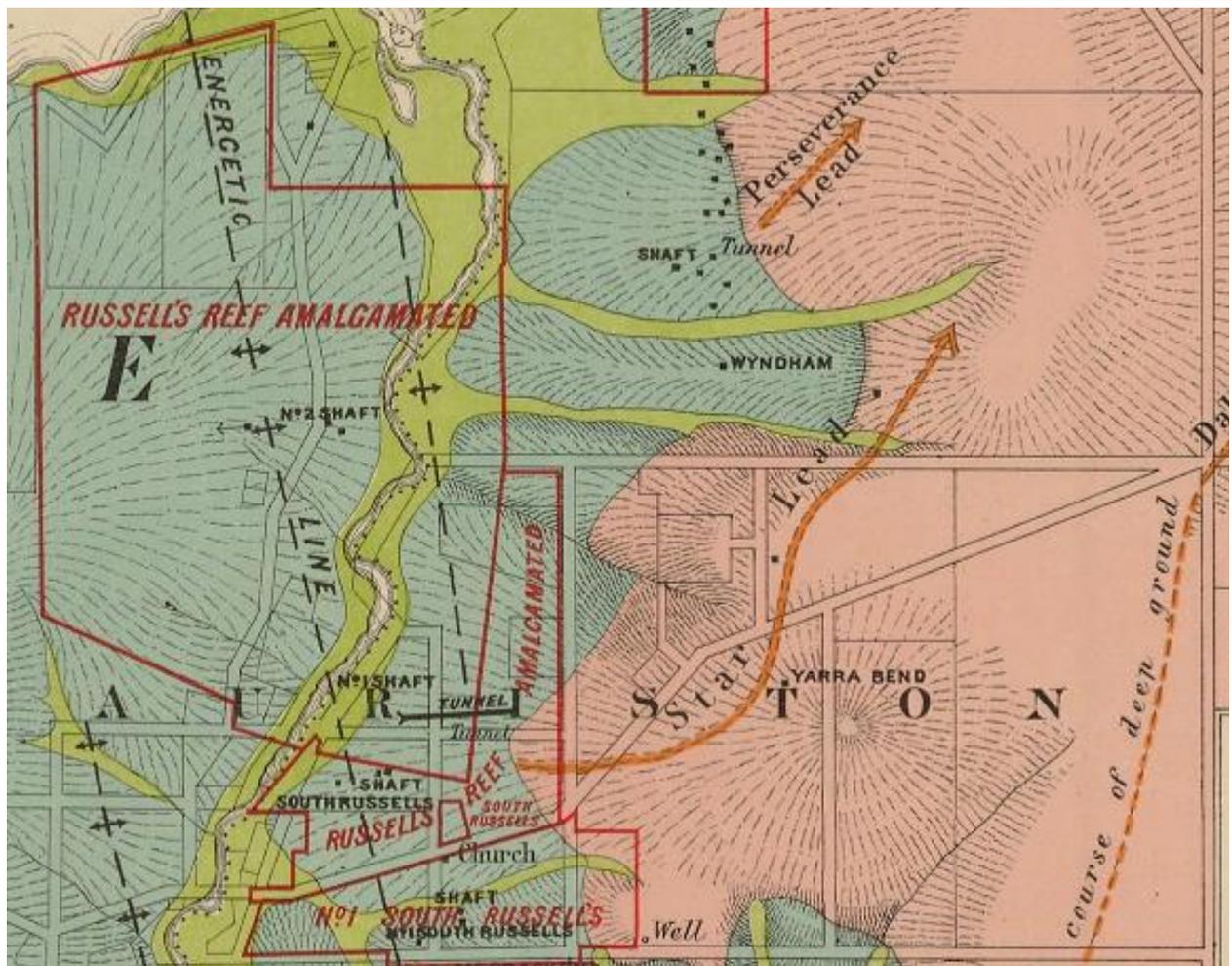


Figure 18. Portion of a 1906 version of Lidgley's Gold Fields Map showing the Study Area

The shafts, tunnels and mining lease boundaries of Russell's Reef Amalgamated, South Russell's and No. 1 South Russell's are clearly marked.

Source: Lidgley, Ernest., R. A. F. Murray, C. Glover, and E. J. Dunn. *Malmsbury & Lauriston Gold Field: Showing Anticlinal Lines*. Surveyed by Ernest Lidgley, under the Direction of R.A.F. Murray, Government Geologist; Lithographed by C. Glover. Rev. ed. Melbourne: Dept. of Mines, 1906.

Russell's Reef Amalgamated was granted exemptions from the labour covenants in September 1907 on their Lease numbers 3488, 5037, 6048, 6173 and 2264PP to enable them to develop Lease number 3298.²⁸² Leases 6048 and 6173 were new leases issued in 1906 and 1907 respectively to replace those formerly held by South Russell's.²⁸³ The developments reported included a new Cornish

²⁸² "Mining Exemptions." *Kyneton Guardian*, 5 September 1907: 2.

²⁸³ "Applications for Mining Leases." *Victoria Government Gazette*, 10 October 1906: 4179; "Applications for Mining Leases." *Victoria Government Gazette*, 27 February 1907: 1278; "Mining Leases Declared Void." *Victoria Government Gazette*, 19 September 1906: 3908.

boiler with iron chimney, and new drums and piers for the winding gear.²⁸⁴ The exemption from the labour covenants was extended in December 1907 to permit the addition of a **Phoenix Weir concentrator** and rebuilding the engine or boiler house.²⁸⁵ Further exemptions were granted in July and November 1908 and January 1909 during which time a new building, 26 feet x 12 feet x 12 feet, was erected.²⁸⁶

The mine remained active between late 1908 and May 1912. The battery was running close to full time in late 1908 and the recorded gold yields for the September and December quarters of that year for the mine were 1010 oz and 439 oz respectively (valued at £4131) from a total of 3496 tons of crushed rock.²⁸⁷ Tenders were invited in June 1909 for sinking the No. 1 main shaft a further 200 feet, work that was reported to be done under contract by a team of six miners from Maldon.²⁸⁸ Flooding of the Coliban River valley in August 1909 caused a temporary work stoppage as water seeped in to the Lauriston mines.²⁸⁹ By September 1910 the shaft was 1520 feet deep.²⁹⁰

There was, however, already a steady decline in mining at Lauriston. In May 1911 it was decided the parts of the mine not being worked by the Company would be let on tribute.²⁹¹ By October of 1911 Russell's Reef had shut down and eleven miners instigated legal action in February 1912 against the Company for unpaid wages.²⁹²

In summary, Table 2 shows the numerous mining leases issued which became assets of Russell's Reef Amalgamated Gold Mining Company. A visual outline of this is shown in Figure 19. The fate of

²⁸⁴ "Mining Intelligence." *Kyneton Guardian*, 17 September 1907: 2; "Mining." *Kyneton Guardian*, 17 October 1907: 3 (Advertisement); "Mining Intelligence." *Kyneton Guardian*, 19 October 1907: 2; "Mining Intelligence." *Kyneton Guardian*, 16 November 1907: 2.

²⁸⁵ "Mining Intelligence." *Kyneton Guardian*, 10 December 1907: 2; "Mining Intelligence." *Kyneton Guardian*, 11 January 1908: 2; "Mining Intelligence." *Kyneton Guardian*, 18 January 1908: 2; "Mining Intelligence." *Kyneton Guardian*, 25 January 1908: 2.

²⁸⁶ "Mining Intelligence." *Kyneton Guardian* 4 July 1908: 3; "Mining Intelligence." *Kyneton Guardian*, 3 November 1908: 2; "Mining Intelligence." *Kyneton Guardian*, 30 January 1909: 2; "Tenders." *Kyneton Guardian*, 19 August 1908: 3.

²⁸⁷ "Mining Intelligence." *Kyneton Guardian*, 5 December 1908: 2; "Mining Intelligence." *Kyneton Guardian*, 16 March 1909: 2.

²⁸⁸ "Tenders." *Kyneton Guardian*, 8 June 1909: 3; "Mining Intelligence." *Kyneton Guardian*, 12 October 1909: 2.

²⁸⁹ "The Coliban in Flood." *Kyneton Guardian* 21 August 1909: 2; "Mining Intelligence." *Kyneton Guardian*, 21 August 1909: 2.

²⁹⁰ "Mining Intelligence." *Kyneton Guardian*, 10 September 1910: 2.

²⁹¹ "Russell's Reef." *Kyneton Guardian*, 25 May 1911: 2.

²⁹² "Lauriston." *Kyneton Guardian*, 19 October 1911: 2; "Lauriston." *Kyneton Guardian*, 4 November 1911: 2; "Police Court." *Kyneton Observer*, 22 February 1912: 2.

the mining leases still active in 1909 has yet to be determined, but evidence would suggest they would have been declared void either through failure to comply with work covenants from 1911 onwards, or forfeited to anyone prepared to apply to take on the leases. No evidence of the latter has been uncovered and, given most of them were mortgaged to the Government in 1906, it is likely the former is the case.

In May 1912 the Russell's Amalgamated, the South Russell's and the No. 1 South Russell's mines were all idle.²⁹³ With the local major mines no longer operating, numerous mining assets were left on the ground and it seemed inevitable that the districts mining machinery would be moved to other places. Some machinery removal work may have begun by January 1913 when John D. Jones of Kyneton advertised for 'men to clean bricks at Russell's Reef, Lauriston'.²⁹⁴

²⁹³ "Lauriston." *Kyneton Guardian*, 14 May 1912: 2.

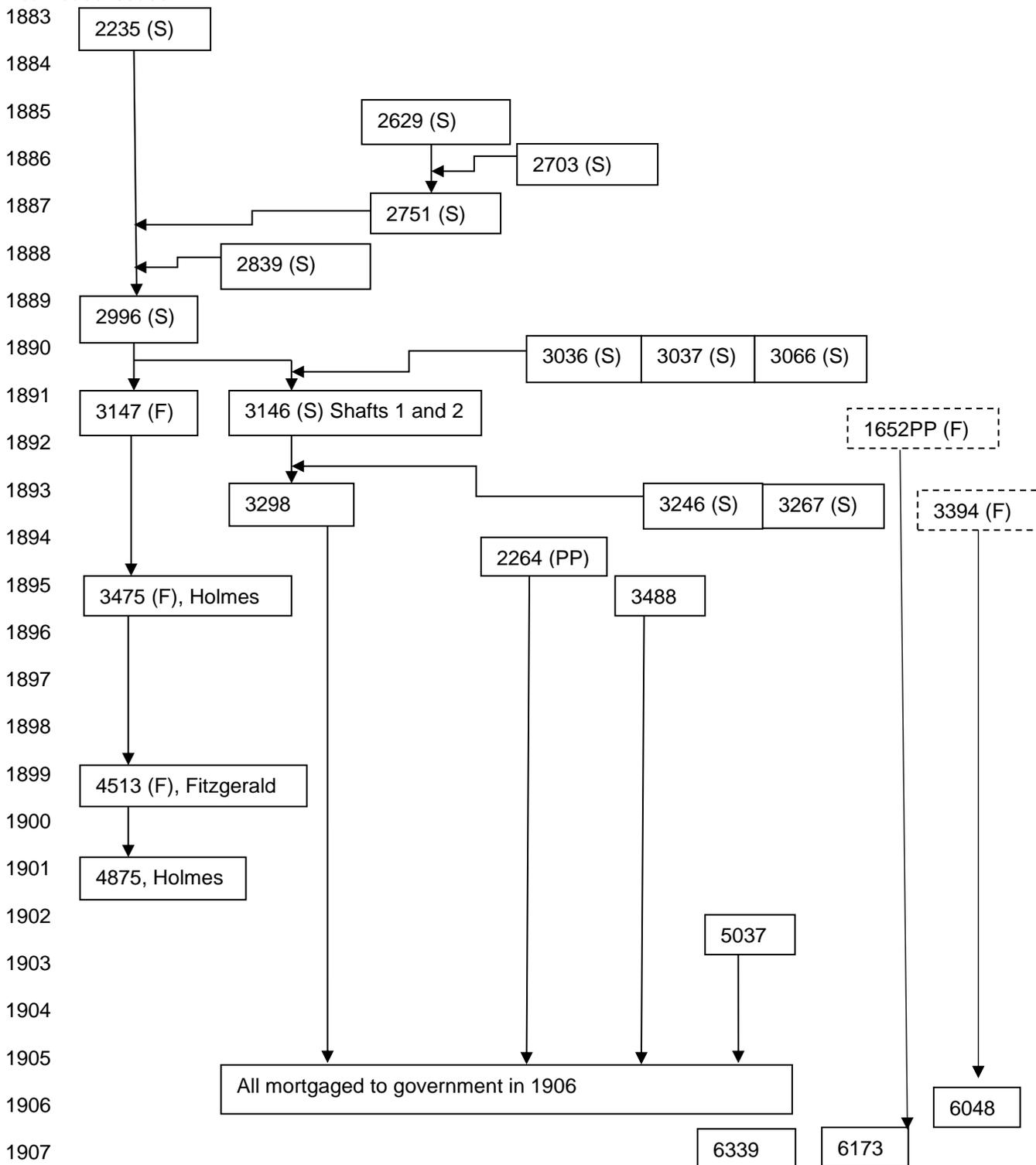
²⁹⁴ "Wanted." *Kyneton Guardian*, 4 January 1913: 3.

Table 2. Summary of issue and consolidation of leases for Russell's Reef Amalgamated.

Lease No.	Date issued	Issued to	Size	Fate
2235	29/5/1883	E H Wedgwood for Russell's Reef Gold Mining Company	13a 3r 20p	Surrendered for 2996
2629	16/11/1885	E T Gregory	13a 1r 20p	Surrendered for 2751
2703	1/8/1886	E T Gregory	24a 0r 10p	Surrendered for 2751
2751	17/5/1887	E T Gregory	36a 1r 12p	Surrendered for 2996
2839	16/7/1888	E T Gregory	11a 3r 33p	Surrendered for 2996
2996	18/11/1889	J Barker for Russell's Reef Amalgamated	62a 0r 30p	Surrendered for 3146 & 3147
3036	12/5/1890	E T Gregory for Russell's Reef Amalgamated	13a 1r 33p	Surrendered for 3146 & 3147
3037	12/5/1890	E T Gregory for Russell's Reef Amalgamated	8a 0r 7p	Surrendered for 3146 & 3147
3066	10/11/1890	E T Gregory for Russell's Reef Amalgamated	4a 0r 0p	Surrendered for 3146 & 3147
3146	17/8/1891	Russell's Reef Amalgamated	67a 3r 5p	Surrendered for 3298
3147	17/8/1891	Russell's Reef Amalgamated / Russell's Reef Amalgamated No. 1	19a 3r 25p	Declared void June 1895, reissued to W. Holmes as No. 3475
3246	20/2/1893	E T Gregory for Russell's Reef Amalgamated	3a 2r 30p	Surrendered for 3298
3267	26/6/1893	J Russell for Russell's Reef Amalgamated	81a 3r 0p	Surrendered for 3298
3298	19/12/1893	J Barker for Russell's Reef Amalgamated	153a 1r 0p	Lease transferred 1906 to permit mortgage
2264PP	13/11/1894	E T Gregory for Russell's Reef Amalgamated. (NB: Lease for Private Property)	4a 1r 0p	Lease transferred 1906 to permit mortgage. Active 1909
3488	4/11/1895	W H Hill for Russell's Reef Amalgamated	16a 2r 30p	Lease transferred 1906 to permit mortgage. Active 1909
5037	23/12/1902	Russell's Reef Amalgamated	9a 1r 4p	Lease transferred 1906 to permit mortgage. Active 1909
6048	28/12/1906	N G McLeod	22a 2r 8p	Active in 1909
6173	6/5/1907	N G McLeod	2a 3r 25.75p	Active in 1909
6339	3/10/1907	N G McLeod	3a 1r 8p	Active in 1909

Figure 19. Dateline and process of issuing and fate of Russell's Reef Amalgamated's Mining Leases 1883-1907

Year lease issued:



(S) = Surrendered (F) = Forfeited (PP) = Mining lease for private land
 Leases surrendered were usually in lieu of new lease(s) shown at the bottom, end of each arrow
 Leases originally issued to South Russell's Company are outlined with a dotted line



Figure 20. South Russell's Buildings offered for sale in 1907

Source: "For Sale or To Let." *Kyneton Guardian*, 24 October 1907: 3



Figure 21. Description of South Russell's Company assets in 1908

Source: "Auctions." *Kyneton Guardian*, 14 March 1908: 3

With respect to the South Russell's Company, some of the mine's buildings had been offered for sale in October 1907 (Figure 20).²⁹⁵ The Company had its own 10-head battery as demonstrated by the items listed when the machinery and plant were offered for sale in March 1908 (Figure 21) i.e.:

10-head battery with Pumping Gear, 16-inch Engine, Quantity of Piping, two Cornish Flue Boilers, Winch House 12 x 10, Battery House 52 x 48, Wood and Iron Boiler housing 24 x 13, Tram Road and Hoppers to Shaft, Poppet Legs, 4-roomed Wood and Iron House, Blacksmith's shop, Right to Clean Up Round Battery.²⁹⁶

In October 1912, the Secretary for Mines offered the Russell's Reef Amalgamated Gold Mining Company's plant and machinery for sale by auction (Figure 22). The items available were:

Machinery, etc: Large Boiler, Thompson and Co., first-class order, at North Shaft; 4 large Boilers; 20-head Stampers, complete, with shafting, piping, tables and all conveniences; Supply Pumping Engine, 12in. cyl., 20in. stroke; small 6in. cylinder Engine, Vertical Reserve Boiler; Winding Engine and Drum, 14in. cyl., 36in. stroke, and about 2500 feet wire rope; Shaft Pumping Engine, 12in cyl., 30in. stroke; Air Compressing Engine and Compressor, 14in. cyl., 36in. stroke; Small Engine (Australian Otis Co.); 2 Compressed Air Cylinders; Pumping Engine, 18in. cyl., 3ft. 6in. stroke; Winding Engine, 12in. cyl., 30in. stroke, with wire rope and fittings complete; Whip and Wire Rope; Wrought-iron Chimney Stack, 50ft. X 3ft. 6in. dia.; 2 Sets Poppet Heads, complete; Quantity Tram Rails and Trucks; Quantity 2in. Iron Piping (good); Quantity 8in. Iron Piping (spiral); Quantity Bluestone and Bricks; Crab Winch; 3 Screw Jacks;

²⁹⁵ "For Sale or To Let." *Kyneton Guardian*, 24 October 1907: 3.

²⁹⁶ "Mining Intelligence." *Kyneton Guardian*, 31 October 1905: 2; "Auctions." *Kyneton Guardian*, 14 March 1908: 3.

Blacksmith's Tools, including Bellows, Anvils, Vyces, etc.; Quantity Redgum Shaft Timber, 9in. x 2in.; Quantity Old Wire Rope; Office Furniture, including Iron Safe, Table and 2 Chairs; Quantity Steel and Iron Bars (new); 5 Sets Screws and Dies; Quantity New Stores, including Packing, Bolts, Handles, etc., Blocks and Pullies, single, double and treble; Quantity Tools, Rockborers, etc.; Quantity Piping (assorted sizes). Buildings.—Office and Storerooms (almost new); Battery, Engine and Boiler Houses at Main Shaft; Engine and Boiler Houses at North Shaft; Manager's House, 6 rooms, in good order; 2 Blacksmith's Shops; several small Buildings. All of the buildings are roofed with galvanised iron.²⁹⁷

By late December 1912 'the old Russell's mining plant' had mostly been removed from Lauriston, some of it being relocated to the Princess Dagmar mine at Bendigo.²⁹⁸

Word reached Lauriston in mid-November 1912 that the Secretary for Mines intended selling the mining equipment of the No. 1 South Russell's Mine, including the 10-head battery that was catering for other local mining companies.²⁹⁹ This indicates the batteries belonging to South Russell's and Russell's Amalgamated had been removed or were inaccessible to the other mining companies. It was suggested that the No. 1 South Russell's battery should be retained in the town as a government battery. The proposed sale was advertised a few days later but was then postponed until 16 December to give the community the opportunity to form a trust through which the battery could be managed and operated.³⁰⁰ The items available for purchase were described as:

Winding and Crushing Plant, Engine and Battery Houses, House (12 x 10 x 9), Crab Winch triple geared), about 1 ½ Tons Old Rails, 4 old Trucks, 2 Iron Tanks, 7 old Flat Sheets, Vyce, Bellows, Anvil, Avery Scales, Pulley Block, Safety Cage, old Boiler Shell and portion of an old Boiler Flue, 400 gal. Malt Tank, 6 Galvanised Pipes, etc. ³⁰¹

²⁹⁷ *Kyneton Guardian*, 19 October 1912: 3.

²⁹⁸ "Lauriston." *Kyneton Guardian*, 21 December 1912: 2; "Mining News." *Bendigo Advertiser*, 30 August 1913: 2.

²⁹⁹ "Hopeful Mining Revival." *Kyneton Guardian*, 19 November 1912: 2.

³⁰⁰ *Kyneton Guardian*, 23 November 1912: 3; "Sale Postponed." *Kyneton Guardian*, 30 November 1912; "No. 1 Battery, Lauriston." *Kyneton Guardian*, 30 November 1912: 2; "The No. 1 South Battery." *Kyneton Guardian*, 3 December 1912: 2; "Mining." *Kyneton Guardian*, 7 December 1912: 2.

³⁰¹ *Kyneton Guardian*, 23 November 1912: 3.

SALE OF THE
RUSSELL'S REEF AMALGAMA-
TED G.M. COMPANY'S
PLANT, ETC.

At LAURISTON.

FRIDAY, NOVEMBER 1, 1912.

W. H. FYSH & CO. have been instructed by the Secretary for Mines to Sell by Auction, at the Mine, Lauriston, at 11 a.m. on above date, the Russell's Reef A.G.M. Co.'s

MINING PLANT, ETC.,
Comprising—

Machinery, etc: Large Boiler, Thompson and Co., first-class order, at North Shaft; 4 large Boilers; 20-head Stampers, complete, with shafting, piping, tables and all conveniences; Supply Pumping Engine, 12in. cyl., 20in. stroke; small 6in. cylinder Engine, Vertical Reserve Boiler; Winding Engine and Drum, 14in. cyl., 36in. stroke, and about 2500 feet wire rope; Shaft Pumping Engine, 12in. cyl., 30in. stroke; Air Compressing Engine and Compressor, 14in. cyl., 36in. stroke; Small Engine (Australian Otis Co.); 2 Compressed Air Cylinders; Pumping Engine, 18in. cyl., 3ft. 6in. stroke; Winding Engine, 12in. cyl., 30in. stroke, with wire rope and fittings complete; Whip and Wire Rope; Wrought-iron Chimney Stack, 50ft. x 3ft. 6in. dia.; 2 Sets Poppet Heads, complete; Quantity Tram Rails and Trucks; Quantity 2in. Iron Piping (good); Quantity 8in. Iron Piping (spiral); Quantity Bluestone and Bricks; Crab Winch; 3 Screw Jacks; Blacksmith's Tools, including Bellows, Anvils, Vices, etc.; Quantity Redgum Shaft Timber, 9in. x 2in.; Quantity Old Wire Rope; Office Furniture, including Iron Safe, Table and 2 Chairs; Quantity Steel and Iron Bars (new); 5 Sets Screws and Dies; Quantity New Stores, including Packing, Bolts, Handles, etc., Blocks and Pullies, single, double and treble; Quantity Tools, Rockborers, etc.; Quantity Piping (assorted sizes).

Buildings.—Office and Storerooms (almost new); Battery, Engine and Boiler Houses at Main Shaft; Engine and Boiler Houses at North Shaft; Manager's House, 6 rooms, in good order; 2 Blacksmith's Shops; several small Buildings. All of the buildings are roofed with galvanised iron.

The special attention of mining men, dealers, etc., is called to this sale, as all lots must be disposed of to the highest bidder.

Vehicles will be provided to convey buyers from Kyneton to the sale.

TERMS: CASH.

W. H. FYSH & CO., Kyneton.

Figure 22. Sale of Russell's Reef Amalgamated Company's assets.

Source: *Kyneton Guardian*, 19 October 1912: 3

Government Battery

Despite the 1912 negotiations and formation of the trust, the old No.1 South Russell's battery only functioned as a government battery until December 1913 when it too was sold, some of it being dismantled and removed to the Premier Mine at Tylden.³⁰² In recognition of the small amount of local mining which still relied upon access to a battery, the government relocated the government '5-head battery with an engine and whifley tables' from nearby Little Hampton to Lauriston in February 1914.³⁰³ The site chosen for its re-erection was on the old Russell's Reef Amalgamated Company's lease, adjoining their No 2 shaft on the west side of the Coliban River. Within the Crown land file for Ah Heng's Chinese garden site is a Department of Lands and Survey memo from January 1916 confirming this location, and refusing any occupation of the site within 200 yards of the battery.³⁰⁴ This battery remained in operation throughout World War One, despite some occasional manning problems, and was still active well into the 1930s.³⁰⁵ The Mines Department annual report of 1944 shows that a battery was still in Lauriston that year and had crushed some material, however in 1945 nothing had been crushed at Lauriston and by 1946 the Lauriston battery is not mentioned in the Department's annual report.³⁰⁶

Lease 2383 Phoenix Company

Figure 12 shows portion of an 1884 mining map which covers Lauriston. The Phoenix Company is recorded as having a lease adjoining the Coliban River, mostly on the west bank, but some on the

³⁰² "Mining Revival at Lauriston." *Kyneton Guardian*, 4 February 1913: 2; "Mining." *Kyneton Guardian*, 22 April 1913: 2; "Lloyd's A1 Mine." *Kyneton Guardian*, 26 June 1913: 3; *Kyneton Guardian*, 2 December 1913: 3; "Tenders." *Kyneton Guardian*, 10 January 1914: 3.

³⁰³ "Mining." *Kyneton Guardian*, 21 January 1915: 4; "Lauriston." *Kyneton Guardian*, 23 December 1913: 2.

³⁰⁴ PROV, VPRS 439/P0, Unit 301, Item 9/49 Allotment 10N, Section 3 Burke.

³⁰⁵ "Mining." *Kyneton Guardian*, 21 January 1915: 4; "Mining at Lauriston." *Kyneton Guardian*, 19 October 1915: 2; "The Lauriston Battery." *Kyneton Guardian*, 16 March 1916: 2; "Mining at Lauriston." *Kyneton Guardian*, 13 May 1916: 2; "Mining Yield." *Kyneton Guardian*, 30 November 1918: 2 "Mining." *Kyneton Guardian*, 8 May 1919: 2; "Prospecting for Gold." *Age* (Melbourne), 28 April 1931: 8; "News in Brief." *Herald* (Melbourne), 21 August 1935: 5; Earth Resources. Geological Survey of Victoria catalogue. Report on assay samples of battery residues from location Lauriston, State Chemistry Laboratory, Mines Department, 1935. Assay sample numbers 1935/1758-1760, GSV Catalogue Record #144075. <https://earthresources.vic.gov.au/geology-exploration/maps-reports-data>, (accessed 17 January 2020) by choosing "Geoscience catalogue and publications".

³⁰⁶ Victoria. *Annual Report, including Gold and Mineral Statistics and Boring Records*. Department of Mines, Melbourne: Government Printer, 1944: 6; Victoria. *Annual Report, including Gold and Mineral Statistics and Boring Records*. Department of Mines, Melbourne: Government Printer, 1945: 6; Victoria. *Annual Report, including Gold and Mineral Statistics and Boring Records*. Department of Mines, Melbourne: Government Printer, 1946: 8.

east bank, just north of the Russell's Reef. A lease for 26 acres, 1 rood and 3 perches (No. 2383) at Lauriston was applied for by C E Jordan, on behalf of the Phoenix Gold Mining Company, in April 1884, and was issued in June.³⁰⁷ In September 1884, a licence to transfer this lease to the Energetic Union Gold Mining Company was issued.³⁰⁸ An application to register this second company had been made in August 1884.³⁰⁹ While no specific location has been found, the Energetic Union's lease was described in September 1884 as having 'two known gold-bearing reefs running through the whole length of their claim viz., the Energetic and Russell's'.³¹⁰ This suggests it refers to the old Phoenix Company's lease. The sinking of this Company's shaft commenced in September 1884 and there was a Blacksmith's shop on site by October.³¹¹ The shaft was 80 feet deep in April 1886.³¹²

The Energetic Union company applied in January 1885 for an additional mining lease (No. 2539, 9 acres, 1 rood and 12 perches) west of their existing lease, which was granted in April that year.³¹³ Legal action taken against the Company in February 1885 for a wages debt saw 'all the available effects of the company in the way of mining plant' seized for sale until the debt was paid.³¹⁴ Work continued for a short while longer, but the *Kyneton Observer* reported in June 1885 that 'the Energetic Union ... have stopped working owing to the mens' wages not being forthcoming'.³¹⁵

Lease 2539 (Energetic Union) was declared void in January 1886 while the original Phoenix lease (2383) was declared void in May 1886 after E T Gregory applied for the lease to be forfeited based on the non-fulfilment of the labour covenants.³¹⁶ The lease had never been transferred from Jordan to the

³⁰⁷ "Warden's Court." *Kyneton Observer*, 27 March 1884: 2; "Applications for Gold Mining Leases." *Victoria Government Gazette*, 10 April 1884: 943; "Mining Leases, Etc." *Victoria Government Gazette*, 13 June 1884: 1835.

³⁰⁸ "Licenses to Transfer, Etc., Mining Leases." *Victoria Government Gazette*, 5 September 1884: 2599.

³⁰⁹ "Private Advertisements." *Victoria Government Gazette*, 1 August 1884: 2234.

³¹⁰ "Mining." *Kyneton Observer*, 18 September 1884: 2.

³¹¹ "Mining." *Kyneton Observer*, 9 September 1884: 2; "Mining." *Kyneton Observer*, 11 October 1884: 2.

³¹² "Warden's Court." *Kyneton Observer*, 15 April 1886: 2.

³¹³ "Warden's Court." *Kyneton Observer*, 25 December 1884: 3; "Mining." *Kyneton Observer*, 25 December 1884: 2; "Applications for Gold Mining Leases." *Victoria Government Gazette*, 23 January 1885: 242; "Mining Leases, Etc." *Victoria Government Gazette*, 17 April 1885: 1079.

³¹⁴ *Kyneton Observer*, 3 March 1885: 2.

³¹⁵ "Mining." *Kyneton Observer*, 6 June 1885: 2.

³¹⁶ "Gold Mining Leases Declared Void." *Victoria Government Gazette*, 29 January 1886: 209; "Gold Mining Leases Declared Void." *Victoria Government Gazette*, 28 May 1886: 1338; *Kyneton Observer*, 8 April 1886: 2; "Warden's Court." *Kyneton Observer*, 15 April 1886: 2.

Phoenix Company. The land covered by the original Phoenix lease was excepted for occupation for mining purposes under the 'Mining Statute 1865' in May 1886.³¹⁷

Tailings Licences 954 and 2918.

While there was known activity at the Government battery at Lauriston until 1944, further detailed investigation would be required to determine where the material being crushed originated from. Figure 23 shows a mining lease (No. 7915) to the west of Reservoir Road which dates to the 1930s. This lease, the Lucky Hit mine was active between 1931 and 1936 and located west of the Lauriston township.³¹⁸ Early reports on this mine show at least 17 tons of rock were crushed.³¹⁹ The Lucky Hit lease was transferred to the Lauriston Gold Mining Company in 1933 and in 1934 a nearby mine, the Mushroom Syndicate, was also operating.³²⁰ These both provide evidence on ongoing mining and processing of mining products and may have utilised the nearby government battery.

Following the 1904 Victorian *Mines Act*, the Government established their ownership of mine tailings situated on Crown Land and began issuing licences to treat or remove such tailings.³²¹ The Government subsequently began issuing tailings licences (as oppose to mining leases) and an early one in the Lauriston district (for Drummond North) was issued in March 1906.³²² A tailings licence may have been issued prior to 1935 for the general vicinity of the Russell's Reef Amalgamated area (Figure 23). This most likely occurred in 1930 or 1931 based on the *Register of Applications for Tailings Licences* held at the Public Record Office Victoria (PROV).³²³

³¹⁷ "Lands Excepted from Occupation, Etc., Under Section 14 of the 'Mining Statute 1865'." *Victoria Government Gazette*, 28 May 1886: 1338.

³¹⁸ PROV, VPRS 602/P0, Unit 173, Gold Mining Lease Files, File 7915; "Rich Spur at Lauriston." *Argus* (Melbourne), 6 July 1931: 5; "Mines and Metals." *Age* (Melbourne), 18 May 1935: 27.

³¹⁹ "Mines and Metals." *Age* (Melbourne), 31 August 1931: 11.

³²⁰ PROV, VPRS 602/P0, Unit 173, Gold Mining Lease Files, File 7915, letters dated 6 February 1933 and 23 July 1934.

³²¹ *Mines Act 1904* (No. 1961) (VIC), s. 54; "Application for Tailings License." *Bendigo Advertiser*, 17 March 1906: 6.

³²² "Mining." *Kyneton Guardian*, 27 March 1906: 3.

³²³ PROV, VPRS 7844/P1, Register of Applications for Tailings Licences, Unit 10 covers licence numbers 901 to 1000 with a date range of 1929-1932. Tailings lease file 954 is not available in VPRS 10808 unless it is attached to a subsequent file for the same licence holder.

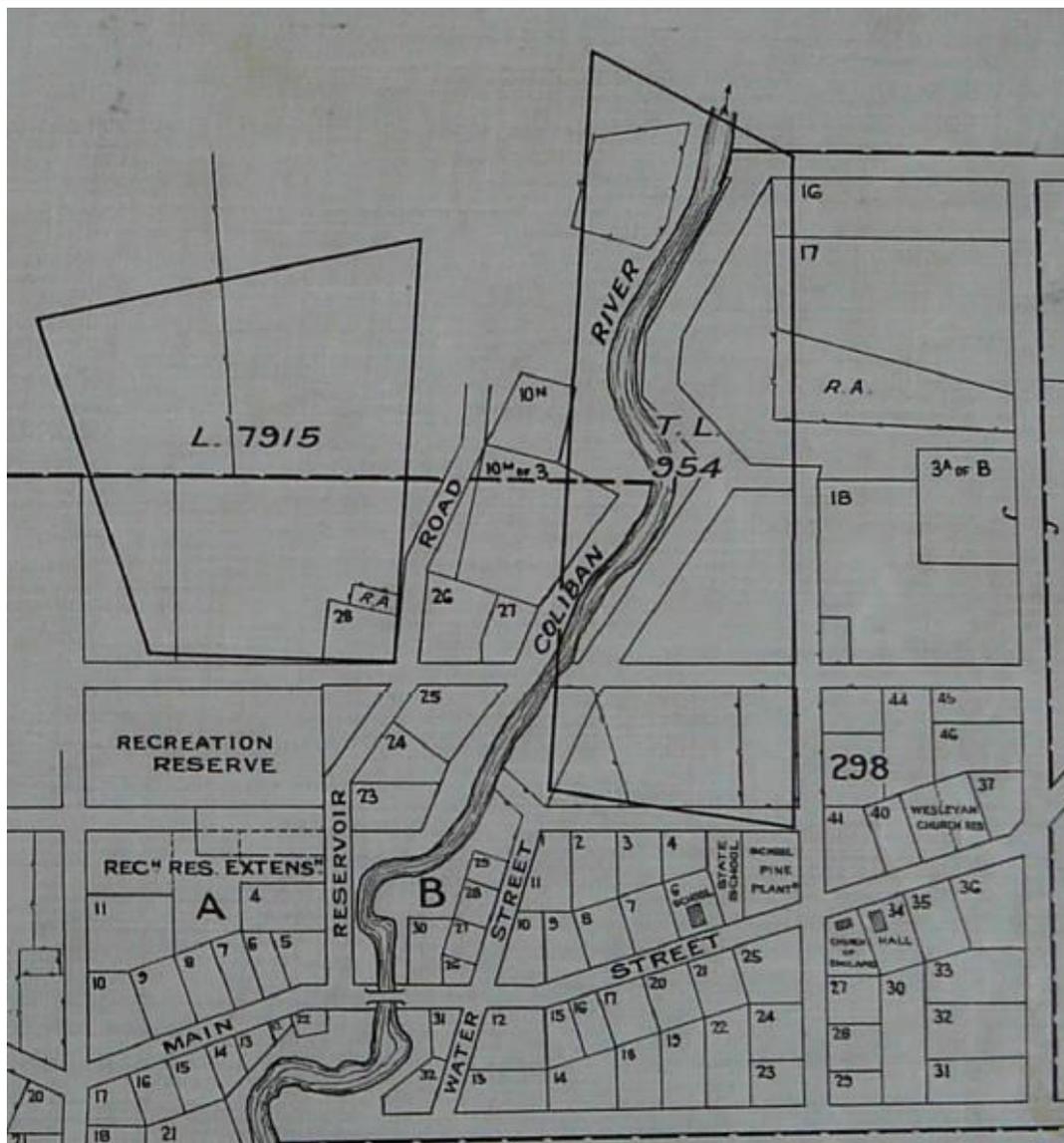


Figure 23. Detail of 1935 Mining Lease Plan showing existing TL954 (Tailings Licence), and L7915 (Mining Lease) in the township of Lauriston.

No mining infrastructure is shown. The former Police Reserve on the corner of Bennies Lane is now a School pine plantation.

Source: PROV, VPRS 14969/P2, Unit 320, Mining Lease Plans, No. 8330 Castlemaine, dated 1 March 1935

Tailings licence 2918 (later replaced by numbers 3081, 3231 and 4105 upon expiry) had been granted to Leslie Shelton by October 1959 for Lauriston (Figure 24).³²⁴ Between that time and December 1964 he treated a total of 8980 tons of tailings and recovered 569 ounces of gold. Although he held the licences until December 1969, no tailings were treated after 1964 and no precise details can be found as to the exact nature and origins of the tailings other than they were sourced from 'Russels (sic) Mine' and measured 350 by 80 yards.³²⁵ The correspondence file for Shelton's licence also records he was operating cyanide vats in 1959 and 1961 and there were concerns they were in a sub-standard condition and leaking.

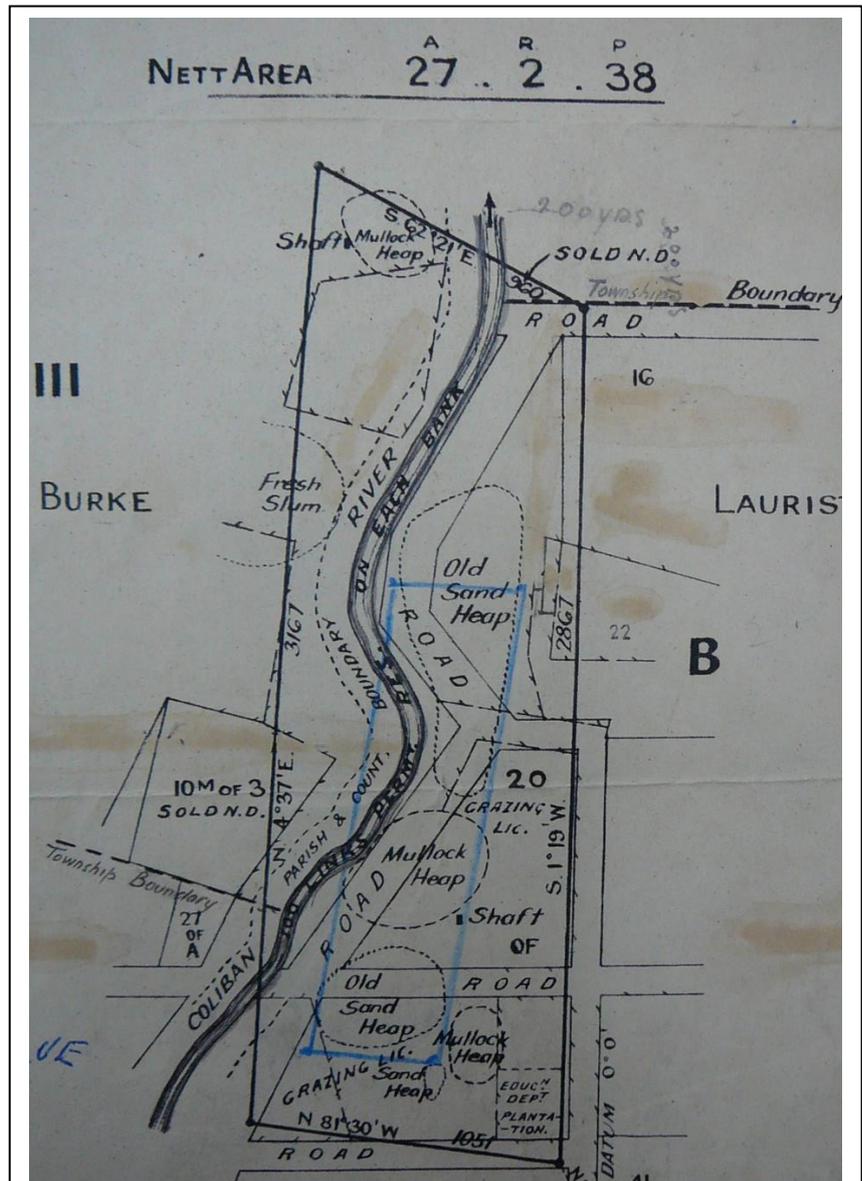


Figure 24. Area covered by Tailings Licence Number 2918

This also applies to licences 3081 and 3231 during the period 1959-1965. Key features are the Fresh Slum, 4 Old Sand Heaps, 3 Mullock Heaps and shafts. The Fresh Slum may have originated from more recent mining.

Source: PROV, VPRS 10808, Unit 35, Licence Number 3231

³²⁴ Earth Resources: Geological Survey of Victoria Online Catalogue. SHELTON, L.J., 1969. Lauriston. (Lease or Licence 2918). Return of tailings treated for quarters December 1959 to December 1969, 65 pp. Mineral Resources Compactus, Geological Survey of Victoria. Catalogue Record #55321 (1969) (accessed via: <https://earthresources.vic.gov.au/geology-exploration/maps-reports-data> 12 December 2019); PROV, VPRS 10808/P0, Unit 35 Tailings Licence File 3231; "Tailings Licences Granted." *Victoria Government Gazette*, 9 August 1961: 2794.

³²⁵ PROV, VPRS 10808/P0, Unit 35 Tailings Licence File 3231.

Exploration Licences 17 and 22 and Mining Lease Application 9276

A company, Planet Mining Company (also recorded as Planet Gold Pty Ltd) began to show interest in the former Lauriston goldfield in 1966. The exploration licences they acquired (EL17 and EL22) included the Lauriston area, and mapping and drilling work was undertaken in the vicinity of the Energetic and Russell's Reefs during the period 1967 to 1968.³²⁶ As part of their exploration work, a site plan was constructed which showed the remaining mining heritage features surrounding the Coliban and Malmsbury Reservoir at Lauriston (Figure 25).³²⁷ Planet Mining Company later applied for Mining Lease No. 9276 (circa 1971) which covered 623 hectares and included Lauriston township (Figure 26), the plan for which shows the location of the tunnel identified in the 1894 map in Figure 16.³²⁸ The application for this lease was abandoned in May 1975 so it can be assumed that no further work took place at the site.³²⁹

³²⁶ Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 31 December 1967.* Earth Resources Division Expired Exploration Reports File. GSV Catalogue Record #31363 (1967); Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 31 March 1968.* Earth Resources Division Expired Exploration Reports File. GSV Catalogue Record #31364 (1968).

³²⁷ Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 30 June 1968.* Earth Resources Division Expired Exploration Reports File, GSV Catalogue Record #31365 (1968): Labelled Figure 1, Sheets 1 and 2 (Figure 14 in report).

³²⁸ PROV, VPRS 14969/P2, Unit 361, Mining Lease Plan 9276. No firm application date has been located but Leases 9275 and 9277 were dealt with in 1971.

³²⁹ "Mines Department." *Victoria Government Gazette*, 14 May 1975: 1146. The GSV Exploration licence reports for this company cease in September 1970.

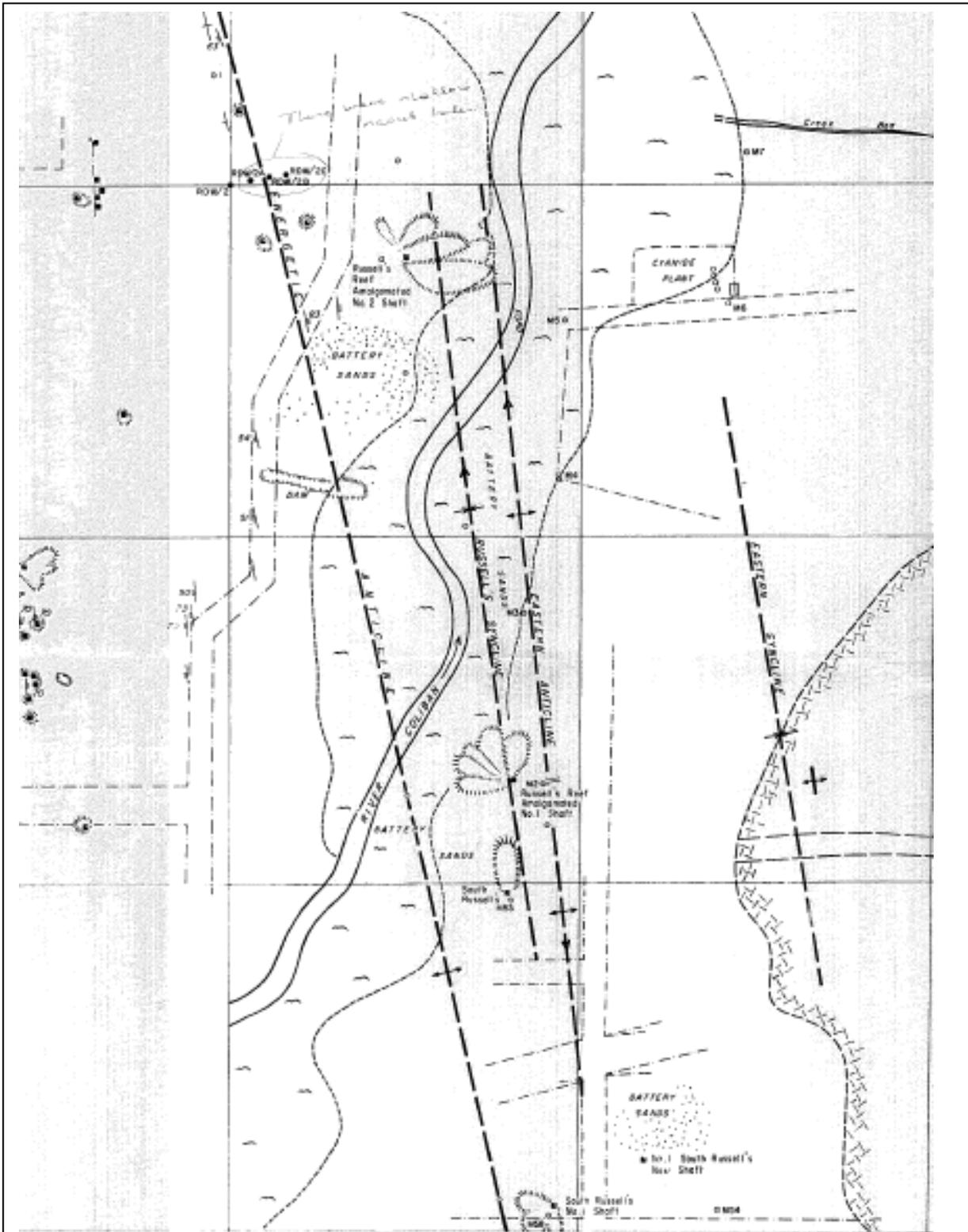


Figure 25. Site plan of the former Russell's Reef mines from 1968.

Source: Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 30 June 1968.* Earth Resources Division Expired Exploration Reports File, GSV Catalogue Record #31365 (1968): Labelled Figure 1, Sheets 1 and 2 (relabelled 'Figure 14' in report)

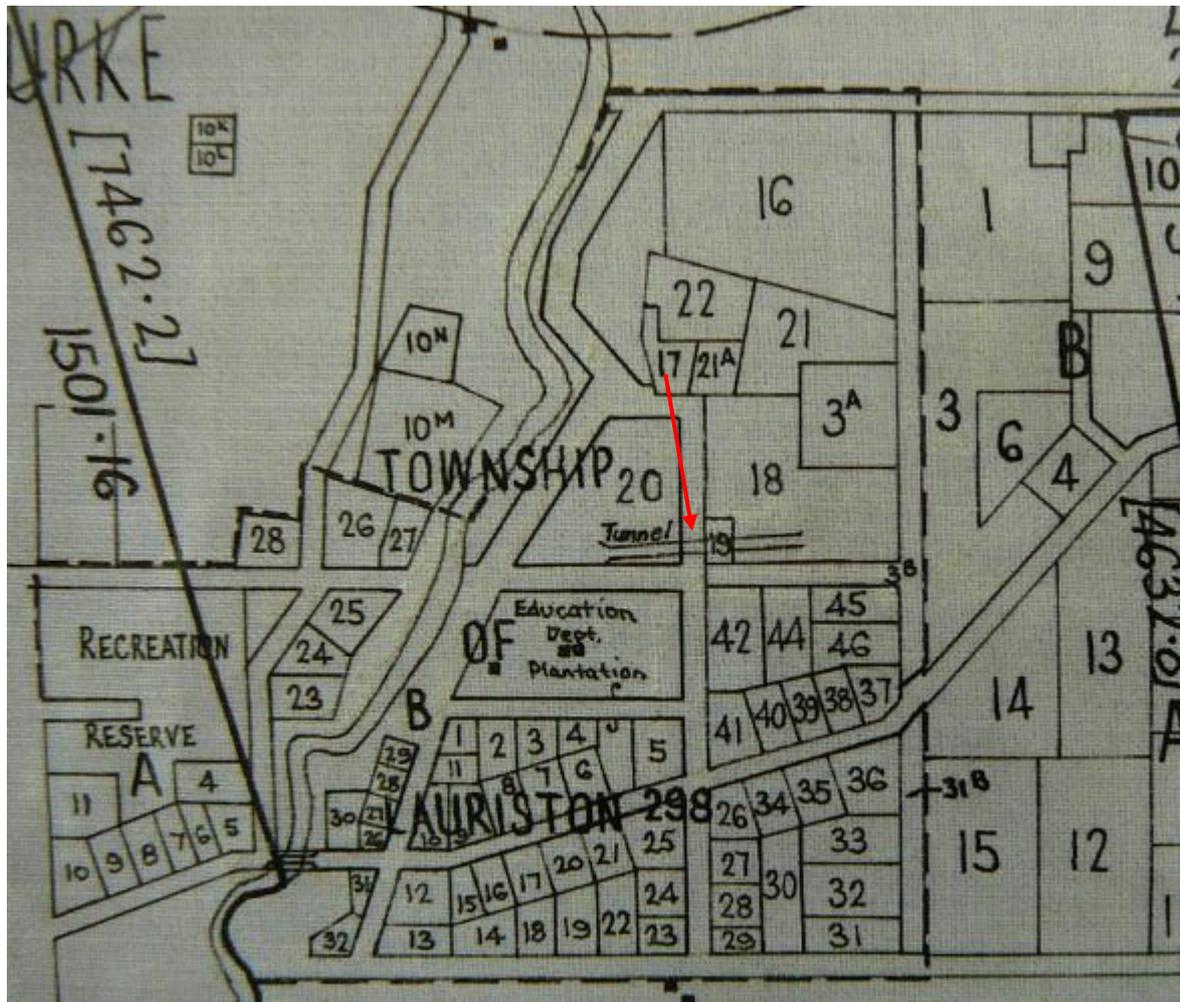


Figure 26. Part of 1974 Mining Lease Plan for Lease Number 9276 of 623 hectares applied for by Planet Mining Company.

The map shows a tunnel running (red arrow) between Allotments 20 and 18 of Section B which was also depicted in Lidgely's 1906 plan (see Figure 18). The Education Department Pine Plantation is also shown. Small black squares probably signify shafts

Source: PROV, VPRS 14969/P2, Unit 361, Mining Lease Plans, *Mining District of Castlemaine: Lease No. 9276*

Unconfirmed Sites

On Toon's Claim

In September 1865 a Chinese miner by the name of On Toon (or Oun Toon) and his party of miners commenced legal action against Hill & party for encroaching on their 1200-foot mining claim on the Coliban at Lauriston.³³⁰ Given the proximity of the Chinese market gardeners Ah Toon and Ah Heng

³³⁰ "Items of News." *Mount Alexander Mail*, 1 September 1865: 2; "Warden's Court." *Kyneton Observer*, 9 September 1865: 2; "Malmsbury Warden's Court." *Kyneton Observer*, 16 September 1865: 2.

to the west side of the Coliban, north of the road bridge (see Figure 28 below), this claim may also be within the Study Area. Further research on 'Hill and party' would be needed to confirm this.

Consequences of Mining: Protecting and Using Water Resources

Figure 27 is a photograph of Lauriston dating to the early 1900s. It is taken from the west bank of the Coliban on the southern side of the road bridge and looks roughly north-east, over the river valley. It shows a landscape nearly denuded of trees, an extremely eroded river valley, with possibly some early gorse infestations, and some mining infrastructure on the east bank. Prior to the commencement of the MDLG project, the northern side of Lauriston looked very different to this photo, with more vegetation. A lot of it was cultivated in gardens or was of a very weedy nature, such as the willows lining the riverbanks and the gorse and blackberry infestations. This section considers the environmental impacts of the past mining activity and human occupation of the Study Area.

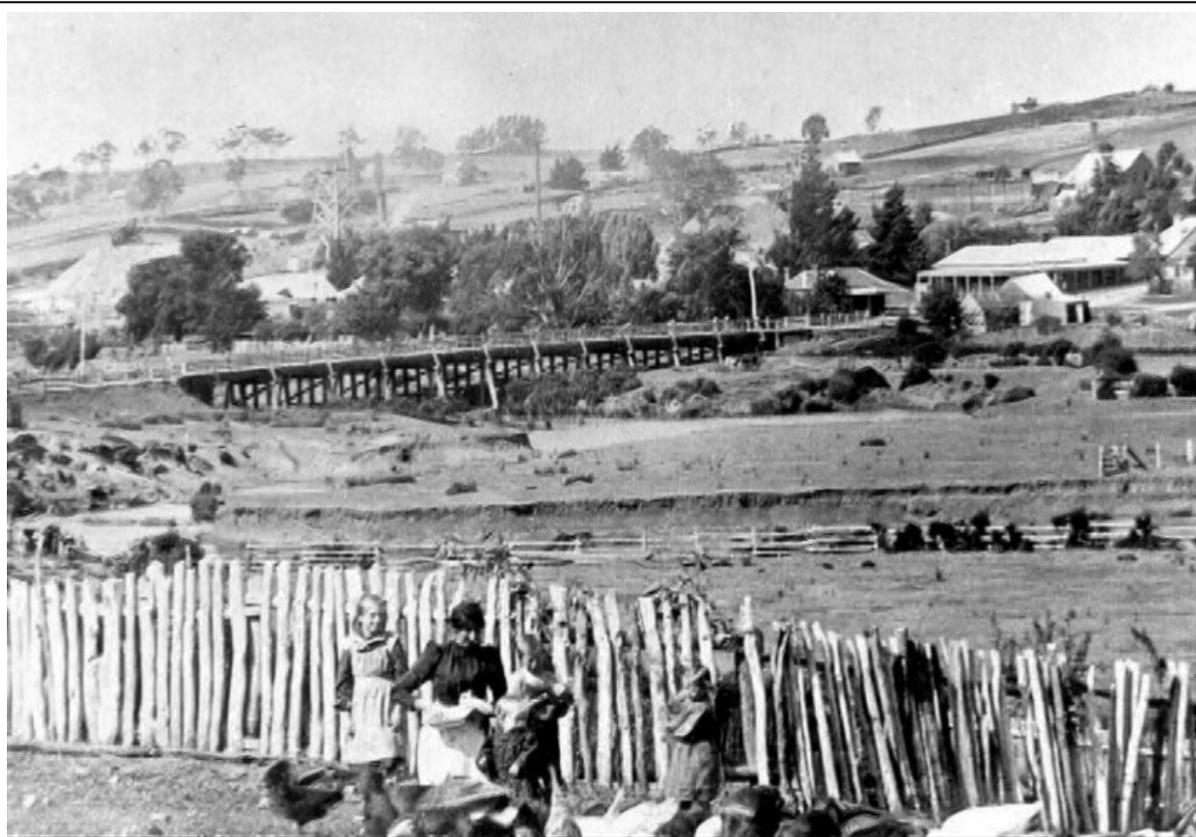


Figure 27. View of Lauriston showing the Coliban River and the old timber road bridge.

The poppet legs and mullock heap of the Russell's Reef Amalgamated No. 1 shaft can be seen in the top left of the photo. The riverbank is heavily eroded and devoid of trees. Circa 1900.

Source: Malmsbury Historical Society Inc. Collection, Catalogue Number 3LBD0004R

Sludge

As explained in *Sludge: Disaster on Victoria's Goldfields*, a recent expose by archaeologists Susan Lawrence and Peter Davies on the environmental impacts of mining, the destruction and pollution of Victoria's waterways by mining was a major problem.³³¹ The mining industry, and a Colonial government which supported it, was hesitant to take decisive action and the battle to contain sludge, and its impacts on others, was fought over many decades. Another hazard was the insufficient management of human excrement and the subsequent health implications. Both of these problems surfaced in Lauriston and the adjoining Malmsbury Reservoir.

The sludge problem was certainly present in the Malmsbury-Drummond-Taradale-Lauriston Goldfields. In Drummond in 1868 the sludge outflow from the Allendale Gold Mining Company (North Drummond near Back Creek) was damaging a local road and brought to the attention of the Glenlyon Shire Council.³³² A channel was being constructed in 1878 to manage the flow of sludge into the Back Creek at Taradale and in Malmsbury township in 1881 the sludge from the Confluence mine was flowing over Adamson and Coliban Streets.³³³

At Lauriston itself, the Manager of the Central Energetic Freehold Gold Mining Company was summoned to the Malmsbury Police Court in July 1871 for 'permitting a quantity of dirt and sludge to flow from their claim into the Malmsbury Reservoir'.³³⁴ Noting that this was during the period of construction of the reservoir itself, within days of this case it was proposed to construct a channel 'which will carry the waste water and sludge into the Coliban at a point above the embankment' (i.e. the dam wall).³³⁵ While this does not sound like a real solution to the problem, the reporter had made a mistake and the actual proposal was subsequently reported as a channel to 'divert the waste water, &c., from the Lauriston mines into the river beyond the embankment of the reservoir' (i.e. downstream).³³⁶ Either way this sounds like the authorities were more concerned about the impact on the reservoir construction and its contents, as opposed to the state of the river as a whole, however the matter of allowing mining within the reservoir reserve itself was questioned. When re-inspected in August 1871, the Crown Lands Bailliff observed a sludge 'stream that was running about two feet

³³¹ Susan Lawrence and Peter Davies. *Sludge: Disaster on Victoria's Goldfields*. Carlton: La Trobe University Press and Black Inc., 2019.

³³² "Glenlyonshire Council." *Kyneton Observer*, 7 July 1868: 2.

³³³ "Taradale." *Kyneton Guardian*, 22 June 1878: 2; "Taradale." *Kyneton Guardian*, 6 July 1878: 3; "Malmsbury Borough Council." *Kyneton Guardian*, 5 January 1881: 2; "Malmsbury Borough Council." *Kyneton Guardian*, 3 August 1881: 2.

³³⁴ "Malmsbury Police Court." *Kyneton Guardian*, 8 July 1871: 2.

³³⁵ "Local and General News." *Kyneton Guardian*, 12 July 1871: 2.

³³⁶ "Local and General News." *Kyneton Guardian*, 15 July 1871: 2.

wide and about six or eight inches deep' was running from the mine's dam into the reservoir.³³⁷ While the case was dismissed, by October 1872 the mine was able to demonstrate that the problem had been controlled.³³⁸

John Bennie was summoned to the Kyneton Police Court in December 1871 when a man working for him was observed allowing the sludge from Bennie's battery and mining works in Orr's paddock, which was within the declared drainage area of the reservoir, to drain into the reservoir.³³⁹ A sludge dam was located adjoining the crushing mill, however when the dam became full, it was alleged the sluice gate was opened to let the sludge, being the 'consistency of pea soup', run into the reservoir. The case was dismissed as there was no evidence Bennie had released the sludge himself. By June 1872 the *Kyneton Guardian* reported that 'at a point nearly a mile from the embankment the silt is more than two feet in depth, and the quantity will of course be found to increase as the embankment is neared. There seems to be no reason to doubt that within a very few years the storage capacity from this cause will be very seriously diminished'.³⁴⁰

Human Effluent

There is evidence of the establishment of market gardens adjoining the Coliban at Lauriston from 1867.³⁴¹ Both Ah Heng and Ah Toon occupied crown land on the west bank of the Coliban River for the purposes of market garden (Figures 28 and 29). These are now recognised as Allotments 10M and 10N of Section 3, Parish of Burke. Both Ah Toon and Ah Heng used a variety of manures, including human, in their gardens, which caused a number of complaints to be made against them. Ah Heng was cautioned in April 1888 over using night soil (human manure) in his vegetable garden and in July 1889 his garden was found to have a 'stream of filth which flowed direct into the Coliban River' and he was fined.³⁴² Further fines over the same matter occurred in January, and in May 1892 he was sentenced to 14 days in Castlemaine Gaol for 'allowing nuisance to accumulate on premises' and

³³⁷ "Malmsbury Police Court." *Kyneton Guardian*, 16 September 1871: 3.

³³⁸ "Malmsbury Police Court." *Kyneton Guardian*, 23 September 1871: 2; "Local and General News." *Kyneton Guardian*, 26 October 1872: 2.

³³⁹ "Kyneton Police Court." *Kyneton Guardian*, 23 December 1871: 2.

³⁴⁰ "Local and General News." *Kyneton Guardian*, 8 June 1872: 2.

³⁴¹ Walter. *Gold'n Greens*: 36.

³⁴² *Ibid.*; 46-47; "Chinamen's Gardens Again." *Kyneton Observer*, 18 July 1889: 2.

again in December 1892 for a month for the same offence.³⁴³ In an 1898 court case it was reported that Ah Hing and Gon Hock had been fighting over obtaining 'water from the Russell's Reef mine for their gardens' suggesting they were using the same dam as Ah Woon in 1888 (see above in Lease 2235).³⁴⁴ This is on the east side of the river, confirming the gardens are not those of Ah Toon.

Ah Toon was reported to be a more respectable gardener, keeping his site as a 'model of cleanliness' however he too was accused of polluting the

Coliban in 1889.³⁴⁵ Consideration was given at the time to the government buying him out and closing down the garden, given Ah Toon's application to purchase the site had been approved and finalised in 1882. The *Kyneton Observer* questioned the practicality of this proposal, given most of the farm land adjoining the Malmsbury reservoir also used manure to fertilise their crops and floods created run off from their farms, meaning they too would need to be bought out.³⁴⁶ Closing down the market gardens would also remove an important source of fresh food from the district, which the local Lauriston residents were reluctant to lose.³⁴⁷

Ah Toon's garden was still functioning as a market garden site in the early 1900s while Ah Heng remained on his Crown land site until some time before he was arrested for vagrancy in 1916 and, after a brief gaol term, was admitted to the Castlemaine Benevolent Asylum.³⁴⁸ A subsequent

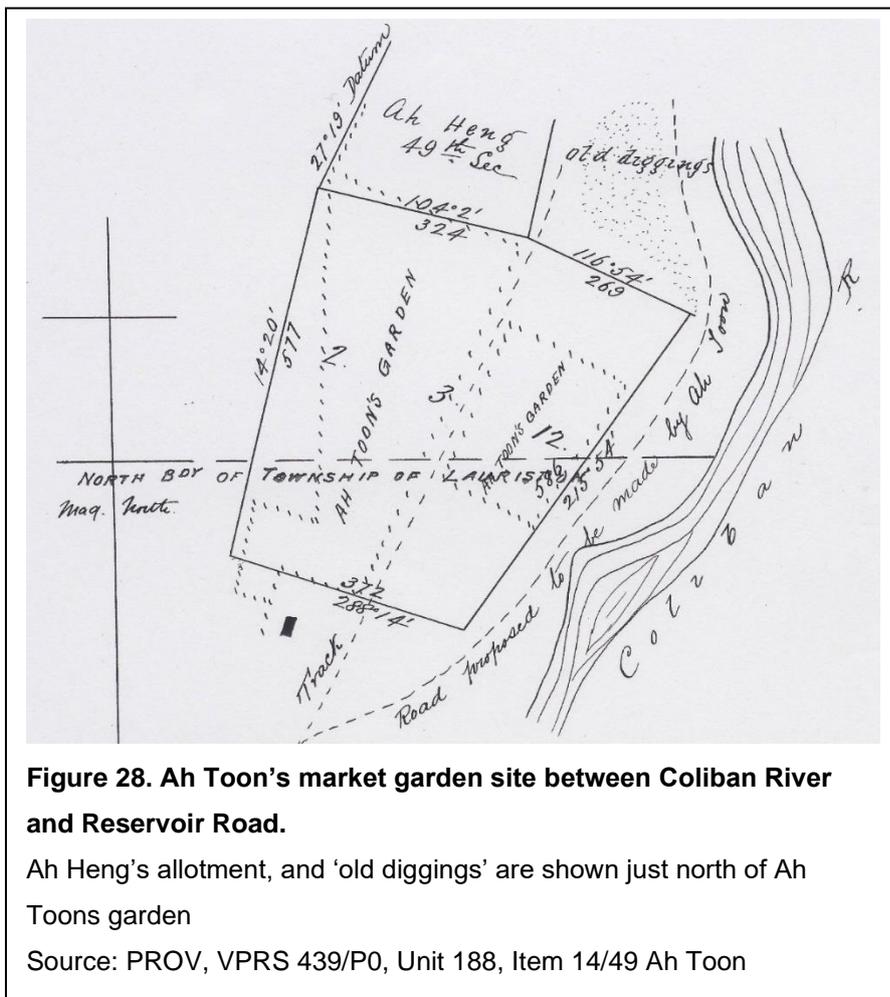


Figure 28. Ah Toon's market garden site between Coliban River and Reservoir Road.

Ah Heng's allotment, and 'old diggings' are shown just north of Ah Toons garden

Source: PROV, VPRS 439/P0, Unit 188, Item 14/49 Ah Toon

³⁴³ Walter. *Gold'n Greens*: 47.

³⁴⁴ Walter. *Gold'n Greens*: 49.

³⁴⁵ Walter. *Gold'n Greens*: 59.

³⁴⁶ "Lauriston." *Kyneton Observer*, 24 September 1889: 2.

³⁴⁷ Walter. *Gold'n Greens*: 59–60; "Lauriston." *Kyneton Guardian*, 7 December 1889: 3; "Lauriston." *Kyneton Guardian*, 26 February 1890: 3.

³⁴⁸ Walter. *Gold'n Greens*: 51–52, 62.

application in 1915 by Thomas Bell to occupy the site under licence was refused and the land was eventually 'excepted from occupation for residence or business under any miner's right or business license' in 1918.³⁴⁹

The problems associated with these garden sites on the Coliban River were compounded by the occasional floods which occurred after extreme weather events. Ah Toon's garden was severely damaged after a storm in January 1889, and as we saw above in the 1909 example (see under lease 6049, above), mining operations could be temporarily suspended after flood events. It was suggested in 1892 and

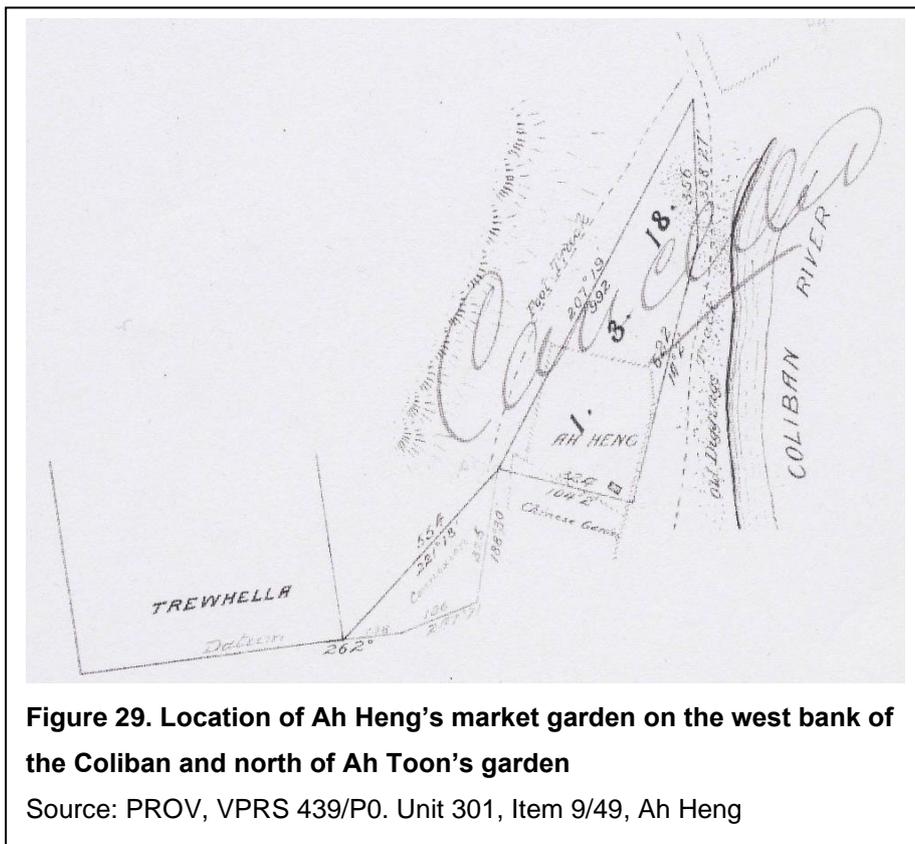


Figure 29. Location of Ah Heng's market garden on the west bank of the Coliban and north of Ah Toon's garden
Source: PROV, VPRS 439/P0. Unit 301, Item 9/49, Ah Heng

1893 that one source of pollution of the Coliban was the carcasses of poisoned rabbits.³⁵⁰ Malmsbury Reservoir caretaker, William Smyth reported to the Shire of Kyneton that same year that during his inspection of 'the Coliban River from the North Russell's mine to the Lauriston bridge ... [he] did not find anything to pollute the water'.³⁵¹ Concerns over the quality of the water in Malmsbury Reservoir grew from 1897 especially as a consequence of the Federation Drought.³⁵² Drummond resident Thomas St Patrick complained in January 1897 of the environmental and potential health impacts of dead livestock being discarded, or left, by farmers in the Kangaroo Creek, which runs into Malmsbury Reservoir.³⁵³ William Thomas was one such offender.³⁵⁴

³⁴⁹ Ibid.: 52.

³⁵⁰ "Lauriston." *Kyneton Observer*, 10 March 1892: 3; "Lauriston." *Kyneton Guardian*, 12 March 1892: 2; "Lauriston." *Kyneton Observer*, 21 March 1893: 2.

³⁵¹ "Kyneton Shire Council." *Kyneton Observer*, 5 April 1892: 3.

³⁵² Wikipedia contributors, "Federation Drought," *Wikipedia, The Free Encyclopedia*, https://en.wikipedia.org/w/index.php?title=Federation_Drought&oldid=898190490 (accessed 27 January 2020).

³⁵³ "Pollution of the Water Supply of Malmsbury and Bendigo." *Kyneton Guardian*, 14 January 1897: 2.

³⁵⁴ "Kyneton Shire Council." *Kyneton Observer*, 9 February 1897: 1.

In 1889 attention was given to the belief that cemeteries and townships adjoining the Malmsbury Reservoir were causing pollution to the water.³⁵⁵ This was led in part by a report to Malmsbury Borough Council in 1889 by the local medical practitioner, Dr Harry Main who attributed the Malmsbury cemetery as one of several causes of pollution, despite the fact that no specific cases of pollution had been found at Malmsbury.³⁵⁶ While Lauriston township was almost certainly a problem the Malmsbury cemetery would be questionable, and the supposed bad smell and taste to water at Taradale that Dr Main cited was attributed to a 'microscopical plant called protococcus' (algae) and it was noted that the water at Taradale was sourced from a separate basin.³⁵⁷ It was also pointed out on more than one occasion that the reservoir had originally been constructed for mining and irrigation, and not drinking, purposes.³⁵⁸ The same two causes of pollution were further mentioned in 1900.³⁵⁹

In 1904 Lauriston had a population of about 400 but had no sanitary pan system to deal with the human excrement and domestic wastes, and of course the Chinese gardens, who were the default sewerage system, were also accused of being a potential health hazard.³⁶⁰ The prevalence of typhoid in Bendigo in 1904 refocused attention on the source of most of their water - Malmsbury - and in September 1905 the human waste from Lauriston was found to be directly running into the Coliban River, as was the drainage from the Chinese gardens.³⁶¹ An inspection of Lauriston by Bendigo City councillors revealed that 'the river was the object aimed at when the drainage was made. Down the hillsides green, putrid "water" streaked towards the Coliban, and a streamlet of disgusting filth discoloured the water to a greenish-brown hue near the river's edge'.³⁶² The fencing in of the entire reservoir to control livestock was one suggested solution, as was the closing down of the Chinese gardens and 'the removal of the township of Lauriston outside the water area'.³⁶³ Bendigo's Councillor Curnow targeted the Malmsbury cemetery stating 'every day a certain amount of matter from human bodies must flow into the water, which was drunk by human beings'.³⁶⁴

³⁵⁵ "The Malmsbury Reservoir Water Condemned." *Kyneton Observer*, 16 July 1889: 2.

³⁵⁶ *Ibid.*; "The Malmsbury Reservoir Water." *Kyneton Observer*, 23 July 1889: 2.

³⁵⁷ "Malmsbury Reservoir Water." *Kyneton Guardian*, 24 August 1889: 3; "Taradale Water Supply." *Kyneton Guardian*, 28 August 1889: 2; "The Malmsbury Reservoir Water." *Kyneton Guardian*, 31 August 1889: 3.

³⁵⁸ "Malmsbury Reservoir Water." *Kyneton Guardian*, 24 August 1889: 3; "Coliban Water Supply." *Mount Alexander Mail*, 8 September 1910: 2.

³⁵⁹ *Kyneton Observer*, 31 May 1900: 2.

³⁶⁰ "Coliban Water at Bendigo." *Kyneton Guardian*, 26 January 1904: 2.

³⁶¹ "Some Remarkable Exaggerations." *Kyneton Guardian*, 9 September 1909: 3.

³⁶² *Ibid.*

³⁶³ "Malmsbury Reservoir." *Kyneton Guardian*, 26 September 1905: 2.

³⁶⁴ *Ibid.*

Rather than deal with the sanitation problems at Lauriston, action was taken in November 1905 to use the *Cemeteries Act* 1890 to enforce the discontinuance of burials at Malmsbury Cemetery except on the part which 'slopes away from the Malmsbury Reservoir in a north-easterly and easterly direction, and does not form any part of the natural catchment of the said Reservoir'.³⁶⁵ This remains in force today. Further calls for the removal of the Lauriston township were made in 1908, despite the introduction of the 'double pan system' by the Shire of Kyneton to manage the removal of nightsoil, and dispose of it 1.5 miles from the township, at a considerable burden to its rate payers.³⁶⁶

Still the finger pointing at Lauriston continued. Floods in 1909 made the water supply to Castlemaine and Chewton 'filthy'.³⁶⁷ In this case some of the blame was attributed to the practice of 'portions of water supply reserves being let for grazing purposes' and the resulting livestock manure which accumulated on the water's edge.³⁶⁸ While the proximity of the grazing and manure was certainly not the most desirable practice, and there was clearly a siltation issue, there was virtually no mention of the fate or role of bird, native animal, feral animal or fish excrement. We now know, of course, that only humans are carriers of typhoid fever.³⁶⁹ Filtration beds were considered by some a better financial investment than the Government buying up swathes of Lauriston land, especially as Tylden and Trentham were also accused of causing water pollution.³⁷⁰ The focus on Malmsbury Reservoir and Lauriston appears to have diverted attention from genuine investigation into why Bendigo had 'the highest typhoid fever rate in the State' in 1909 when Malmsbury, and Lauriston itself, did not and the fact that there were opportunities for the water to become polluted after it left Malmsbury.³⁷¹ Once correspondent to the *Bendigo Advertiser* in 1912 suggested 'there is about one thousand times more filth run into the Bendigo Creek here, and of a viler kind, than what is run into Stoney Creek [Trentham] or the Coliban River'.³⁷² With the burials at Malmsbury and nightsoil at Lauriston now under control, the incidence of the disease should have reduced if they were the cause. In 1918 water

³⁶⁵ "Discontinuance (With Qualification) of Burials in the Malmsbury Cemetery." *Victoria Government Gazette*, 15 November 1905: 4349.

³⁶⁶ "Lauriston's Removal Advocated." *Kyneton Guardian*, 18 February 1908: 2; "Protecting Malmsbury Reservoir." *Bendigo Independent*, 21 November 1907: 2; "Bendigo Water Supply." *Bendigo Advertiser*, 24 February 1908: 8; "Polluted Water Supply." *Bendigo Independent*, 30 March 1908: 1.

³⁶⁷ "Coliban Water Pollution." *Kyneton Guardian*, 18 September 1909: 2

³⁶⁸ *Ibid.*

³⁶⁹ Wikipedia contributors, "Typhoid fever," *Wikipedia, The Free Encyclopedia*, https://en.wikipedia.org/w/index.php?title=Typhoid_fever&oldid=937493557 (accessed 27 January 2020).

³⁷⁰ "Polluted Water Supply." *Bendigo Independent*, 30 March 1908: 1.

³⁷¹ "Typhoid Fever." *Herald* (Melbourne), 16 January 1909: 3; "Coliban Water Supply." *Mount Alexander Mail*, 8 September 1910: 2.

³⁷² "Coliban Water Pollution." *Bendigo Independent*, 29 January 1912: 6.

tests confirmed the 'bad water [at Bendigo] seemed to be confined to the lower levels supplied from Crusoe reservoir'.³⁷³

During all of this period, little attention, or mention, was made of the potential contribution made to the pollution, siltation or sedimentation of the Malmsbury Reservoir by the local mining industry. Perhaps it was the presence and regulation of the Reservoir itself which enforced tighter controls compared to other places. Following water tests in 1912 it was, however, suggested that 'the establishment of cyanide plants on the edge of the Coliban at Lauriston should be discontinued', not that this would have prevented typhoid fever.³⁷⁴ It would appear that the depression in local mining, the departure of men (and their families) to other goldfields and to World War One, all eventually worked towards closing down the much-maligned Lauriston township anyway, and the reduced incidence of typhoid was ultimately assisted by further developments in health and research. A typhoid vaccine, while initially used primarily by the military, had been in use since 1896, and the chlorination of water supplies 'made a significant impact on the number of individuals affected by the disease'.³⁷⁵

The effective management of water quality and its associated infrastructure remains a key consideration in the fate of the Lauriston Study Area.

Indigenous Occupation of the Site

No direct evidence of indigenous occupation on the surface of the Study Area was discovered by the author during any of the site visits. The extensive disturbance of the site since European occupation would require more intrusive archeological investigation to find any such sites. There are however numerous examples of unworked pieces of tachylite, a dense glass-like form of basalt in the Study Area which can be found among the river alluvium and adjoining the riverbanks (Figure 30). This rock, primarily sourced from south-east of Lauriston was widely used throughout the Coliban valley and beyond, by the indigenous occupants of the land for the purposes of making stone tools.³⁷⁶ There are however several known indigenous occupation sites adjoining Malmsbury township and the Reservoir so there is no reason to suspect the Study Area was excluded from indigenous occupation.³⁷⁷

³⁷³ "Bendigo Water Supply." *Kyneton Guardian*, 7 March 1918: 4.

³⁷⁴ "Coliban Water Pollution." *Bendigo Independent*, 29 January 1912: 6.

³⁷⁵ "Typhoid Vaccine." *Geelong Advertiser*, 21 February 1910: 2; Yolanda Smith. "Typhoid Fever History." News Medical Life Sciences, AZO Network. <https://www.news-medical.net/health/Typhoid-Fever-History.aspx> (accessed 27 January 2020).

³⁷⁶ Dr. Vincent Clark & Associates. *Malmsbury Common: Walking Track, Landscaping and Revegetation*. Heritage Victoria Project Number: 3812, Coburg: Dr Vincent Clark & Associates, 2011.

³⁷⁷ State Government of Victoria. "Aboriginal Victoria Online Map." Aboriginal Cultural Heritage Register and Information System (ACHRIS), <https://achris.vic.gov.au/#/onlinemap> (accessed 29 January 2020).



Figure 30. Pieces of tachylite observed within or adjoining the Study Area.

The weathered mid-gray outer surface reveals the almost-black glass-like interior when broken. Except for one, all have been recently damaged by machinery (e.g. cars) on in the case of the top right, damaged during gorse grooming. Bottom photos taken north of the Study Area.
 Source: All photos courtesy of John Walter except top left by the author. June 2019

Since a known source of tachylite lies within the Coliban River valley, it is probable both millennia of erosion, and more recent human intervention are responsible for the movement of this material to sites at Lauriston and Malmsbury. Stone flakes found well above the natural pre-reservoir flood levels, such as those found in the nearby Lauriston Nature Conservation Reserve, would undoubtedly have been transported, and created, by humans, but the raw unfractured stone found in river gravel deposits within the flood plains at Malmsbury Reservoir, and further north at Ellis Falls, suggests river waters were complicit in their distribution.³⁷⁸

North of the Study Area, on the west bank of the Coliban, are large deposits of river alluvium through which more examples of unworked tachylite, and many flakes from tool making, can be found scattered (Figure 31). This area is currently at risk of damage by vehicles accessing the river further downstream.

³⁷⁸ Based on observations from both the author and John Walter during numerous walks in the Malmsbury and Lauriston district.



Figure 31. Scatter of tachylite pieces and flakes found north-west of the Study Area and adjoining the Coliban River.

Photo courtesy of John Walter, June 2019

Remnant Mining Infrastructure

Site inspections of the Study Area were made by the author and MDLG president, John Walter, in June and September 2019 after the grooming of gorse and blackberry had been completed. Photographs were taken, GPS readings taken and observations recorded. A literature search was then conducted to explain the structures and features observed and to allow the above site history to be constructed.

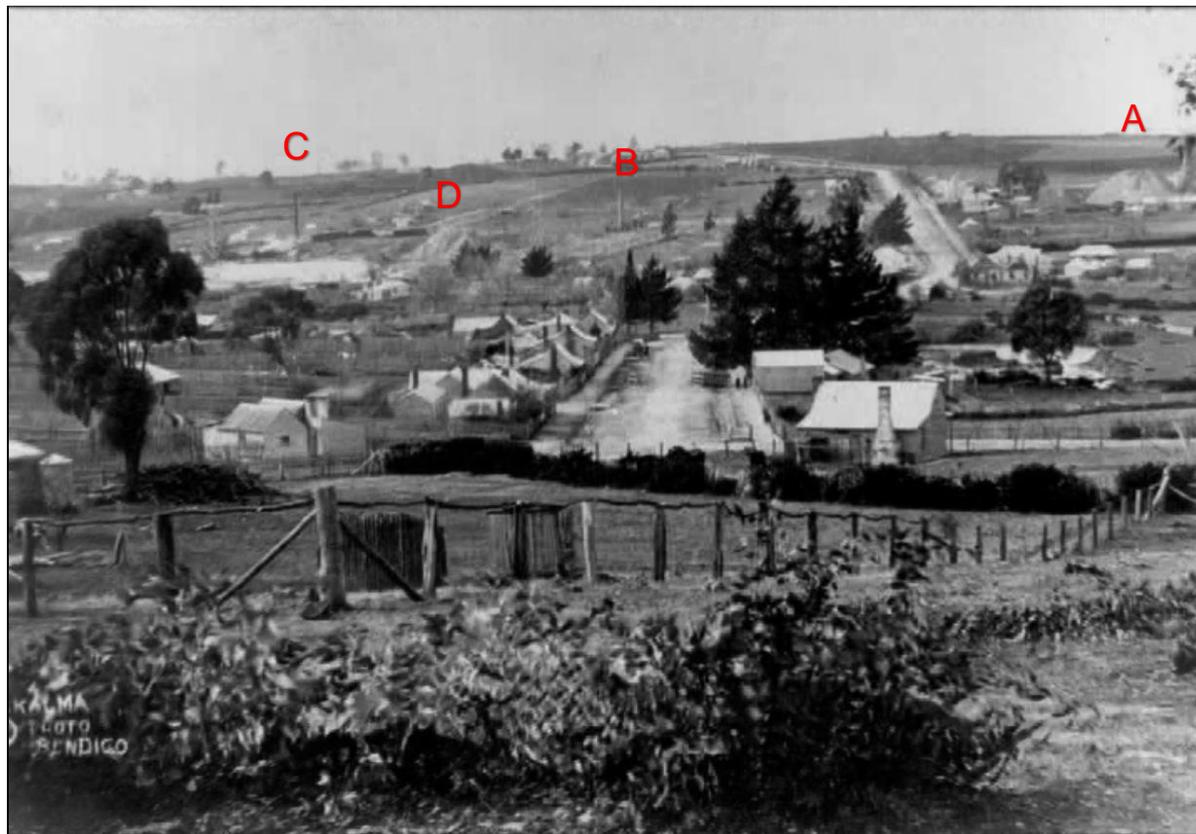


Figure 32. View of Lauriston looking east from the west side of the Coliban River

The mullock heap of the No.1 South Russell's (A) mine can be seen on the far right. The chimney of the South Russell's Mine (B) is just to the left of the cluster of pine trees, and the chimney of the Russell's Amalgamated No. 1 shaft (C) is further to the left. The source of the mullock/tailings heap (D) has not been identified. Circa 1900

Source: Malmsbury Historical Society Inc. Collection, Catalogue Number 3LND0007R

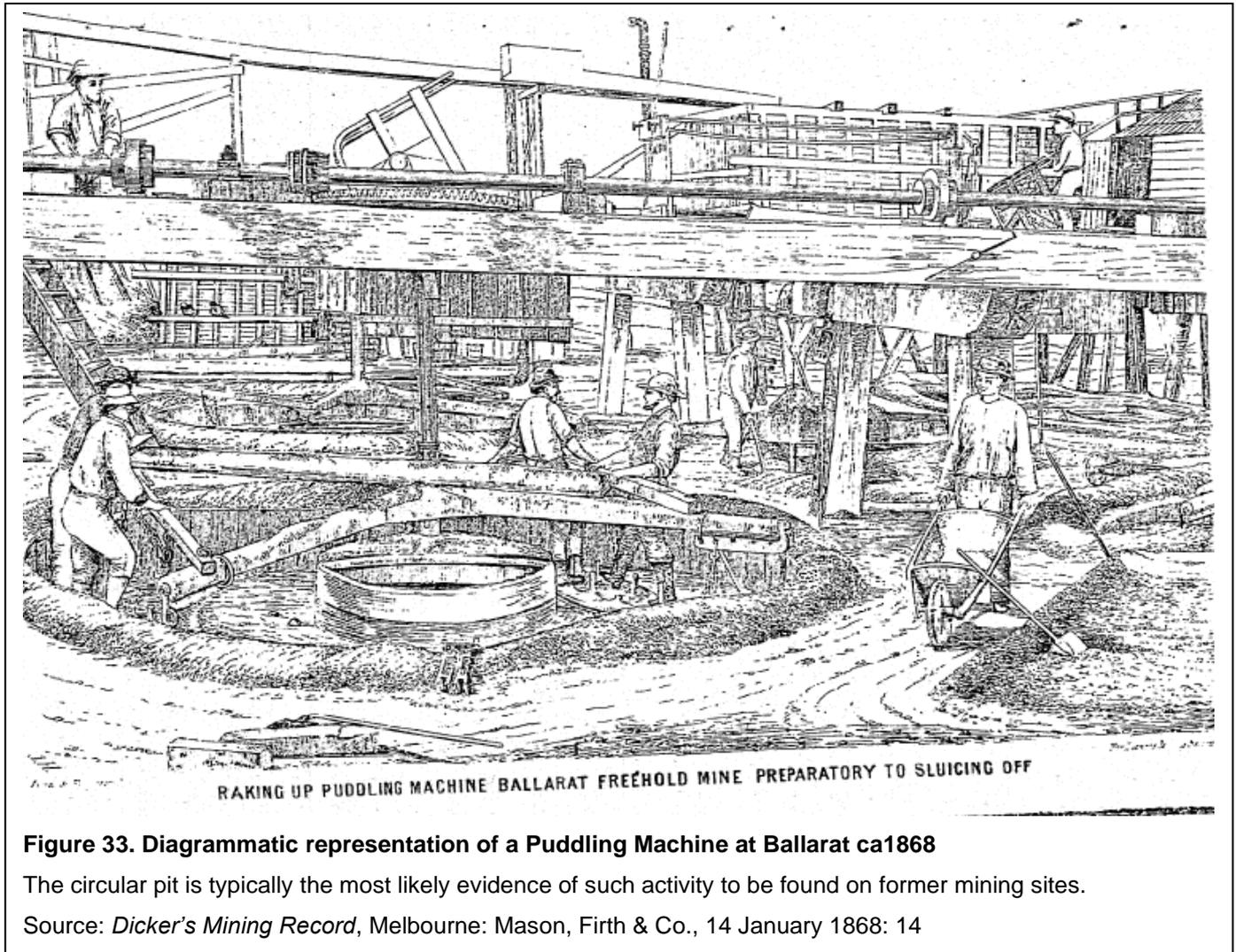
East Bank of the Coliban – Russell's Reef No1 Shaft area

A historic view of this site, taken about 1910, can be seen in Figure 32.³⁷⁹ The Old Sand Heap in the bottom left of the area covered by Tailings licence number 3231 from 1959 (Figure 24) appears to correlate with the unidentified heap D in Figure 32.

No obvious evidence of circular basins which would signify sites of puddling machines (Figures 33 and 34), or the early water race of Russell's Reef were found on the site. Isolated blocks of bluestone

³⁷⁹ A photograph of Lauriston similar to Figure 27 above appeared in the *Bendigo Advertiser* in 1911. Several other historical photos in this report, some taken by Kalma Studios of Bendigo, date to about the same period and may have been taken at this time. See "The Coliban Water Supply." *Bendigo Advertiser* 9 March 1911: 2.

and red bricks of various ages and modes of manufacture were scattered on the site (Figure 35).³⁸⁰ Remnants of actual machinery were limited to small pieces of piping or damaged metal objects. A section of cast iron pipe (Figure 36), typical of the piping used to convey water out of mine shafts, lies at the southern end of the site and a severely damaged rivetted metal object of undetermined nature, but possibly a water tank, lies north of the No. 1 shaft area (Figure 37).³⁸¹



³⁸⁰ Iain Stuart. "The Analysis of Bricks from Archaeological Sites in Australia." *Australian Historical Archaeology*, 23 (2005): 84.

³⁸¹ See: G. J. Drew. "Reconstruction of Morphetts enginehouse, Burra" in Jonathan Selby (ed.) *South Australia's Mining Heritage*. Special Publication No. 7, Adelaide: Department of Mines and Industry South Australia, 1987: Figure 5.



Figure 34. Field evidence of former puddling machine site

Source: "Remains of a puddling machine along the M114 Track, Daisy Hill." *Puddling machines of the Victorian Goldfields*. Goldfields Guide: Exploring the Victorian Goldfields.

<https://www.goldfieldsguide.com.au/blog/15/puddling-machines-of-the-victorian-goldfields>

(accessed 3 February 2020)



Figure 35. Bluestone block and bricks of various types representative of building materials scattered across the site.

A: Bluestone block dressed on one side and with splitting marks, suggesting it was once part of a wall.

B: Broken handmade red brick with "hack mark". C: Red brick with "Frog" (indent), possibly machine made.

D: Red "Northcote" brick with frog, probably machine made. June 2019 and February 2020.



Figure 36. Section of cast-iron pipe located south of the machinery beds.

This is similar to pipes used to convey water out of mine shafts by pumps. June 2019



Figure 37. Severely damaged large metal object with riveted edge joints.

Found slightly north of machinery bed area at No. 1 shaft site, possibly a water tank.

June 2019

Figure 38 shows an enlargement of Planet Gold's 1968 plan of the site. This plan does not record any machinery bed sites but does show the location of the mullock heaps, battery sands and the South Russell's and Russell's Reef Amalgamated No. 1 shafts. Mining archaeologist David Bannear described in 1993 the main features of this part of the Study Area, including the machinery beds, as follows:

Site 12B. Russell's Reef No 1 Co. ... Mining machinery site. Large U-shaped engine bed whose fabric suggests several different construction dates; side arms constructed of concrete, front (connecting) wall (hand-made) red bricks. The front of the engine bed has also been extended by the addition of a foundation block made up of a mixture of mortar and red brick bats. The modified engine bed measures 19 ft x 11 ft and stands at least 5 ft high. All the engine bolts have been ripped out of the main part of the bed. There are some 1-1/2 inch bolts protruding from the addition to the front of the bed.

Running parallel to the U-shaped engine bed, 2 ft to the south, is a small section of blue-stone wall. Running parallel to the U-shaped engine bed, 3 ft to the north, are the fragmented remains of a brick engine bed which measures 18 ft x 4-1/2 ft, and stands approx. 5 ft high. The engine bed has 1 inch mounting bolts. The bricks are hand-made and set in a concrete mortar. Running parallel to this bed, 7 ft further to the north, is another similar sized brick engine bed. This bed, although badly obscured by vegetation, appears to be constructed of machine-made red bricks.

Tailings Dump. Below the machinery site, 30 m to the south, is a tailings dump. Area surrounding the machinery site is so obscured by vegetation that it is was impossible to locate any battery footings.

Adit. 5 m from the south-east corner of the U-shaped engine bed is a collapsed adit.³⁸²

³⁸² David Bannear. *Historic Mining Sites in the Taradale Mining Division: Part Two: Site Gazetteer*. North Central Goldfields Project. Department of Conservation and Natural Resources, North West Area, 1993: 86.

Bannear makes no direct mention of a mullock heap (only a tailings dump) which suggests the former, shown on the 1968 plan, had been removed prior to 1993 [see Figures 48 and 59]. In addition to this description, Figures 39 and 40 show a historical perspective of the site. Figure 39 shows a small dam on the south side of the site, and two buildings located to the right (east) of the poppet legs probably housed the machinery beds. Figures 41, 42 and 43 show the ruins of the engine beds which are located west of Bennie's Lane and above what is now river flats (in Figure 46) which once housed the large mullock heap seen in Figure 40. Figure 44 shows the collapsed adit.

The bricks used in the construction of the engine bed walls vary in nature from early handmade bricks, similar in nature to those which can be found in historic buildings in Malmsbury, and more modern bricks, as shown in Figure 35.³⁸³ The older brick sections are constructed using stretcher brick bond, while the adjoining wall (Figure 41-B) is constructed using English bond.³⁸⁴ Any sections of walls containing more than one type of brick could, of course, have been constructed with recycled bricks, as opposed to new, contemporary bricks.

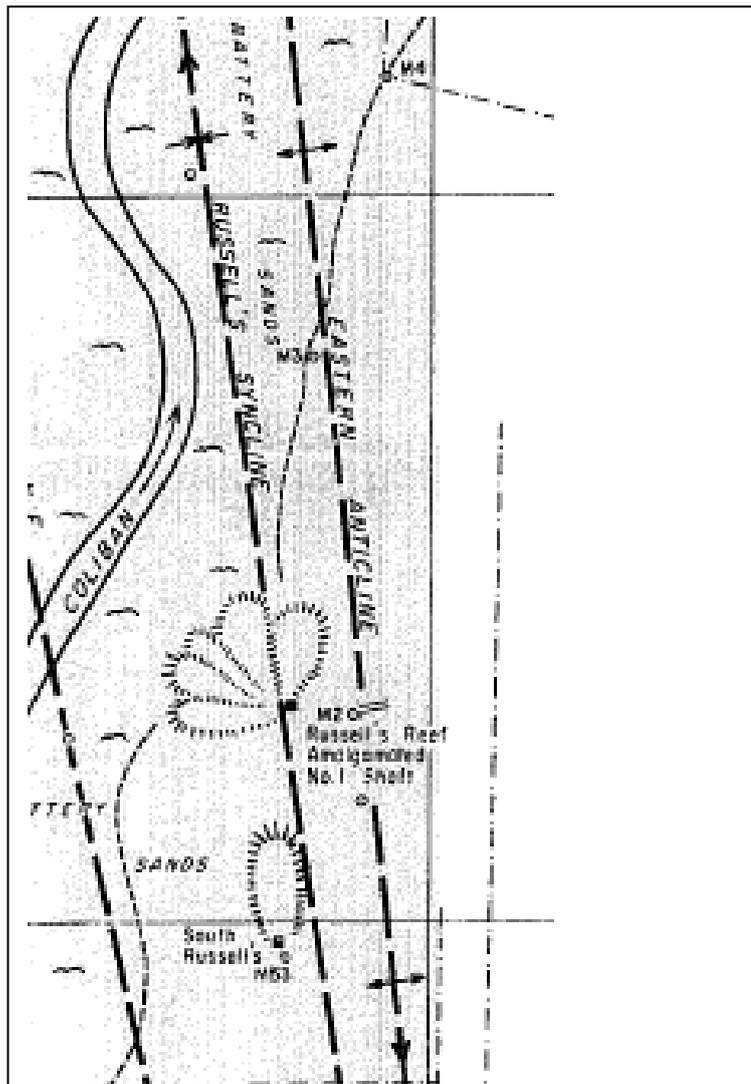


Figure 38. Highlight of 1968 Mining Map showing the Russell's Reef No. 1 shaft site plan.

The location of the shafts, mullock and the battery sands are shown, but not machinery beds.

Source: Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 30 June 1968.* Earth Resources Division Expired Exploration Reports File, GSV Catalogue Record #31365 (1968): Labelled Figure 1, Sheets 1 and 2 (relabelled 'Figure 14' in report)

³⁸³ Susan Walter. "What Brick is That?" *Malmsbury Historical Society Newsletter*, July 2019: 1–6.

³⁸⁴ Forterra. "Brick bond patterns." Forterra Building Products Ltd. <https://www.forterra.co.uk/resources/design-advice/brickwork-details/brick-bond-patterns> (accessed 4 February 2020).

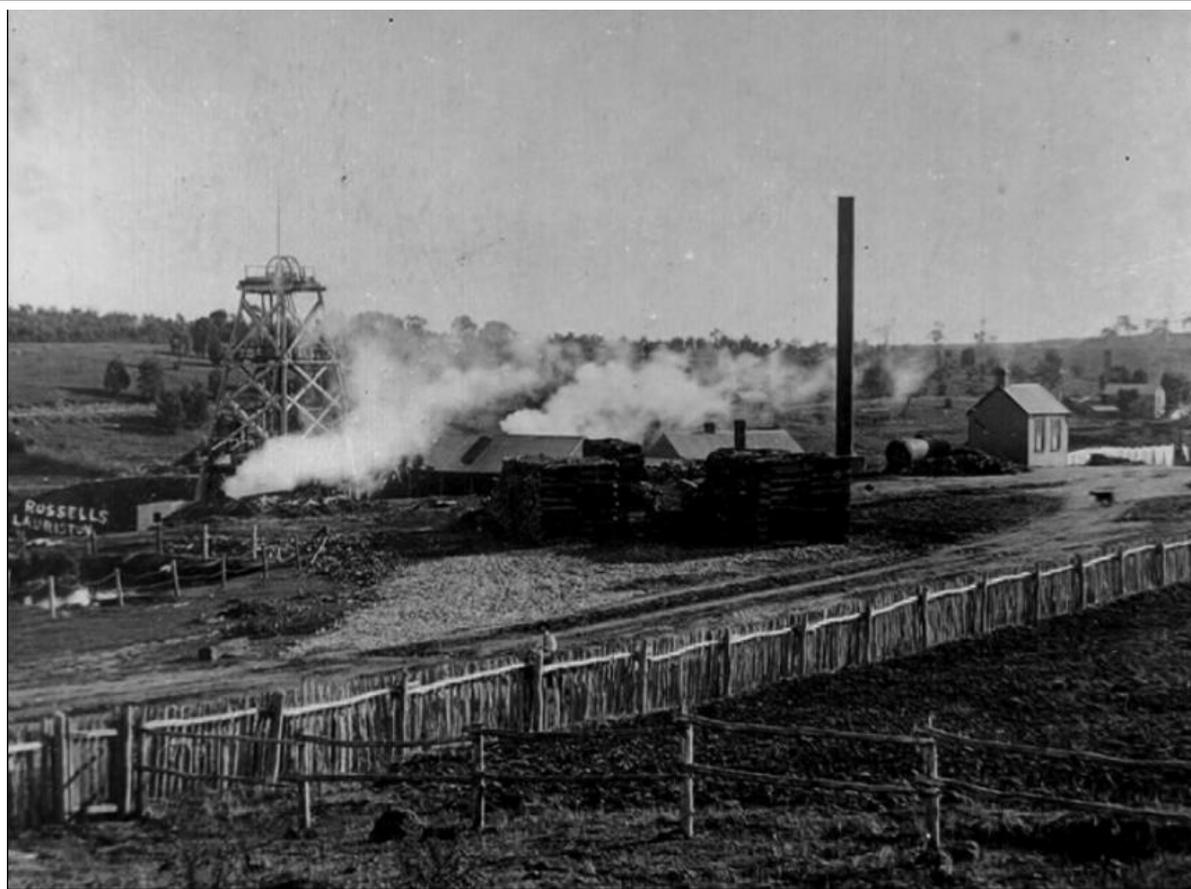


Figure 39. View of the mining infrastructure of the Russell's Reef Amalgamated No. 1 shaft. Taken from just east of Bennie's Lane and looking roughly north-west, it shows the poppet legs, chimney and a stack of firewood. A boiler can be seen to the right of the chimney and the buildings in the distance on the far right are associated with the No. 2 shaft. Circa 1900.
Source: Malmsbury Historical Society Inc. Collection, Catalogue Number 3LND0002R

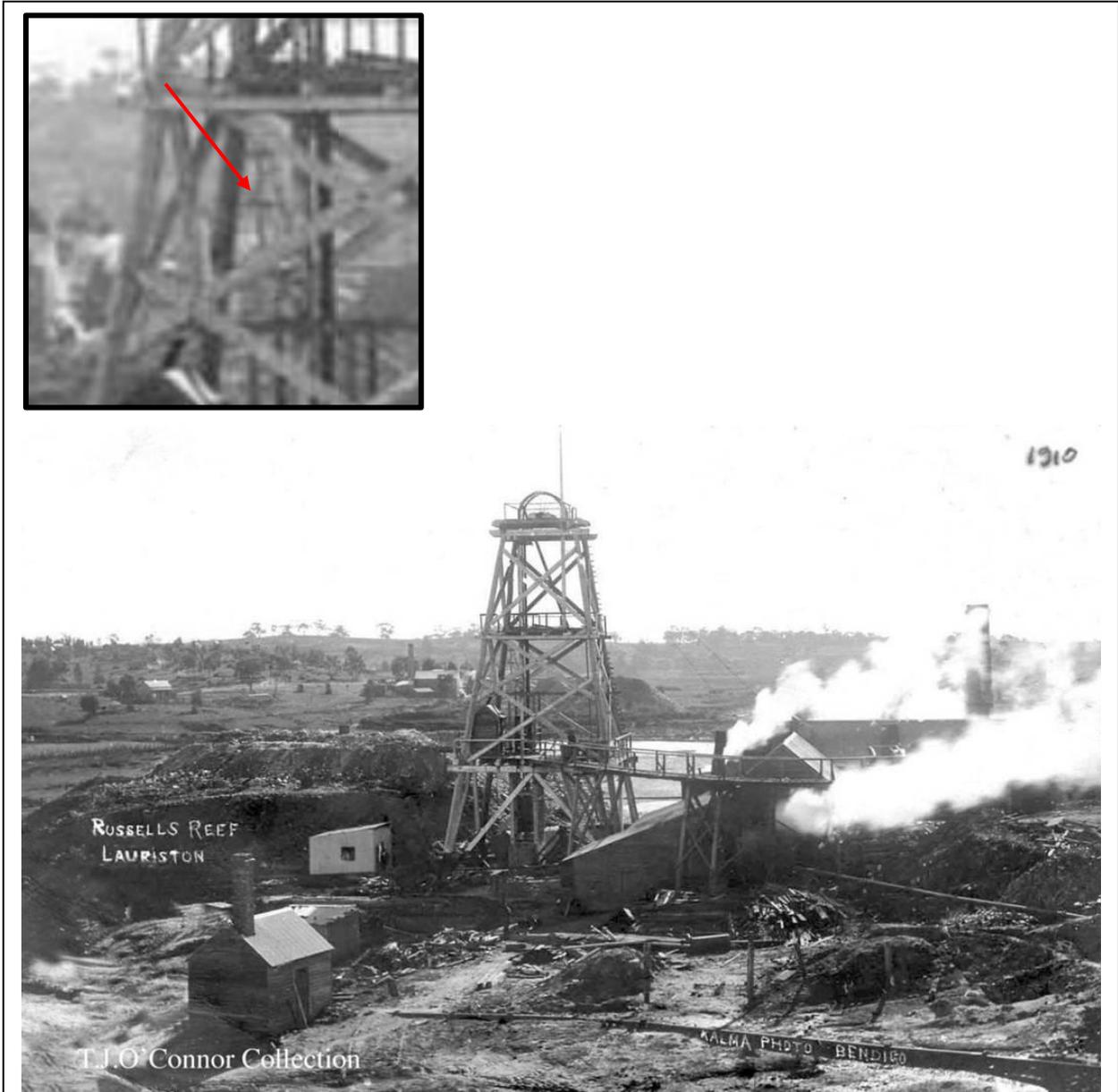


Figure 40. Photo of Russell's Reef Amalgamated Mine No. 1 shaft in 1910.

Looking slightly more northwards than the previous photo, the large heap of the mine's mullock adjoining the poppet legs is obvious. In the background is the infrastructure and mullock of the No. 2 shaft of the company, however the poppet legs (arrowed in inset) are mostly obscured by the No. 1 poppet legs.

Source: Terry J O'Connor. *Lauriston Lamented* (DVD) (n.d., ca 2006) including images from Kalma Studios, Bendigo ca 1900-1910



Figure 41. The concrete U-shaped engine bed (A) and adjoining brick wall (B)

Photos looking west, from the end nearest to Bunnies Lane, at Russell's Reef Amalgamated No. 1 Shaft.

June 2019



Figure 42. The adjoining bluestone wall on the south side of the engine bed
Structures associated with Russell's Reef Amalgamated No. 1 Shaft. June 2019



Figure 43. View of the brick wall on the north side of the Russell's Reef Amalgamated No. 1 shaft engine bed

Looking southwards, the section which runs parallel to the engine bed is on the left and the brick extension to the front of the engine bed is on the right. June 2019



Figure 44. The collapsed adit adjoining the engine bed of Russell's Amalgamated No. 1 shaft
Looking eastwards, Bennies lane is beyond and parallel to the horizon. June 2019



Figure 45. View from the river flats looking east.

The engine beds of Russell's Amalgamated No. 1 shaft can be seen amongst the trees just below the horizon. The foreground shows the area below the embankment where the mullock/tailings heap once stood. June 2019



Figure 46. River flats below the machinery embankment showing the sludge accumulation

Looking roughly west, the willows trees define the banks of the Coliban River. The light grey sludge-like material is very fine sandy, almost clay material with poor drainage and limited vegetation. June 2019

West Bank – Russell’s Reef Amalgamated No. 2 Shaft

Historic photographs of mining on the west bank of the Coliban River are rare but some detail can be seen in the background of Figure 40. Planet Gold’s 1968 plan of the part of the Study Area depicts the No. 2 shaft, the river ford, battery sands, a dam on the west bank and the cyanide plant on the east side of the river (Figure 47). David Bannear described this site in 1993 as:

Site 12D. Russells Reef Amalgamated--No 2 shaft ...

Machinery site. Bulldozed remains of a once large mullock heap, and a filled, but slightly collapsed, shaft. This shaft appears to be on Crown Land, next to a boundary fence belonging to a block of private land. Just inside the boundary fence, is a large clump of mature blackberries. Protruding from the south-east corner of the blackberries is what appears to be the base of a brick chimney stack. The brickwork is approximately 5 ft square and stands around 6 ft. The bricks are machine-made and are set in concrete mortar.

Tailings Dump and cyanide vats. On the opposite side of the Coliban River, to the No 2 shaft, is a dump of tailings and the remains of some cyanide vats.³⁸⁵

³⁸⁵ David Bannear. *Historic Mining Sites in the Taradale Mining Division: Part Two: Site Gazetteer*: 87.

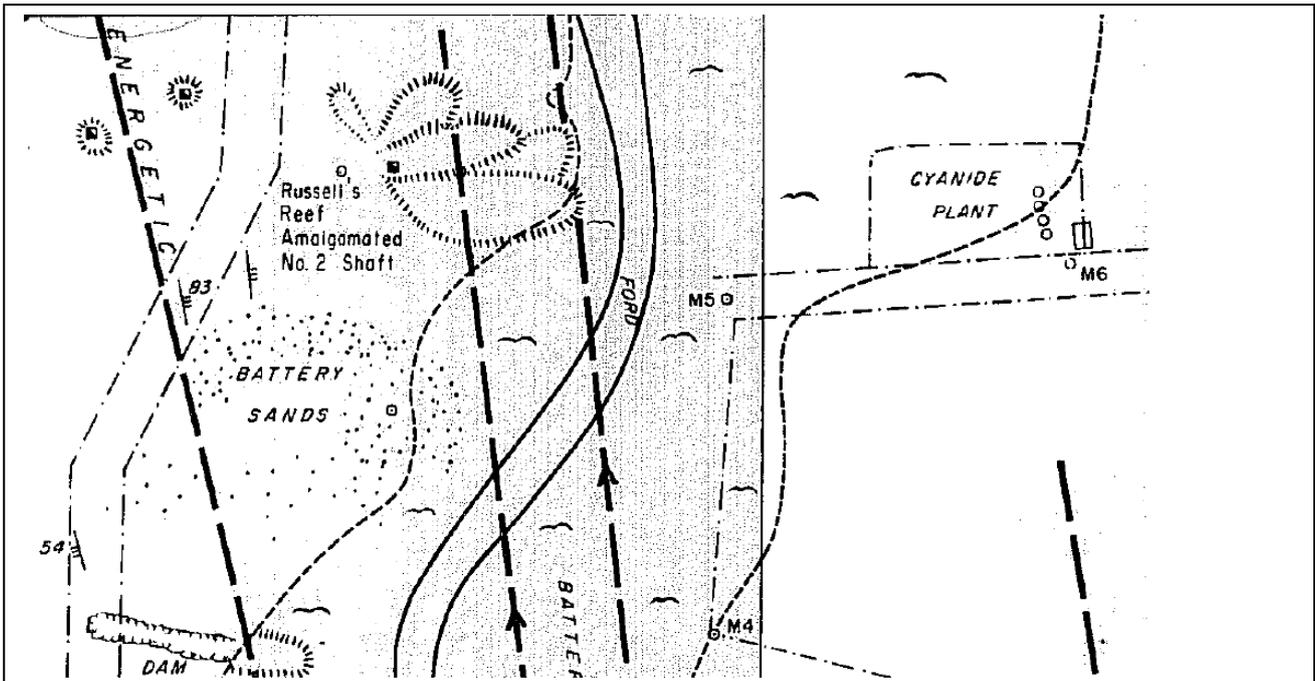


Figure 47. Site plan from 1968 showing the remnant mining infrastructure.

A large mullock heap is shown, as are battery sands, a dam, the river ford and the cyanide plant. No machinery beds are shown.

Source: Earth Resources: Geological Survey of Victoria Online Catalogue. *Planet Mining Co Pty Ltd. EL 17 and EL 22. Quarterly report for period ending 30 June 1968.* Earth Resources Division Expired Exploration Reports File, GSV Catalogue Record #31365 (1968): Labelled Figure 1, Sheets 1 and 2 (relabelled 'Figure 14' in report)

The mullock heap, still evident in a 1972 aerial photograph of the district (Figure 48) had clearly been removed by 1993. The clarity of the 1972 image is too poor to determine if the light areas on the east half of the Study Area are also mullock heaps, as opposed to tailings dumps, but it is possible all these mullock heaps were intact at this time.

The Russell's Reef Amalgamated No. 2 shaft remains partially filled. The weed-obscured brick structure near the shaft that Bannear identified in 1993 may be a chimney stack in combination with other machinery structures (Figure 49 and Figure 50). It, too, is constructed with an English bond with several bricks being embossed with "Northcote" in the frog and some upper edges include curved coping bricks. The surrounding area is also littered with the bricks shown in Figure 35, but there are also much more recent (e.g. Selkirk) bricks near the remnants of the mullock heap near the shaft, resulting from rubbish dumping. Adjoining the machinery bed (north-west corner) is the remains of a metal frame (possibly some sort of door or hatch) firmly embedded in the ground. A small piece of broken tachylite was found near these beds.



Figure 48. Portion of 1972 aerial photograph of Lauriston showing the Study Area.

Source: DELWP, Aerial Photography Archive, Project 1936, Torquay/Lorne, Run 7, Film 2573, Frame 144, February 1972



Figure 49. Two views of the red brick structure recorded by Bannear in 1993

There are clearly two or more portions to the brick work (A), as opposed to a single square structure, suggesting it was a series of engine beds with an associated chimney stack. There are bolts and pieces of timber (B) still imbedded in the brick work. Several of the bricks are embossed with “Northcote” and some of the upper edges have curved coping bricks. February 2020 and June 2019



Figure 50. Detail of Figure 40 showing the western part of the Study Area.

A house is visible (red arrow) as is Reservoir Road (green arrow) running behind it and the mining site. At the mine (left of the poppet legs in the foreground) are buildings and a chimney (yellow arrow) and the mullock heap is on the far right (blue arrow).

Source: Terry J O'Connor. *Lauriston Lamented* (DVD) (n.d., ca 2006) including images from Kalma Studios, Bendigo ca 1900-1910

A noticeable rocky embankment or levee encloses the shaft area on the south and east of the site. This may simply have been the remnant of the large mullock heap, or a means of containing mining waste. Lower than this, and on the southern flanks of the levee is a low-lying swampy area, also enclosed by a levee on the north and east edges, suggestive of a sludge dam (Figure 51). The ‘Fresh Slum’ area in Figure 24 appears to correlate to this portion of the Study Area. This holds water in wet weather and prevents run off into the river. The old river ford is visible from the south-east corner of this swampy area. Above this levee, and running south west, is a former access road which leads to an old gateway in the boundary fence on Reservoir Road.³⁸⁶ South east of this old track is what

³⁸⁶ Note, this fence was replaced in February 2020.

appears to be a former house site, with pieces of brick, bluestone and wild daffodils. Some parts of this site have been recently disturbed, possibly by bottle collectors.³⁸⁷ South of this is a drainage line and then an east-west fence line, south of which, and close to Reservoir Road, is a concrete slab possibly associated with a former building.



Figure 51. The low-lying area on the south-east side of Russell's Reef Amalgamated No. 2 shaft, looking north-east

The levee bank runs roughly north-south in front of the willows lining the river, then westwards at the far left of the picture. June 2019

Further south is a longer east-west running mullock heap, low in height and probably the feature labelled “Dam” in Figure 47. This is associated with the concrete machinery beds and the battery site identified by Bannear (Figure 52 and Figure 53) and is probably the site of the Government Battery given the nature of the site. Bannear’s 1993 description of this site is:

Site 12C. 5-head battery (Most probably the remains of the Lauriston Government Battery ...)
Battery. Remains of a small loading ramp, below which are three well preserved wooden stamper blocks and some bedlogs. Below the stamper footings are a series of well preserved small concrete machinery beds. Associated with the machinery foundations, almost totally obscured by gorse bushes, is a small portable steam boiler.

Tailings. In the gully below the battery site is a small tailings dump.³⁸⁸

³⁸⁷ Observations of author, 15 June 2019.

³⁸⁸ David Bannear. *Historic Mining Sites in the Taradale Mining Division: Part Two: Site Gazetteer*: 86.

Scattered bricks, some labelled “Northcote” can be found at the site. West of the line of mullock is a cutting into the Reservoir Road embankment suggestive of a former collapsed adit or machinery/structure being set into the embankment designed to be accessed above from the road (Figure 54). The small portable steam boiler recorded by Bannear is no longer located on this site. Another east-west running fence, with a small but damaged gate in it, demarks the northern boundary of Ah Heng’s garden site. Two north-south running levee banks, one on the east and one on the west side of the land between Reservoir Road and the Coliban River, appears to be associated with Ah Heng’s garden site.



Figure 52. The concrete machinery bed with tailings dump behind it.

Looking south towards Ah Heng’s garden site. The rising embankment on the right of the photo runs up to Reservoir Road and there is a cutting into the road embankment. June 2019



Figure 53. The wooden stamper blocks in proximity to the machinery bed, as identified by Bannear in 1993.

Heavily-groomed blackberry and gorse partly obscures the features. The mullock heap or dam can be seen in the far right of the photo. June 2019



Figure 54. The cutting adjoining the concrete machinery bed and below Reservoir Road

June 2019

The Cyaniding Vats

As reported by Bannear in 1993, surviving cyanide vats are visible on private land (Portion 296 Lauriston Parish) adjoining the north-east part of the Study Area (Figure 55). As the lease areas covered by Tailings Licences 954, 2918, 3081 and 3231 (See Figure 23 and Figure 24) do not extend to this site, they were probably part of the Wyndham complex of mining leases (See Figure 18). A small dam is just downhill from these vats (Figure 56). Possibly associated with this complex is another embankment, closer to the river, which is separated from the cyaniding area by a boundary fence demarking private from Crown land. Being rather shallow in nature, this embankment may have been for controlling sludge from mining activity. The remains of a pump located on the east bank of the Coliban River may also be associated with this mining complex (Figure 57)

While not specifically within the Study Area, these vats give important context to the local mining history and heritage of Lauriston.



Figure 55. Remains of cyaniding vats adjoining the Study Area

Located high on a slope above the river, the circular metal vats are still filled with sand. A worked Tachylite flake was found on a nearby pathway.

Photo courtesy of John Walter, September 2019

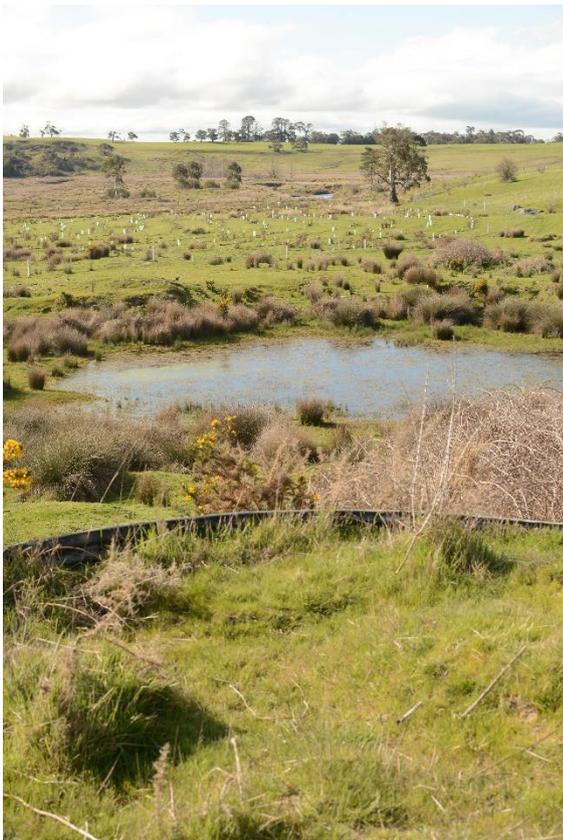


Figure 56. View of embankment wall downhill of cyanide vats

Taken from one of the vats, the photo also shows the revegetation area on the east bank of the Coliban

Photo courtesy of John Walter, September 2019



Figure 57. Remains of a pump on the east bank of the Coliban and west of the cyanide plant

No documented association with mining activity has been found. September 2019

Heritage Status of the Study Area

Local Heritage

None of the mining sites listed in this report appear on the Schedule to the Heritage Overlay for Macedon Ranges Shire Council (MRSC).³⁸⁹ A document produced by MRSC in 2012 suggested 'Cornish boiler, Mining Remains and Terracing' on Reservoir Road, as one of several 'places of potential heritage significance' at Lauriston that had no heritage protection.³⁹⁰ This document cites the 1991 Shire of Kyneton Heritage Study which described the site on Reservoir Road as:

This portable Cornish boiler is apparently the last surviving such machine in the Shire of Kyneton and thus of special historic and technological interest. The survival of this boiler on a mining site which survives untouched results in a site of special importance. The only other surviving mining sites are in Premier Mine Road (with equipment but partly destroyed in 1990) and east of the Coliban River north of Malmsbury. The origins of the terracing are unknown, but possibly they were to grow food, and local repute ascribes them to Chinese miners.³⁹¹

The boiler in question (Figure 58) is the one identified by Banner in 1993.

It has also been revealed during the compilation of this report that some of the willow trees adjoining the Coliban River at Lauriston are listed on the MRSC heritage overlay schedule and have tree control limitations placed on them.

State Heritage

There are four relevant sites recorded on the Victorian Heritage Inventory. These are shown in Table 3 and include the site codes used by Bannear in 1993. No descriptive details are freely available online from the Victorian Heritage database for these sites other than basic details including their name, location, and inventory number. Thus it is impossible to know what is covered other than what Bannear described in 1993. As noted in Bannear in 1993, the mullock heap recorded in 1968 by Planet Mining had already been removed (Figure 59). The Cornish boiler from Site 12B was probably included.

³⁸⁹ Macedon Ranges Planning Scheme. Schedule to Clause 43.01 Heritage Overlay. https://planning-schemes.delwp.vic.gov.au/schemes/macedonranges/ordinance/43_01s_macr.pdf (accessed 17 January 2020).

³⁹⁰ Anon. *Places of Potential Heritage Significance with no current heritage protection*. Macedon Ranges Shire Council, 22 March 2012: 12 (document presented at Macedon Ranges Heritage Council meeting, Malmsbury Historical Society Collection).

³⁹¹ David Bick, Phyllis Murphy, John Patrick and Susan Priestley. *Shire of Kyneton Conservation (Heritage) Study Volumes 1 2 & 3*, Prepared for the Heritage Branch, Ministry for Planning and Environment, 1991: 851–851b.



Figure 58. The portable Cornish Boiler *in situ* 1991.

Also reported by Bannear in 1993, it has since been removed from the site.

Source: Bick et al. *Shire of Kyneton Conservation (Heritage) Study Volumes 1 2 & 3*, 1991: 851

Table 3. Relevant Lauriston sites listed in Victorian Heritage Database.³⁹²

Name	Victorian Heritage Inventory Number	Bannear's 1993 Site Code
No.1 South Russell's No.1	H7723-0437	12A
Russell's Reef Co. No.1 Shaft	H7723-0438	12B
Government Battery	H7723-0439	12C
Russell's Reef Amalgamated No.2 Shaft	H7723-0440	12D

³⁹² Heritage Council Victoria. "Victorian Heritage Database." <https://vhd.heritagecouncil.vic.gov.au/> (accessed 17 January 2020) - using "Lauriston" as the search term and narrowing search results (using "Location") to Macedon Ranges Shire Council; David Bannear. *Historic Mining Sites in the Taradale Mining Division*: 78–89.



Figure 59. Highlight of the remains or the mullock heap visible in Figure 48, on the west side of the Coliban

Source: Google Earth Pro. 2019. *Lauriston*. Lat: -37.238601° Long: 144.375851° elevation 475m, viewed 17 September 2019. <http://www.google.com/earth/index.html>

Environmental Considerations for Future Use

As explained above, there are large tracts of the Study Area which contain battery sands from the processing of mine tailings, and potentially from the cyaniding process (Figure 60 and Figure 61). These deposits were far more obvious in the 1972 aerial photograph in Figure 48. Being an organic compound, it is unlikely that there is any residual cyanide present at or adjoining the site. There are however other potential contaminants which may have an impact on the future use of the Study Area. Chemistry lecturer and science historian, Ian Rae, has written an informative account of the strong association between gold mining and arsenic 'bequeathed to modern-day Victorians by their predecessors in the quest for gold'.³⁹³

³⁹³ Ian Rae. "Gold and Arsenic in Victoria's Mining History." *Victorian Historical Journal*, Vol. 72, No. 102, 2001: 165.



Figure 60. Highlight of the northern-most battery sand area on the east side of the Coliban river, 2004

Source: Google Earth Pro. 2019. *Lauriston*. Lat: -37.238601° Long: 144.375851° elevation 475m, image date 23 October 2004, viewed 17 September 2019. <http://www.google.com/earth/index.html>.



Figure 61. Highlight of the central mullock or sludge area on the east side of the Coliban river, 2004

Source: Google Earth Pro. 2019. *Lauriston*. Lat: -37.238601° Long: 144.375851° elevation 475m, image date 23 October 2004, viewed 17 September 2019. <http://www.google.com/earth/index.html>.

Current research on the long-term environmental and health implications of arsenic contamination of historic mining sites shows the subject is a complex one. While some Victorian historic mining sites have high levels of arsenic, often a low proportion of it is bioavailable or mobile, much of it remaining in a stable mineral form on or within mineral particles.³⁹⁴ This proportion may change as the mine wastes become eroded (such as during flood events) or oxidised as soil pH varies. The particle size of the mine wastes themselves influence the bioavailability and risk of inhalation of arsenic, with the small particles being the most harmful, and also the most likely to move via wind and water.³⁹⁵ The management of vegetation on old mining sites by fire has also been demonstrated to pose an increased risk of spread by ash or water of contaminants such as arsenic.³⁹⁶ The means of creating the mineral particles can also influence the degree of risk. In the case of the samples from central Victoria tested by geoscientist Rachael Martin, calcine sand (waste generated through the roasting and crushing process) from Bendigo had a significantly higher total arsenic content than battery sands.³⁹⁷ Arsenopyrite (a form of iron pyrites contaminated with arsenic) is highly associated with gold deposits in Victoria.³⁹⁸ With historic evidence of processing and calcining pyrites at Lauriston, and arsenic being a known contaminant of pyrites, there is a potential for a portion of the Lauriston tailings to have originated from calcining. Care should thus be taken to ensure there is no risk of contamination or damage from disturbing the battery sands in the Study Area.

As a preliminary step to further investigation, two samples of battery sand were collected in September 2019 from the large pad of sand on the east bank of the Coliban within the Study Area (approximate location Lat. -37 14.070, Long. 144 22.518, Figure 54) for viewing under a microscope. Both samples were clearly mostly composed of angular quartz-like particles as opposed to smooth river-worn particles from a variety of parent rocks. One sample was visibly much finer than the other, and this was confirmed under the microscope. Figure 62 shows the sand particles in the first sample (A) are much finer on average than those of the second sample (B).

³⁹⁴ Francesco Colombi. *Legacy effects of historical gold mining on floodplains of Victorian rivers*. Project summary in Daryl Nielsen, Gavin Rees, Paul Brown, Rick Stoffels, Paul McInerney and Rebecca Durant. *La Trobe University, Centre for Freshwater Ecosystems, MMCP Collaboration Final Report 2019*.

³⁹⁵ R. Martin, K. Dowling, D.C. Pearce *et al.* "Size-dependent characterisation of historical gold mine wastes to examine human pathways of exposure to arsenic and other potentially toxic elements." *Environ Geochem Health* **38**, 1097–1114 (2016). <https://doi-org.ezproxy.federation.edu.au/10.1007/s10653-015-9775-z>.

³⁹⁶ Joji Abraham, Kim Dowling, Singarayer Florentine. "Controlled burn and immediate mobilization of potentially toxic elements in soil, from a legacy mine site in Central Victoria, Australia" *Science of the Total Environment* 616–617 (2018) 1022–1034.

³⁹⁷ Martin *et al.* "Size-dependent characterisation of historical gold mine wastes." 1104.

³⁹⁸ *Ibid.*: 1099.

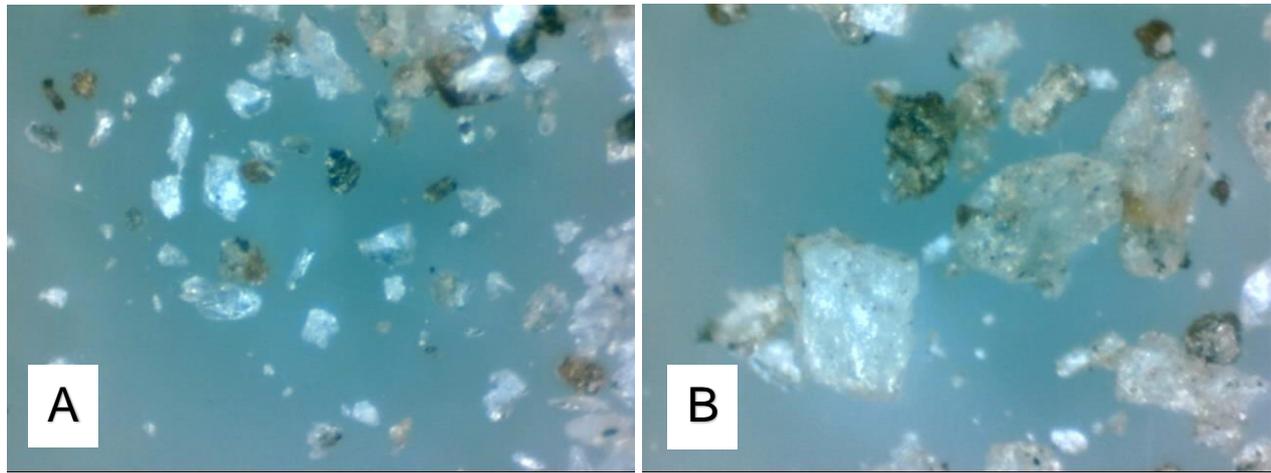


Figure 62. Microscope images of two samples of battery sand at Lauriston (x40 magnification)

A is the very fine sample, and B is the coarser sample.

Photographs courtesy of John Walter February 2020

Care should also be taken when considering the use of, or around, the sludge area shown in Figure 61. The surrounding area was totally overgrown with gorse at the commencement of the weed control works, yet part of the southern-most sludge area was devoid on any significant vegetation. This may suggest the presence of problems associated with contamination, soil structure or chemistry, such as acidity. There may also be chemical and physical implications for the revegetation of the site, especially considering that sandy soils are not a natural occurrence on the basalt plains or Ordovician landscapes, except perhaps in alluvial deposits.

Interestingly, one of the conditions of Shelton's tailings licences was that 'the licensee shall level off all treated tailings and plant thereon such vegetation as may be required by the District Inspector of Mines'.³⁹⁹ The 1972 aerial photograph (Figure 48), and the subsequent gorse and blackberry infestation suggests no planting was required, or took place.

While several of the old mining shafts can be identified on maps and on the ground, the level of mining in the Study Area suggests others may be unidentified and possibly hidden. This aspect of the site's history must be examined with public safety in mind when future uses are considered.

Conclusions

The Study Area has a long and complex history of land use, through gold mining, mineral processing, Chinese market gardening and water management. There has been much disturbance of the

³⁹⁹ PROV, VPRS 10808/P0, Unit 35 Tailings Licence File 3231, Licence Number 3081, dated 1961, condition 10.

landscape originally occupied by the traditional owners, and from the ebb and flow of food and mineral production by Europeans. As a result of this activity, there is limited natural vegetation remaining on the site and rehabilitation may not be simple due to the considerable alteration to soil profiles. There are two potential hazards which may define how any rehabilitation may be undertaken, The levels of naturally-occurring, but potentially more concentrated, arsenic in the desposits of mullock and tailings should not be ignored, especially where particle sizes are quite small. The risk from cyaniding should be kept in mind, especially as processing was being undertaken on the site as recently as 1961. The management of water running through the site also needs to take into consideration the way in which water flows, and thus influences plant establishment and growth, and runs off into the Coliban water system. There are very few heritage considerations and limitations to consider, due mainly to a lack of action to ensure sites are protected by State or Local heritage registers/overlays. A policy of doing the least harm, except in the case of the willow trees adjoining the river, could enable a suitable planning response to this oversight to be formulated. The recent work to replace the fences goes some way to permitting such a response.

For posterity and clarity's sake, a current depiction of the Study Area and the various classifications of land within it, is shown in Figure 63.

One interesting aspect of mining history revealed by this study is the installation, removal and re-use of mining plant and equipment, and the distances some of it travelled. This information also gives explanation to, and evidence of, the absence of mining equipment in the Study Area prior to Bick's and Bannear's heritage studies, and may assist others in recording the history of other mining sites in Victoria.

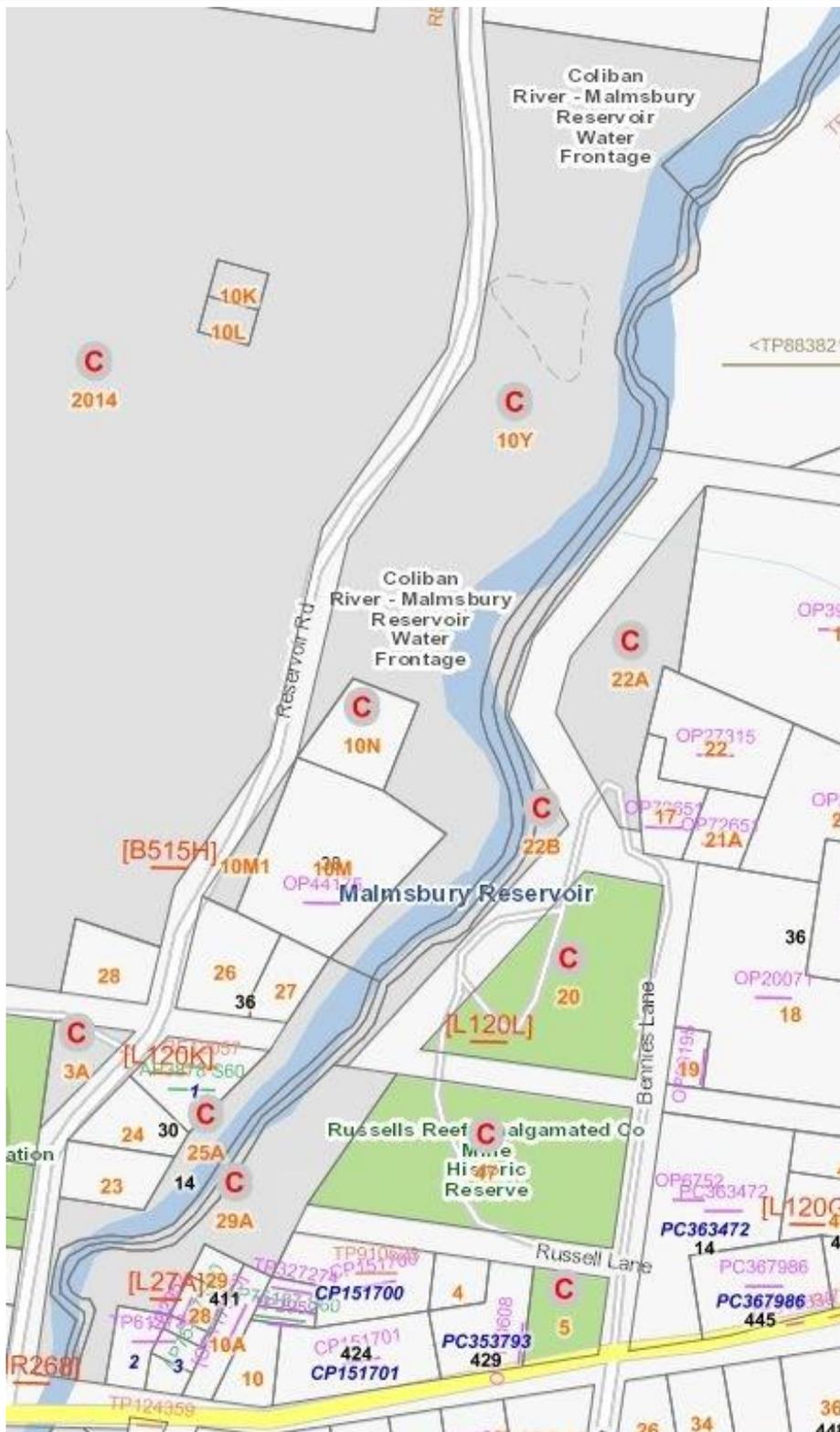


Figure 63. Lassi Website Map showing current land boundaries and tenure

Crown land is marked in blue or green with a red “C”, private land is in white.

Source: Victoria. “LASSI – Land and Survey Spatial Information.” Department of Environment, Land, Water and Planning, release No. 2.15.02, viewed 17 September 2019.

<https://maps.land.vic.gov.au/lassi/>

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<i>Australasian</i> (Melbourne)	<i>Malmsbury Historical Society newsletters</i>
<i>Bendigo Advertiser</i>	<i>Mount Alexander Mail</i> (Castlemaine)
<i>Bendigo Independent</i>	Times (London)
<i>Geelong Advertiser</i>	<i>Victoria Government Gazette</i>
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