NORTH CENTRAL GOLDFIELDS PROJECT

HISTORIC MINING SITES IN THE HEATHCOTE (WARANGA SOUTH) MINING DIVISION

PART TWO: SITE GAZETTEER

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Department of Conservation and Natural Resources

North West Area

May 1993

INDEX TO SITE GAZETTEER

SITE NO. & NAME:	**ALISON MINE SITE**	
	1.1	**Old Alison shaft**
	1.2	**New Alison Mine**
LOCATION:	**Lower Costerfield**	
HI NO:	**1.1**	**H7824-0025**
	1.2	**H7824-0026**

DIRECTIONS:	Site 1.1. W side of the main Road, near the boundary of State Forest and private land, Lower Costerfield Site 1.2. Located approx 200 m N of Alison's shaft
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	Unreserved Crown Land

HISTORY:

Pre-Alison Mining Company 1860-1869.
1860. Encouraged by the successes at Upper Costerfield (Coster and party were then obtaining as much as 4 oz of gold per ton). W. Morris, of Heathcote, as one of a Melbourne syndicate, essayed to locate the southern extension of the reef at Lower Costerfield (now South Costerfield) about 1 mile away on the southern side of Tin Pot Flat.[1]

Early 1861. Morris continued his trench [at South Costerfield] and at the end of the following month (early in 1861) was rewarded by striking the covered outcrop of the vein ... The stone (15 cwt) broken from a shaft sunk 45 feet on this yielded 7 oz 7 dwt of gold. The vein increased in width with depth, and at 70 feet (water level) below surface was 8 inches wide and averaged 8 oz of gold per ton. Other parallel veins were discovered in what is now [1926] known as the Alison ground and 600 feet westward Tate's line was unearthed and worked more or less profitably to a depth of 200 feet.[2]

September 1861. A 15 cwt parcel of ore, obtained by Morris and Co. from a depth of 45 ft on the Kilburn reef, averaged 9 oz 16 dwt per ton.[3]

August 1862. Great impetus by the introduction of capital and energy from Melbourne. Splendid, continuous gold yields from the claim of Messrs Coster, Field and Co., at Costerfield and Messrs Morris and Co. at Lower Costerfield. Comparatively small operating costs of small companies, with less overhead expenses, attract new capital. Purchasing out original claim holders and applying for new leases. Whole of ground has been pegged off. Machinery is being introduced.[4]

Early 1860s. All was plain sailing at both ends of the field until the sulphide zone was reached and the metallurgical problem of the recovery of the gold from the stibnite presented itself. That the earliest method of treatment, which did not aim at the recovery of the antimony after the ore was crushed, was primitive is shown by the fact that the tailings when recrushed--and still without giving up their all--yielded as high as 3 oz per ton.[5]

February 1863. Morris and Co., Lower Costerfield. 17-1/2 tons yielded 158 oz gold. Reef steadily increasing in richness. Exploitation on a much larger scale after completion of own machinery.
McDougall and Co. have nearly completed machinery.[6]

March 1863. Upper Costerfield has about 120 population. Here is Youle, Coster and Field's machinery ... Stewart Town, 1 mile nearer Heathcote, 200 population, Morris and 3 other claims.[7]

April 1863. Costerfield and Stewarton. Considerable activity. Dalsiel and Allen's reef lately discovered south of Morris and Co.'s claim ... traced through Hay and Hoskin's lease and Argo Mining Company's ground.
McDougall and Co. crushing.
Two more machines being erected.
New Antimony Reef between Costerfield and Stewartown, half mile west off the road.[8]

April 1863. Stewarton. Morris and Co.'s new engine nearly ready, the largest and most up-to-date in the antimony district. Ripple boards covered with copper plates to save quicksilver; besides blankets are used. Yield estimated: 10-12 oz per ton.
McDougall and Co. also prepare to start engine operations.[9]

April 1863. Stewartown. Morris and Co. about to start machinery. McDougall and Co. started pumping. Allen and Dalziel sunk 25 feet. Reef 18 inches thick of pure antimony.[10]

July 1863. Lower Costerfield [Stewartown] looks deserted. Morris and Co. crushed 25 tons of stone yielding 120 oz.[11]

March 1864. Some Bendigo miners have taken two of Messrs McDougall and Co.'s leases on tribute. They altered the copper plates, put down blanket tables, and find that their speculation will pay them very well. It appears that the machinery was very imperfect before.
Morris and Co. Crushing from 130 feet. Messrs Morris and Co., on the Kelburn Reef, Lower Costerfield ... are not doing so well as hitherto; they require to sink their shaft deeper. They have of late been crushing most surface refuse and tailings. From the pyrites, with which these lodes are so highly charged, they obtained some cheering results; they roasted several hundredweight, and after passing it through a Berdan basin got 12 oz 5 dwt, or at the rate of 35 oz to the ton. [12]

April 1864. New antimony smelting process. Patent by Rev. Edward Hughes of McIvor, taken out for separating antimony from other metals ... Work at Costerfield under the name "Victorian Antimony Smelting Co." ... could also be exported for conversion into white paint.[13]

June 1864. Morris and Co., Kilburn Reef, Lower Costerfield, crushing from 167 feet. Morris and Co. have been idle for some time. They have raised but 8 tons of stone during the 3 months. Their mine is said to be failing.
Kenny and Co., Murray Reef, Lower Costerfield, crushing from 50 feet. Messrs Kenny and Babbage once more commenced to work their claim on the northern boundary of Messrs Morris and Co.'s miner's right claim. The yield from 25 tons is nearly half an ounce to the ton.[14]

January 1868. Export Antimony Mining Co., All Nations Reef, Lower Costerfield, Capital £1000.[15]

<u>Alison Gold and Antimony Mining Co.</u>
February 1869. Lower Costerfield. Application to register the Alison Gold and Antimony Mining Co. Capital £5,200.[16]

August 1869. All ground between Upper and Lower Costerfield now taken up.[17]

1870s. The antimony production increased, benefiting in the early and late seventies by the high market for antimony caused by European wars.[18]

June 1870. Mr Hughes is still continuing his smelting operations on Lower Costerfield, and has produced 20 tons of regulus from 60 tons of antimony tailings; and he informs me that, having made improvements to his furnaces, he hopes to produce 20 tons a month in future.[19]

October 1870. Four more furnaces to be erected by Edward Hughes of Lower Costerfield. The soft granite found near the Hanging Rock appears to stand the most intense heat; to be used for furnaces.[20]

February 1872. Alison Gold and Antiomny Co. Disposal of tailings at their discretion.[21]

September 1875. Little of consequence to report for the Division, excepting that the Costerfield companies seem to be prosecuting their operations with increased vigour. The Costerfield Company and South Costerfield Co. have considerably increased the number of their miners; and the Alison and Central Company have erected another steam engine of 16 hp, with new stampers, boxes, etc.[22]

1875-78. Small tonnages of rich gold ore were obtained from the Alison shaft.[23]

June 1876. Smelting operations are now being carried on with great vigour at the Costerfield, Alison and Central, and South Costerfield mines, and I believe with satisfactory results.[24]

December 1876. The Costerfield Gold and Antimony Mining Company, the South Costerfield Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., and the Butlers Reef United Quartz Mining Co. are pursuing their operations steadily.[25]

December 1877. Alison Co. at Costerfield during the last quarter crushed 354 tons for a yield of 386 oz of gold.[26]

March 1878. The Alison Co. at Costerfield still continue to obtain fair average yields.[27]

June 1878. The Alison Co. obtained from 200 tons, 260 oz gold.[28]

September 1878. Alison Gold and Antimony Co. obtained 172 oz from 200 tons crushed.[29]

March 1879. The Alison Company, at Lower Costerfield, crushed 120 tons, the average yield was 10 dwts.[30]

December 1880. At Costerfield, mining has slightly improved, notwithstanding the Costerfield Co. have not been doing much, and the Alison Company's plant etc. is in the market for sale.[31]

December 1890. New company called the "New Costerfield Gold and Antimony Mining Co." being formed to work ground of Costerfield Gold and Antimony Mining Co., Bombay Gold and Antimony Mining Co., Morning Star Gold and Antimony Mining Co., Alison Star Gold and Antimony Mining Co., and South Costerfield Co.[32]

July 1891. At South Costerfield were the South Costerfield and Alison mines. Had an interest in Alison mine, when it was paying 20 oz to the ton. It was worked to 380 feet. There was very little antimony in the mine ... Between the mines of the Upper and Lower Costerfield the distance is a mile and a quarter with no trace of an outcrop between them. Over a mile of ground has never been touched ... The South Costerfield mine is the Southernmost mine. It has not been working for 8 years. Between this and the Alison the ground has not been touched. The Albion Co. hold the Old Costerfield, the Minerva, Bombay, Morning Star, the South Costerfield (Tait's claim), and the Alison mines. In all 269 acres, and over a mile and a quarter of ground ... Mr E.Y.L. Brown was the only expert at South Costerfield. He was never engaged at the Costerfield mine. He is now Government Geologist in South Australia. The treatment of the ore at South Costerfield was a secret. They had a battery there. Mr Brown and Mr Moodie were smelting there. They smelted there on the chlorination system. They used to take from 6 to 8 oz of gold per ton from the ore from the Costerfield mine.[33]

March 1893. The New Costerfield Metal and Extracting Co. ... have taken up a total area of 269 acres 2 roods 5 perches, embracing as it does the whole of the mines, the Old Costerfield, Bombay, Morning Star, Prince of Wales, Minerva and Alisons ... the cost of erecting the machinery will be heavy: estimated that it will cost from £15,000 to £20,000.[34]

May 1894 [History]. On the Kelburn reef Mr Morris took out over £4,000 worth of gold in six months, his average yield during that period being 3 oz to the ton.[35]

May 1906. London Price Rise of antimony to £100 per ton should give an impetus to mining in the district.[36]

April 1907. South Costerfield. Head frame and winding gear are being erected and boiler bricked in.[37]

1916. Costerfield Antimony Mines. During 1916, the Costerfield antimony mines, Heathcote, Vic., produced 12,382 tons of ore, which yielded 3300 tons concentrates. These were shipped to the St. Helens' Smelting and Refining Company, England, which is controlled by the Imperial government under the Munitions Act, 1915.
Opening up the old South Costerfield mine proved very expensive, owing to heavy water and the bad condition of shafts. The deposit here is patchy, and the country rock broken by slices and cross-courses. The ore lenses are not continuous, and production will be expensive. The old Costerfield North shaft has been sunk to 800 feet, and cross-cuts put out to the reef ... Crosscutting west on the 600 feet level has opened up a vein of good ore, which will add considerably to the life of the "old" mine, as it will be west of all workings in the upper levels.
Nearly all work underground at Costerfield has been carried out on the contract system. The average wage earned by contractors has been 15/- per shift. The company employs over 30 men and boys, and paid in wages, etc., £60,000 for the year.
The advisability of supplementing the concentrating equipment by the addition of a M.A. flotation unit is being considered.[38]

1920. The Costerfield antimony and gold mines, Heathcote, Vic., have been closed down, pending extensive alterations to the machinery and plant.[39]

1903-22. At South Costerfield, one mile south from the main line along the lines of strike, the Alison shaft has been an important point of production. Two miles further south of the Alison shaft is Bradley's claim, from which antimony ore has been obtained. There are four equipped shafts on the field, including the Alison shaft, but for some time operations have been confined to the main shaft. The shafts are:-

Main or north shaft	1015 ft deep
Minerva shaft	295 ft deep
Bombay shaft	340 ft deep
Alison shaft	400 ft deep

[40]

Post-1925. Prospecting at the Alison mine continued by the Bradley brothers.[41]

New Alison Company

1935. The New Alison Mining Co. is breaking payable ore from the 100-ft level and erecting a mill. Several small parties are working on the field.

The cyaniding of the old dumps at Costerfield is still profitable.

At Costerfield the main mine is still doing developmental work. Tate's line of reef is producing some antimony as did the New Alison, but at present the work has ceased while tenders are called for sinking the shaft. The smelters at Costerfield have closed down, owing to a lack of suitable material. Ironstone was mined locally for the use of the smelters, but at present there is no demand for this commodity. Magnesite is being mined in the belt of schistose diabase near Heathcote.[42]

July 1936. The New Alison Mining Co. occupies an area of ground about 75 chains south of the southern boundary of the Township of Costerfield. Operations are centred at a point about 4 to 5 chains north of the old Alison shaft, which had reached a depth of 400 feet, on what is believed to be the continuation of the main reef channel worked so successfully further north for a considerable period prior to 1925.

Present operations ... Later the New Alison Mining Co. purchased the lease. A winding and milling plant has been installed, and a two compartment shafts sunk to 100 ft.

The company's operations show an expenditure of £4,398 in addition to an amount of £2,088 for the purchase of the plant ... The company has treated 500 tons for 157 tons of concentrates. The tonnage milled by the Bradley brothers is not available.

A complete winding, crushing and classification plant is erected on the mine, and is suitable for all requirements.[43]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site:

1860 to c. 1864:	Morris & Co.Plant installed included furnace(s) and battery.
1868 to 1880:	Alison Gold & Antimony Mining Co. Plant installed included smelting furnaces, steam engines and battery.
1880s:	Owned by Albion Co. Part of a much bigger property which stretched to Upper Costerfield.
1891 - 1903:	Property taken over by New Costerfield Gold and Antimony Mining Co.
1903 to 1922:	Property taken over successively by Bombay Syndicate, Victoria Syndicate, and Costerfield Mining Co. Shaft re-opened and worked during this time.
1935:	New Alison Mining Co. New shaft sunk and winding, crushing and classification plant installed.

Site 1.1 appears to date to the 1903-1922 phase of mining; and Site 1.2 to the New Alison Mining Co's operations in the mid 1930s.

Site 1.1: Old Alison Mine site

Dam--located W of the mullock heap. Earthen bank still retains water. Measures approx. 50 x 20 m.

Mullock heap--forms two distinct mounds, bisected by a modern water pipe. Southern-most heap has a rounded profile and has been partly quarried. Measures 30 x 40 m. and stands approx. 10 m. high.

The N heap has not been quarried and has a more triangular profile. The top of this heap still retains a flattened platform and some trestles, remnants of a tramway which would have run from the poppet head/shaft to dump mullock at the far (N) end of the heap.

Shaft--located between the two dumps, on the SE side. Shaft has been filled, but has collapsed inwards to a depth of approx 4 m. The cavity has been partly filled with domestic rubbish.

Engine shed--located 23 m. SE of shaft. Surviving concrete footings would have once been housed in timber/gal. iron shed (post holes and some timber posts evident at regular intervals). Footings are contained in an area measuring 42 ft (12.8 m.) x 44 ½ ft (13.5 m.). Engine shed has concrete floor. Most northerly concrete footing has holes which formerly held upright iron bolts. This footing measures 22 ¼ ft (7.7 m) x 3 ¾ ft (1.14 m) and stands approx 30 cm above floor level. Through the base of the footing are a series of rectangular timber bolts. Immediately W of footing is a series of upright, iron bolts (in 3 lines) with threaded tops. The timber beams in which these bolts were originally, have been burnt (fragments of charred timber remains), but the concrete surrounds are in reasonable condition. The timber beams once set within the concrete would have been about 2 ft square and 10 ft (3 m) long. W of the upright bolts are two parallel raised, concrete footings, running N-S. They measure 2 ½ ft (75 cm) x 24 ¾ ft (7.55 m), and are 4 ft apart. The area covering and surrounding the engine house is littered with brick rubble.

Brick rubble--red, hand made, bricks. Most have straight sides, but some are curved indicating they once formed part of a chimney stack.

Circular raised feature--located 14 m NNE of the NE corner of the engine house. This feature has a diameter of approx. 28 ft (8.m) and is raised about ½ m above existing ground level. The feature has a flat surface and appears to have a surrounding edging of stone. The top is an earthen, grassed surface, beneath which is gravel.

Settling ponds—50 m N of the circular feature is are three adjoining settling ponds. The middle pond still retains, on its E (front) end, the remnants of a wooden outlet. The ponds are rectangular and measure approx. 20 x 30 m and are approx. ½ m deep, with a base of hard sludge.

Site 1.2: New Alison Mine site

Dam--NW of mullock heap. Earthen bank still retains water. Approx 20 x 10 m.

Mullock heap--forms two distinct heaps, both retaining a triangular profile. The most westerly heap measures 8 x 28 m, is 3 m high and runs N from the shaft. The E heap runs NE from the shaft and still retains some trestle work on its crown, belonging to its dumping tramway.
Shaft--a 3-compartment shaft is sealed by padlocked wooden trapdoors and surrounded by wooden fencing. The shaft measures around 4 1/2 x 9 ft and a wooden ladder-way leads down from the most W compartment.
Bedlogs—4 m SE of the shaft are two parallel bedlogs, each with two large iron screws at their NE end. (Site of most recent plant).
Brick rubble--to the immediate SE of the bedlogs is a bulldozed spread of bricks, comprising both handmade and machine made red bricks.
Concrete footings—7 m further SE of the bedlogs are three concrete mounting blocks. One forms a low slab, measuring 6 ft (1.8 m) x 9 ft (2.75 m). Iron bolts at each corner have been cut off. Footings stand approx. 20 cm above existing ground level. To the NE, two taller and much smaller footings stand, with iron bolts (threaded tops still present) protruding from their tops. These footings stand approx 80 cm high. The concrete is in good condition.
Wooden posts & pit--One metre NE of the concrete footings are two large wooden posts, set in concrete, between which is a timber-surrounded pit, measuring approx 1.3 m x 1.6 m. The wooden posts have been sawn off to just above ground level.
Concrete footings & ramp—15 m further to the SE are some U-shaped concrete footings which abut onto the NW end of earthen loading ramp. Thee footings stand approx. 1.5 m high. On the W side of the footings is a wooden frame, containing various sections of ironwork. The frame's overall dimension is 5 ¼ ft (16 m) x 15 ft (4.6 m). The frame sits on substantial wooden bedlogs. The frame is constructed of milled timber 5 x 9-in.
Tailing heap—15 m to the E of the concentrating plant are the remains of a tailing dump.

INTEGRITY/CONDITION: Surviving timber on New Alison mine site in good condition.

CULTURAL SIGNIFICANCE:

The sites have:

- Historical significance, because they form part of a group or network of sites, the totality of which is considered to be significant, namely the Costerfield gold and antimony field (Sites 1, 2, 4, 5 & 6].

SIGNIFICANCE RANKING: Site Listed heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 Whitelaw, 1926, p. 6
2 Whitelaw, 1926, p. 6
3 Stillwell, 1922, pp. 355-6
4 McIvor News, 15 August 1862
5 Whitelaw, 1926, p. 6
6 McIvor News, 6 February 1863
7 McIvor News, 6 March 1863
8 McIvor News, 10 April 1863
9 McIvor News, 17 April 1863
10 McIvor News, 24 April 1863
11 McIvor News, 17 July 1863
12 Mining Surveyors' Reports, March 1864
13 McIvor News, 24 April 1864
14 Mining Surveyors' Reports, June 1864
15 McIvor News, 29 January 1868
16 McIvor News, 26 February 1869
17 McIvor News, 13 August 1869
18 Stillwell, 1922, p. 357
19 Mining Surveyors' Reports, June 1870
20 McIvor News, 14 October 1870
21 McIvor News, 2 February 1872
22 Mining Surveyors' Reports, September 1875
23 Stillwell, 1922, p. 357
24 Mining Surveyors' Reports, June 1876
25 Mining Surveyors' Reports, December 1876
26 Mining Surveyors' Reports, December 1877

27 Mining Surveyors' Reports, March 1878
28 Mining Surveyors' Reports, June 1878
29 Mining Surveyors' Reports, September 1878
30 Mining Surveyors' Reports, March 1879
31 Mining Surveyors' Reports, December 1880
32 McIvor News, 4 December 1890
33 F. Debney, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
34 McIvor News, 2 March 1893
35 McIvor Times, 24 May 1894
36 McIvor Times, 31 May 1906
37 McIvor Times, 11 April 1907
38 Mining and Engineering Review, 5 February 1917, p. 118
39 Chemical Engineering and Mining Review, 5 May 1920, p. 280
40 Stillwell, 1922, pp. 358-60
41 Caldwell, 1937
42 Mining Surveyors' Annual Reports, 1935
43 Caldwell, 1937

SITE NO. & NAME:	**2.1**	**TAIT'S SHAFT**
LOCATION:		**Lower Costerfield**
HI NO:		**H7824-0027**
DIRECTIONS:	E side of Costerfield main road, south of weatherboard house	
MUNICIPALITY:	Greater Bendigo City	
LAND STATUS:	Freehold	

HISTORY:

October 1870. Notice of application for mining lease: Lower Costerfield, £1,000, to erect furnaces for antimony smelting.[1]

September 1875. Little of consequence to report for the Division, excepting that the Costerfield companies seem to be prosecuting their operations with increased vigour. The Costerfield Company and South Costerfield Co. have considerably increased the number of their miners; and the Alison and Central Company have erected another steam engine of 16 hp, with new stampers, boxes, etc.[2]

June 1876. Smelting operations are now being carried on with great vigour at the Costerfield, Alison and Central, and South Costerfield mines, and I believe with satisfactory results.[3]

December 1876. The Costerfield Gold and Antimony Mining Company, the South Costerfield Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., and the Butlers Reef United Quartz Mining Co. are pursuing their operations steadily.[4]

January 1878. South Costerfield Co.'s claim, machinery and plant to be sold.[5]

April 1878. Mining plant at South Costerfield to be sold.[6]

July 1891. At South Costerfield were the South Costerfield and Alison mines. Had an interest in Alison mine, when it was paying 20 oz to the ton. It was worked to 380 feet. There was very little antimony in the mine ... Between the mines of the Upper and Lower Costerfield the distance is a mile and a quarter with no trace of an outcrop between them. Over a mile of ground has never been touched ... The South Costerfield mine is the Southernmost mine. It has not been working for 8 years. Between this and the Alison the ground has not been touched. The Albion Co. hold the Old Costerfield, the Minerva, Bombay, Morning Star, the South Costerfield (Tait's claim), and the Alison mines. In all 269 acres, and over a mile and a quarter of ground ... Mr E.Y..L. Brown was the only expert at South Costerfield. He was never engaged at the Costerfield mine. He is now Government Geologist in South Australia. The treatment of the ore at South Costerfield was a secret. They had a battery there. Mr Brown and Mr Moodie were smelting there. They smelted there on the chlorination system. They used to take from 6 to 8 oz of gold per ton from the ore from the Costerfield mine.[7]

August 1898. A cyanide plant has been put up at South Costerfield by Mr McFadgean to treat the tailings from the battery there by that process. Work has been progressing for some time.[8]

1900. There is a ten-head battery (Browns) also at South Costerfield. This is occasionally running, and has a small cyanide works adjacent; these are both on the eastern side of the road and creek, the refuse heaps of the Allison mine being on the western side.[9]

1926. Other parallel veins were discovered in what is now [1926] known as the Alison ground and 600 feet westward Tate's line was unearthed and worked more or less profitably to a depth of 200 feet.[10]

1948. The South Costerfield Antimony Company--Tait's Shaft. An inspection was made of the underground workings on this Company's property.
Tait's Shaft is just over two hundred feet deep and is situated near the southern limit of the Costerfield antimony lodes. Although a mine is known a few miles to the south-east, the workings around Tait's shaft mark the southern limit of the Costerfield workings.
The problem of sinking a new shaft was discussed with the manager, who suggested deepening an old shaft which is 80 feet deep, a few hundred feet to the south.
The present shaft is ideally situated for deeper prospecting of the lode, and the widening of the two-compartment shaft and its deepening should not present insurmountable difficulties, and would be cheaper than sinking a new shaft.

It would be necessary to obtain another pump, and a compressor and machines to do this work. New poppet legs would be necessary, but winches of the type at the mine have been used in deeper shafts.[11]

1948. The South Costerfield and Antimony Co. has installed the steam plant formerly in use at the Virginia South Extended Mine at Eaglehawk and has sunk a new three-compartment shaft to the west of the old prospecting shaft to a depth of 150 feet.
Several dangerous shafts have been secured.[12]

1949. South Costerfield Gold and Antimony Mine ... shaft was deepened.[13]

1950. South Costerfield Antimony and Gold Mine, Costerfield, 7 tons, value £470.[14]

1951. The South Costerfield Gold and Antimony Co. proved the existence of four parallel lodes of antimony ore, but carried out little extraction work. It is anticipated that the property and plant will be taken over by Victorian Antimony Mines Ltd. With a new type of furnace erected at the mine, this company will produce antimony oxide by volatilisation, thus eliminating the necessity for long-distance transport of the ore to a separate metallurgical treatment plant.
Antimony concentrates--South Costerfield Gold and Antimony Co.--231-1/2 tons, value £6,320.[15]

1952. Antimony mining. Victorian Antimony Mines Ltd at Costerfield did not carry out any underground development work, but in the latter half of the year a furnace for the smelting of ore was erected at the mine site. The furnace is expected to be ready for operation in 1953.[16]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site:
1870 to 1878: South Costerfield Co. Plant installed included smelting furnaces and a ten-head battery.
c.1898/1900s: Ten-head battery and small cyaniding works.
1948: South Costerfield Antimony Co. Installation of steam-driven mining plant.
The concrete footings recorded in the survey would date to the 1948 phase of mining operations. The small poppet head and associated dumping tramway probably represents a further (later) phase of working when the shaft was cleaned out.

Tait's shaft
Part of the mine is fenced off with high cyclone. In the fenced area is a relatively small (approx 1om high) wooden poppet head. A tramway embankment heads N from the poppet head.
Outside the fence, on the N side, in alignment with the poppet head, is a row of 3 concrete mounting beds. The beds, each with protruding bolts, stand approx 1 m above existing ground level. The most westerly bed and its neighbour form a set. They measures 15 1/2 (4.75 m) x 3 ¼ ft (1 m) and are positioned 7 ½ ft (2.3 m) apart. The most easterly bed, 2 ¾ ft (85 cm) from its neighbour, measures 11 (3.35 m) x 3 1/2 (1.05 m) ft. There is another concrete footing, to the NE, which measures 12 (3.65 m) x 4 ½ ft (1.35 m). Near this fourth footing is a spread of red bricks.

INTEGRITY/CONDITION: Concrete beds in good condition.

CULTURAL SIGNIFICANCE:

Site 2.1 has:

- Historical significance as it forms part of a group or network of sites, the totality of which is considered to be significant, namely the Costerfield gold and antimony field (Sites 1, 2, 4, 5 & 6).

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 McIvor News, 7 October 1870
2 Mining Surveyors' Reports, September 1875
3 Mining Surveyors' Reports, June 1876
4 Mining Surveyors' Reports, December 1876
5 McIvor News, 3 January 1878
6 McIvor News, 4 April 1878
7 F. Debney, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891

8 McIvor News, 25 August 1898
9 Jenkins, 1900, pp. 66-7
10 Whitelaw, 1926, p. 6
11 Thomas, 1948, pp. 32-3
12 Department of Mines Annual Report, 1948
13 Department of Mines Annual Report, 1949
14 Department of Mines Annual Report, 1950
15 Department of Mines Annual Report, 1951
16 Department of Mines Annual Report, 1952

SITE NO. & NAME:	**3.1**	**ROBINSON'S REEF MINE**
LOCATION:		**Robinson's Reef, Lower Costerfield**
HI NO:		**H7824-0028**

DIRECTIONS:	Take track to Robinson's Dam
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	State Forest

HISTORY:

September 1881. A new reef, known as Robinson's Reef, about 1-1/2 miles from Alison Mine, Costerfield, gave recently a yield of 10 oz pure gold from 3 tons of stone.[1]

March 1884. Robinsons Co. Amalgamated with "some adjoining claim" and to be called "The Robinson's Gold Mining Co". Workings have been extended 150 feet from the surface.[2]

June 1884. Robinson's Gold Mining Co. has been formed and floated with good prospects, I am informed, but they have not yet commenced crushing operations.[3]

September 1884. At South Costerfield, Mr A.W. Bradley, the manager of Robinson's Gold Mining Co., reports that the large dam is now completed, and is capable of carrying 12 months' water for 12 heads of stamps. The company has purchased an extensive crushing plant from the Enterprise Company, Fryers Creek, a portion of which is landed on the claim.
A company has been formed and floated by a party of Melbourne speculators on ground at South Costerfield, adjoining the claim of the Messrs Robinson on the south, and it is intended to commence opening at once.
In the same locality a new reef has been struck by Messrs G.B. Macdonald and Messrs Edwards and Co. 2 miles SE of Robinson's claim.[4]

February 1885. Robinsons Gold Mining Co. Crushing plant installed. 30-hp engine, battery of 3 heads of 12 stamps. Reef on hill, 250 yards from plant. Reef 8-1/2 feet wide. Quarry Hill shaft (haulage) is down 60 feet. Robinson's shaft is down 130 feet.[5]

March 1885. The Robinson Co. has erected a new crushing plant, but their last crushing has not been up to expectations.[6]

June 1885. Robinson Gold Mining Co. New shaft is being sunk to work the reef at a deeper level.[7]

September 1885. At Costerfield, everything is dull, owing to the low price of antimony.[8]

June 1886. Plant of Robinson Gold Mining, Costerfield, offered for sale.[9]

December 1886. The Welcome Reef on Robinson's Line, Costerfield, struck at depths ranging to 20 feet some rich stone, which, from a parcel of 7 tons, gave 40 oz; other claims on the same line, viz., the Mountain Maid and Cherry Tree, have obtained good payable crushings.[10]

March 1887. The Welcome Reef Co. crushed 17 loads for a yield of 49-1/2 oz; Cherry Tree Company crushed 24 ton for 50 oz; Mountain Maid Co. crushed 14 tons for 7-1/2 oz. all these reefs are on the old Robinson Gold Mining Co.'s lease, which was taken up and held by a company who put down a shaft to a depth of 200 ft but obtained no trace of gold. They then abandoned the claim, and it has since been taken up by three different parties ... At depths ranging from 20 to 80 feet most encouraging prospects have recently been obtained. Adjoining the claims is a 12-head battery with 25-hp engine. This plant, which is the most complete in the district, was put on the ground by the Old Robinson Reef Co. at a cost of £2000; it is at present being worked by Mr W. Bradley.[11]

June 1887. The Welcome Reef, Costerfield is working on payable gold at 30 ft, and the Cherry tree at 70 ft. Neither has, however, had a crushing during the quarter. The Mountain Maid ... has been abandoned as unpayable.[12]

April 1891. Welcome Reef, South Costerfield--ore crushing--14 tons yielded 55 oz.[13]

1900. In the Costerfield district but very little work is in progress. There are a few small workings, one of which, namely, Robinson's, at Quarry Hill, proved, on a visit, to be in very confused and irregular ground, without any defined reef. The working party has a five-head battery, that is kept at work, partly from the workings, and partly by customs crushings for the district. There are workings also at Snake Hill, and there appears to be also a number of low grade lodes, about 3 dwts per ton, one of which is reputed to be 10 feet wide. There is a ten-head battery (Browns) also at South Costerfield. This is occasionally running, and has a small cyanide works adjacent; these are both on the eastern side of the road and creek, the refuse heaps of the Allison mine being on the western side.[14]

1903. Prospecting work being done by the Felix Brown and Quarry Hill mines.[15]

DESCRIPTION OF PHYSICAL REMAINS:

Main mining operations undertaken at Robinson's Reef were in the 1880s. Battery installed during this time.

Robinsons Gold Mining Co.
Robinson's dam still retains water. Below the dam, to the E, is a tailings dump, some of which appears to have been quarried.
On the slope above the dam, 20 m to the S, is what survives of the battery. It is hidden by bush. Most prominent feature of the battery site is the remains of its loading ramp. Below the ramp, is a spread of red bricks and stone rubble, and one ripped-out battery stump. There is no sign of any in-situ stumps or engine bedlogs. The bricks are handmade and have no frog.
300 m SSW, on the crown of a hill are the reef workings. There are several smallish mullock heaps, some of the mullock is blue rock. Shafts have been filled.
Recent work has seen one shaft 2-compartment shaft emptied out. It is fenced-off and has ladder-way in position.

INTEGRITY/CONDITION: Poor condition.

CULTURAL SIGNIFICANCE:

Site holds little historical significance and its integrity has been so reduced as to provide little insight into the operation of a 19th-century gold mine.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 Mining Surveyors' Reports, September 1881
2 McIvor News, 14 March 1884
3 Mining Surveyors' Reports, June 1884
4 Mining Surveyors' Reports, September 1884
5 McIvor News, 27 February 1885
6 Mining Surveyors' Reports, March 1885
7 Mining Surveyors' Reports, June 1885
8 Mining Surveyors' Reports, September 1885
9 McIvor News, 11 June 1886
10 Mining Surveyors' Reports, December 1886
11 Mining Surveyors' Reports, March 1887
12 Mining Surveyors' Reports, June 1887
13 McIvor News, 16 April 1891
14 Jenkins, 1900, pp. 66-7
15 Mining Surveyors' Annual Reports, 1903

SITE NO.	**4.1**	**MINERVA MINE SITE**
LOCATION:		**Upper Costerfield**
VHR NO:		**H1298**
HI NO:		**H7824-0029**

DIRECTIONS:	West side of Costerfield Main Road, Costerfield
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	Unreserved Crown Land

HISTORY:

1860. No further attempt, apparently was made to test the ore until Messrs Youle, Coster, and Field came on the scene in 1860, and, in prospecting north of Doyle's old claim, unearthed, in Kelburn Creek, a tributary of Wapentake Creek, some boulders of oxy-sulphide containing coarse specks of gold. On their exhibiting these specimens to Mr Patterson, the then owner of Moorabie, a shepherd (McNichol) in his employ informed the prospectors that he knew of a deposit, *in-situ*, of mineral resembling that on view, and offered, for £10, to guide them to the occurrence. An agreement being come to, he led them to a spot about 100 yards south of the present [1926] Costerfield Antimony Company's main shaft where, it is said, the oxidised outcrop of what is now known ... as the Costerfield main reef, projected above the surface 4 feet high by 4 feet wide by 20 feet long ... Viewing it through the timber of Tin Pot Gully, from a distance of a quarter of a mile, Youle pronounced the find a "buck" quartz reef similar to others on his original claim and which were then being broken down for road metal, left the party at that juncture, returned to Kelburn Creek, and later, moving to Heathcote, was no further heard of. The remaining members camped on the ground, and with picks and hammers soon found the white surface to be an envelope covering a heavy lead-grey mass of antimony sulphide in which free gold was plainly visible. Coster and Field secured the prospecting claim while others pegged northward to Redcastle (6 miles) and southward for 3 miles to the hills beyond Wapentake Creek. The ore broken from an open cut on the outcrop was handpicked pending the purchase of a crushing mill, and that portion of the sulphide in which gold was visible was sent to Melbourne. At £6 per ton this returned to the claim-holders sufficient capital to enable them to purchase and erect a six-head battery. Although Coster and Field held the pick of the shallow level ground, the claim-holders southward were well in the running, and in the ground afterwards worked by the Minerva and Bombay companies, Coster's shoot was followed by them to water level.[1]

March 1864. Minerva Co. has sunk the shaft, at 180 feet they opened out, drove twenty feet east, struck the reef rather thin; turned south, and drove 5 feet; the reef opened to twenty-one inches, with every appearance of increasing in thickness ... They have bought Mr Acott's engine of 12 stamps, which they have removed and are erecting near their shaft. The company has already spent £4000 on the mine.[2]

June 1864. The Minerva Co. has been pursuing mining operations with vigour. They are now crushing.[3]

July 1864: Minerva Co ...is erecting furnaces for calcining the tailings as they intend crushing without mercury in stamp boxes as stone contains large quantities of antimonal sulphide causing loss of gold and mercury.[4]

September 1864. Minerva Mining Co.--crushing tailings.[5]

October 1864. Minerva Co.'s mine--technical report on experiments in amalgamation.[6]

December 1864. Minerva Mining Co.--crushing from surface to 68 ft.[7]

February 1865. Minerva Co. struck a reef much thicker and richer than the one reported two weeks ago. Supposed to be the main reef. Discovery advances the value of mining property at Costerfield by 51%.[8]

March 1865. Minerva Mining Co., Costerfield--crushed 99 tons from 200 ft, for a yield of 88 oz.[9]

March 1865. Minerva Co., having struck the main reef and being the only one in Upper Costerfield (except Coster and Field) who have worked energetically (practically all the others have been swindlers).[10]

April 1865. Costerfield mines improving. One of the busiest spots in the district. Companies seem to do well, but no particulars available since most companies crush their own stuff and deliver their yields to respective bankers.[11]

August 1869. All ground between Upper and Lower Costerfield now taken up.[12]

1870s. The antimony production increased, benefiting in the early and late seventies by the high market for antimony caused by European wars.[13]

March 1872. £70 was obtained for gold from a party of Chinese for cleaning up the Minerva battery house.[14]

October 1875. Costerfield Co. Underground operations suspended in December 1874, as the lodes being worked from the main shaft were small, expensive to work, unremunerative. Main emphasis was put on reduction to metal of the ore contained in material on the surface. An accident in June 1874 restarted mining ... resumed with very satisfactory results in the ground purchased from the Minerva Co. and midway between main and Minerva shafts (1000 feet apart).
Flues built in connection with smelting, extend 1200 feet, with large chambers at either end, catching oxides from furnaces at Minerva end. Two furnaces working, a third nearly complete. Herrenschmidt's oxide-reducing furnace proves of great value, also renders the metal chemically pure.[15]

July 1891. Frederick Debney ... Had a lot to do with Costerfield ... The Costerfield Gold and Antimony mine was the principal one I was interested in. It was called Field's mine, but it ought to have been called Debney's mine, as I was the largest shareholder in it ... They got a gentleman from Germany, who put the company to expenses amounting to about £10,000. He was to treat our tailings and sludge, and oxidise the tailings and slum. He put in slides which were very good. One furnace was erected at a cost of £1200. When it was partly erected it fell down. Flues and furnaces were built and crushing machines erected before. They got no gold. They got dividends from the antimony. The gold was to be extracted from the antimony, but it was not done. They crushed quartz impregnated with gold. We had sent crude ore to England for assay. The ore was treated by three means, the chloral process, crushing and smelting. At the 420 feet level we put down an engine. The big one above supplied the steam to it ... At 620 feet we put in a drive of 25 feet. It showed a reef of 6 inches thick with 1 oz of gold to the tone, and a little antimony. That was the last of the workings of that mine. The company had no more money to prospect, or do anything ... Then came the Minerva, which the Costerfield Company bought out. There was a tremendous lot of gold in this mine--more than in the Costerfield mine, and also good antimony. The next claim on side line is the Bombay, to the west. The Bombay at the present time is one of the best pieces of property between here and Melbourne. The Bombay paid 11 dividends and was sunk to 350 feet ... The present company, the Albion Company, won't let any one else work it. Had to sell out the Bombay plant for £85. The poppet heads cost £250, and the furnaces £500 ... The tailings were worked three times at the Costerfield Company's mine. Chinamen worked them twice and now want them again. The reason there was so much gold lost was in consequence of the difficulty of separating the gold from the antimony. We had a good battery at that time. We commenced with quicksilver. The quicksilver got thick, and gold and antimony went over it ... antimony and quicksilver could not save the gold. The antimony thickened the quicksilver, and it would not pick up much gold ... We had to knock off quicksilver and use blankets. The great difficulty was the treating the refractory ores. We had copperplates, blankets, and quicksilver. There was nothing to save the gold below the blankets. After that the tailings went to waste. The buckets were washed in tubs and what was on them and put into an amalgamating barrel. The blankets after they were worn out were burnt and the refuse put into the barrel. The gold saved was 20 percent. below the assay. They were getting 5 dwts to the ton crushing the tailings over again with the blankets, but they were washed again, twice by the Chinamen. Believe there was pyrites in the ore ... The Albion Co. hold the Old Costerfield, the Minerva, Bombay, Morning Star, the South Costerfield (Tait's claim), and the Albion mines. In all 269 acres, and over a mile and a quarter of ground ... Mr E.Y..L. Brown was the only expert at South Costerfield. He was never engaged at the Costerfield mine. He is now Government Geologist in South Australia. The treatment of the ore at South Costerfield was a secret. They had a battery there. Mr Brown and Mr Moodie were smelting there. They smelted there on the chlorination system. They used to take from 6 to 8 oz of gold per ton from the ore from the Costerfield mine.[16]

September 1892. Costerfield. Inspection of the lease for the purpose of selecting a suitable site for the putting up of machinery, which is to be of a powerful and expensive character, both for sinking shaft and driving a battery. The place decided upon for the erection of the plant is at the old shaft of the Costerfield Gold and Antimony Co., which is to be sunk a further depth of 200 ft.
Two monuments of Costerfield's former industry were destroyed this week. Two chimney stacks, one in front of the hotel, had the bricks cut from under them, and the pair came toppling down. This was in order to obtain bricks for fixing up the new machinery.[17]

December 1892. New Costerfield Co., which is setting up, includes in its program the treatment of 60,000 of tailings.[18]

March 1893. The New Costerfield Metal and Extracting Co. ... has taken up a total area of 269 acres 2 roods 5 perches, embracing as it does the whole of the mines, the Old Costerfield, Bombay, Morning Star, Prince of Wales, Minerva and Alisons ... the cost of erecting the machinery will be heavy: estimated that it will cost from £15,000 to £20,000.[19]

1900. During the latter days of the [large] mine as a going concern a new shaft, intended to cut the lode in depth, was started midway between the north and the Minerva shafts. This was not completed.[20]

1903. By the long arm of coincidence, a namesake of the discoverer of the field ... was deputed by London capitalists to visit the Commonwealth and inquire into the conditions and prospects of antimony mining in the eastern States. Arriving in Victoria in 1903, Mr J.J. Doyle ... reached Costerfield and soon satisfied himself that the deposits there well fulfilled the conditions required by his principals who held the patent rights of what is known as the Plews process for the treatment of antimonial ores. The ground then held by the Victoria Syndicate (late Bombay Syndicate) was taken over on behalf of the London people, and with additional areas pegged by Mr Doyle, the Costerfield Mining Company now [1926] holds some 306 acres.[21]

April 1907. Old Morning Star shaft is being repaired prior to underground operations with same object in view, a party of men are negotiating with the management of the Minerva shaft, situated close to the Cyanide Works.[22]

1920. The Costerfield antimony and gold mines, Heathcote, Vic., have been closed down, pending extensive alterations to the machinery and plant.[23]

1903-22. Costerfield Mining Company. This company's success has depended principally on the solution of the smelting problem at the smelting works of a sister company at St Helens, near Liverpool, where the gold is completely recovered from the antimony. A contributing factor has been the gradual elimination of losses in separating the ore from the mullock in the crushing and concentrating mill, and the present mill residues at Costerfield contain, on an average, only 15 gr of gold per ton and 1/2% of antimony.
The ore mined at various depths between 420 ft and 780 ft at the main mine. The ore obtained from the Alison mine, at South Costerfield, one mile south of the main shaft at Costerfield, has been of lower grade ... owing to a relatively high percentage of iron pyrites.
In May 1917, the export of the ore was suspended through lack of shipping accommodation. Production continued for a while at a diminished rate, and stocks of ore accumulated. After the close of the European War export was resumed in the early part of 1919, and the stocks reduced. Production has been reduced during the year (1921) on account of the low market combined with high freights and high costs.
[Antimony belt] extends to Redcastle, seven miles north of Costerfield, where auriferous antimony has been mined. At South Costerfield, one mile south from the main line along the lines of strike, the Alison shaft has been an important point of production. Two miles further south of the Alison shaft is Bradley's claim, from which antimony ore has been obtained. There are four equipped shafts on the field, including the Alison shaft, but for some time operations have been confined to the main shaft. The shafts are:-

Main or north shaft	1015 ft deep
Minerva shaft	295 ft deep
Bombay shaft	340 ft deep
Alison shaft	400 ft deep [24]

1926. The Costerfield Mining Company now holds some 306 acres ... The company is at present marking time pending the endeavour to float a new company to be styled "Antox Limited", with the object ... of purchasing as going concerns the auriferous antimony mines of the Costerfield Mining Company and the business and undertaking of the Antox Syndicate Limited of Sydney, New South Wales. The company will work the said mines, produce oxide of antimony for the manufacture of "Antox" non-poisonous pigment, and also recover the gold contained in the ore by a special process which has for many years been successfully employed by the Costerfield Company at their associated works at St Helens, Lancashire, England.
"It is proposed to centralise at Costerfield, Victoria, the operations of the two businesses, and to erect a plant capable of increasing the production of antimony oxide and of recovering the gold contained in the ore from which the oxide is made. This will result in a large saving being effected in the cost of production, as the ore will go straight from the mine to the furnace without entailing any charges for packing and transport ... will manufacture on the spot a commercially proved pigment" (Prospectus).[25]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site:

1861 to 1865:	Minerva Company. Installation of battery and furnaces.
1872:	Chinese cleaned up Minerva Battery site.
1875:	Property purchased and worked by Costerfield Company.
1880s:	Property acquired by Albion Co.
1891:	Property acquired by New Costerfield Co.
1902 to 1922:	Property acquired successively by Bombay Syndicate, Victoria Syndicate and Costerfield Mining Co.
1926:	Costerfield Antox Mining Co.--manufacture of "Antox" non-poisonous pigment.
1934/35:	Gold Exploration and Finance Company.

No references were found that directly related to the galvanised iron shed, iron stacks and associated footings. Discussions with the local Costerfield postmistress (current owner) suggests it may have had something to do with the operations of the Costerfield Antox Mining Co. and the manufacture of a pigment for the production of paint.

Minerva mine site

The Minerva mine site has been cleared and is currently the site of a rubbish disposal depot.

What does survive prominently to the S of the mine site is a galvanised iron shed. The shed has a distinctive appearance: a tall rectangular compartment with a shorter skillion lean-to on its N side. The former measures 30 x 15 ft, (4.55 x 9.1 m), has a gabled roof, and a maximum height of approx. 30 ft. The lean-to also measures 30 x 15 ft, and its side (or N) wall stands 5 ft (1.55 m). The shed is currently used for storage.

Between the shed and the Minerva mine site is a dump of treated tailings which is about 12 m wide and stretches for some 60 m. The northern slope of this heap contains mullock, suggesting that a mullock heap once adjoined the sand dump.

On the NW corner of the shed (skillion section) are two parallel concrete footings with protruding mounting bolts. The beds are 1 ft wide, 7 ¾ ft (2.35 m) long and are placed 1 1/2 ft (45 cm) apart.

19 ½ ft (5.95 m) from the E side of the galvanised shed stands a circular riveted-iron chimney stack. The stack would have a diameter of approx 6 ½ ft (2 m) and would stand approx 25 ft (7.6 m) above existing ground level. The iron stack rests on a 10 ½ ft (3.2 m) square brick base, which stands to a height of 4 ft (1.2 m) above ground level. The brick base has arched flue entrances (2 ½ ft (75 cm) wide and at least 2 ½ ft deep) located in the middle of its east, west and southern sides. The bricks used for the base are machine made. On the ground, near the stack, lies a 10 ft (3.05 m) long section of riveted-iron stack.

Abutting the S side of the shed is an above ground galvanised iron tank (5 ft or 1.5 m diameter).

25 m from the S side of the shed are some concrete footings. The site consists of a partially concealed concrete floor which would cover an area approx. 7 x 28 m. On this floor, at the N end is a rectangular hole. The hole measures approx 7 x 3 m and it contains three raised mounds. To the S of the hole is a single concrete engine bed (3 3/4 (1.15 m) x 7 ¼ ft (2.35 m), which is some 80 cm above floor. The engine bed's mounting bolts have been cut off.

INTEGRITY/CONDITION: Shed and stack in good condition.

CULTURAL SIGNIFICANCE:

Site 3.1 has:

- Historical significance because it:

a) is part of a group or network of sites, the totality of which is considered to be significant, namely the Costerfield gold and antimony field (Sites 1, 2, 4, 5 & 6).
b) is of considerable age.

The site may also have:

- Scientific significance, as the galvanised iron shed and associated stacks/footings may represent a particular type of process, ie. an inventive or innovative process (manufacture of "Antox" non-poisonous pigment).

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 Whitelaw, 1926, p. 6
2 Mining Surveyors' Reports, March 1864
3 Mining Surveyors' Reports, June 1864
4 McIvor News, 15 July 1864
5 Mining Surveyors' Reports, September 1864
6 McIvor News, 29 October 1864
7 Mining Surveyors' Reports, December 1864
8 McIvor News, 17 February 1865
9 Mining Surveyors' Reports, March 1865
10 McIvor News, 31 March 1865
11 McIvor News, 21 April 1865
12 McIvor News, 13 August 1869
13 Stillwell, 1922, p. 357
14 McIvor News, 29 March 1872
15 McIvor News, October 1875
16 F. Debney, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July

1891

17 McIvor News, 23 September 1892
18 McIvor News, 15 December 1892
19 McIvor News, 2 March 1893
20 Jenkins, 1900, pp. 66-7
21 Whitelaw, 1926, p. 7
22 McIvor Times, 2 May 1907
23 Chemical Engineering and Mining Review, 5 May 1920, p. 280
24 Stillwell, 1922, pp. 358-60
25 Whitelaw, 1926, pp. 7-10

SITE NO. & NAME: **5.1** **BOMBAY MINE AND CYANIDE WORKS**

LOCATION: **Upper Costerfield**

VHR NO: **H1298**

HI NO: **H7824-0030**

DIRECTIONS:	Cyanide works located across Creek, 120 m south-west of galvanised iron shed (Site 4.1)
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	Unreserved Crown Land

HISTORY:

Bombay mine

1860. No further attempt, apparently was made to test the ore until Messrs Youle, Coster, and Field came on the scene in 1860, and, in prospecting north of Doyle's old claim, unearthed, in Kelburn Creek, a tributary of Wapentake Creek, some boulders of oxy-sulphide containing coarse specks of gold. On their exhibiting these specimens to Mr Patterson, the then owner of Moorabie, a shepherd (McNichol) in his employ informed the prospectors that he knew of a deposit, *in situ*, of mineral resembling that on view, and offered, for £10, to guide them to the occurrence. An agreement being come to, he led them to a spot about 100 yards south of the present [1926] Costerfield Antimony Company's main shaft where, it is said, the oxidised outcrop of what is now known ... as the Costerfield main reef, projected above the surface 4 feet high by 4 feet wide by 20 feet long ... Viewing it through the timber of Tin Pot Gully, from a distance of a quarter of a mile, Youle pronounced the find a "buck" quartz reef similar to others on his original claim and which were then being broken down for road metal, left the party at that juncture, returned to Kelburn Creek, and later, moving to Heathcote, was no further heard of. The remaining members camped on the ground, and with picks and hammers soon found the white surface to be an envelope covering a heavy lead-grey mass of antimony sulphide in which free gold was plainly visible. Coster and Field secured the prospecting claim while others pegged northward to Redcastle (6 miles) and southward for 3 miles to the hills beyond Wapentake Creek. The ore broken from an open cut on the outcrop was handpicked pending the purchase of a crushing mill, and that portion of the sulphide in which gold was visible was sent to Melbourne. At £6 per ton this returned to the claim-holders sufficient capital to enable them to purchase and erect a six-head battery. Although Coster and Field held the pick of the shallow level ground, the claim-holders southward were well in the running, and in the ground afterwards worked by the Minerva and Bombay companies, Coster's shoot was follwed by them to water level.
Encouraged by the successes at Upper Costerfield (Coster and party were then obtaining as much as 4 oz of gold per ton) W. Morris, of Heathcote, as one of a Melbourne syndicate, essayed to locate the southern extension of the reef at Lower Costerfield (now South Costerfield) about 1 mile away on the southern side of Tin Pot Flat.[1]

June 1864. Bombay Co. Bombay Reef--crushing from 52 feet. [2]

December 1879. At Costerfield, the north level of the Bombay Co. has been extended 35 ft, and in driving that level some splendid antimony ore, fully 30 inches thick, was cut ... Tenders have been invited by the adjoining company--the Morning Star--for putting in a cross-cut to cut the Bombay lode.[3]

December 1879. Bombay Gold and Antimony Mining Co. Tenders invited for sinking main shaft 40 feet, driving level 100 feet.[4]

1880s. Prices [of antimony] slumped, and production practically ceased in the beginning of the eighties.[5]

June 1880. The Bombay Antimony Co., at Costerfield, has raised during the quarter 88 tons of antimony, which contains gold in small quantities.[6]

December 1880. The Bombay Co., at Costerfield, continues to give good yields. 65 tons crushed lately gave 95 oz of gold; and a large quantity of antimony ore is now being raised at this mine.[7]

March 1881. The Bombay mine, at Costerfield, is sinking their shafts and extending their levels; if they have little water to contend with, they expect shortly from 60 to 90 tons of antimony and seconds to put through the furnace.[8]

September 1881. Bombay Co., in July last, erected their winding engine.[9]

December 1881. At Costerfield, a reef was struck by the Bombay Company, at the bottom of the 270 ft level, the antimony being 6 inches thick.[10]

June 1882. The output of the Bombay Co. was up to the usual average.[11]

December 1883. The Bombay Co. Prospects of the mine most encouraging.[12]

September 1884. Bombay Co. has been idle for the whole quarter.[13]

June 1885. The Bombay Mining Co. is engaged sinking the main shaft--driving cross-cut to intersect the lode.[14]

June 1885. Bombay Co.--smelters operating.[15]

September 1885. At Costerfield, everything is dull, owing to the low price of antimony.[16]

December 1885. At Costerfield, the Bombay Co. has ceased work, and the machinery and plant have been sold.[17]

December 1886. The Old Bombay mine, which has now been idle for 2 years, is, I hear, likely to start work again. This mine has yielded gold and antimony to the value of £23,000, and during active work was the means of employing about 40 hands ... I have inspected the smelting works belonging to the claim, and find they are in good order and the most perfect in this part of the district.[18]

March 1887. Bombay Co.--obtained £400 from the Prospecting Vote.[19]

Amalgmation of Costerfield and Bombay mines

July 1891. Frederick Debney ... Had a lot to do with Costerfield ... The Costerfield Gold and Antimony mine was the principal one I was interested in. It was called Field's mine, but it ought to have been called Debney's mine, as I was the largest shareholder in it ... They got a gentleman from Germany, who put the company to expenses amounting to about £10,000. He was to treat our tailings and sludge, and oxidise the tailings and slum. He put in slides which were very good. One furnace was erected at a cost of £1200. When it was partly erected it fell down. Flues and furnaces were built and crushing machines erected before. They got no gold. They got dividends from the antimony. The gold was to be extracted from the antimony, but it was not done. They crushed quartz impregnated with gold. We had sent crude ore to England for assay. The ore was treated by three means, the chloral process, crushing and smelting. At the 420 feet level we put down an engine. The big one above supplied the steam to it ... At 620 feet we put in a drive of 25 feet. It showed a reef of 6 inches thick with 1 oz of gold to the tone, and a little antimony. That was the last of the workings of that mine. The company had no more money to prospect, or do anything ... Then came the Minerva, which the Costerfield Company bought out. There was a tremendous lot of gold in this mine--more than in the Costerfield mine, and also good antimony. The next claim on side line is the Bombay, to the west. The Bombay at the present time is one of the best pieces of property between here and Melbourne. The Bombay paid 11 dividends and was sunk to 350 feet ... The present company, the Albion Company, won't let any one else work it. Had to sell out the Bombay plant for £85. The poppet heads cost £250, and the furnaces £500 ... The tailings were worked three times at the Costerfield Company's mine. Chinamen worked them twice and now want them again. The reason there was so much gold lost was in consequence of the difficulty of separating the gold from the antimony. We had a good battery at that time. We commenced with quicksilver. The quicksilver got thick, and gold and antimony went over it ... antimony and quicksilver could not save the gold. The antimony thickened the quicksilver, and it would not pick up much gold ... We had to knock off quicksilver and use blankets. The great difficulty was the treating the refractory ores. We had copperplates, blankets, and quicksilver. There was nothing to save the gold below the blankets. After that the tailings went to waste. The buckets were washed in tubs and what was on them and put into an amalgamating barrel. The blankets after they were worn out were burnt and the refuse put into the barrel. The gold saved was 20 percent. below the assay. They were getting 5 dwts to the ton crushing the tailings over again with the blankets, but they were washed again, twice by the Chinamen. Believe there was pyrites in the ore. At South Costerfield were the South Costerfield and Alison mines. Had an interest in Alison mine, when it was paying 20 oz to the ton. It was worked to 380 feet. There was very little antimony in the mine. Between the mines of the Upper and Lower Costerfield the distance is a mile and a quarter with no trace of an outcrop between them. Over a mile of ground has never been touched ... The South Costerfield mine is the Southernmost mine. It has not been working for 8 years. Between this and the Alison the ground has not been touched. The Albion Co. hold the Old Costerfield, the Minerva, Bombay, Morning Star, the South Costerfield (Tait's claim), and the Albion mines. In all 269 acres, and over a mile and a quarter of ground ... Mr E.Y.L. Brown was the only expert at South Costerfield. He was never engaged at the Costerfield mine. He is now Government Geologist in South Australia. The treatment of the ore at South Costefield was a secret. They had a battery there. Mr Brown and Mr Moodie were smelting there. They smelted there on the chlorination system. They used to take from 6 to 8 oz of gold per ton from the ore from the Costerfield mine.[20]

September 1892. Costerfield. Inspection of the lease for the purpose of selecting a suitable site for the putting up of machinery, which is to be of a powerful and expensive character, both for sinking shaft and driving a battery. The place decided upon for the erection of the plant is at the old shaft of the Costerfield Gold and Antimony Co., which is to be sunk a further depth of 200 ft.

Two monuments of Costerfield's former industry were destroyed this week. Two chimney stacks, one in front of the hotel, had the bricks cut from under them, and the pair came toppling down. This was in order to obtain bricks for fixing up the new machinery.[21]

December 1892. New Costerfield Co., which is setting up, includes in its program the treatment of 60,000 of tailings.[22]

March 1893. The New Costerfield Metal and Extracting Co ... has taken up a total area of 269 acres 2 roods 5 perches, embracing as it does the whole of the mines, the Old Costerfield, Bombay, Morning Star, Prince of Wales, Minerva and Alison's ... the cost of erecting the machinery will be heavy: estimated that it will cost from £15,000 to £20,000.[23]

Installation of new plant at Old Costerfield shaft

March 1893. Costerfield. The poppet legs have already been erected, and the work of building in the boiler is now proceeding with other work. The engine bed has been completed and the engine in place.[24]

April 1893. Costerfield. Principal work done was shifting an immense boiler about 40 ft long, and weighing about 9 tons, into its bed, where it is now comfortably settled, and is now being bricked up. Clearing away old timber from the site of the battery, and making ready for putting up the stampers, etc. is now being attended to. The connecting rods of the pumps are also being put in order.

April 1893. Costerfield. The large boiler has been built in and connected with the chimney. Two engines have been placed in position, one for working the pump and the other for driving the battery. The battery is now being attended to. A couple of stamper boxes, each of which will contain 5 heads, have been raised to the place where they are to stand, and are now being fixed up ... A contract has been let for the building to contain the machinery and also for repairing the furnaces on the old Bombay lease.[25]

May 1893. New Costerfield Metal Extracting Co. Dewatering first, then treatment of antimony and tailings. Two engines, 14 and 16 inch cylinders. Percussion tables and Watson and Denny Pans to be completed. Old shaft cleaned out to a depth of 60 ft and good lode going 40% antimony and 1 oz gold per ton.[26]

May 1893. The bed of another boiler to supply steam to the winding engine has been laid down. Tenders called for putting up the battery shed. Two Denny Pans have been purchased from Rushworth.[27]

May 1893. An excavation has been made for the purpose of fixing the Watson and Denny Pans.
The bed for the winding engine is approaching completion, and the railings have been placed around the bob-pit.[28]

May 1893. New Costerfield. 10 stamps installed and bed for new boiler laid.[29]

June 1893. Two percussion tables have been fixed, as has one of the Denny and Watson pans.
The poppet legs have received a coating of paint, and look quite respectable with their white coat.
The plant expected to be working in two months.
The vanners have arrived and will shortly be fixed up.
A tender has been accepted for removing the poppet legs at Hedley's shaft, and erecting them at the Bombay Mine.[30]

July 1893. A retort house is being erected alongside of the chimney stack. The two tailing pits are finished and part of the pumping gear fixed in the same.[31]

August 1893. A complete change has taken place since my last visit. Then all the machinery was strewn over the ground, but now there is a large machinery shed erected and poppet heads painted and union jack flying from the top, giving it all the appearance of a new industry ... [Mr Williams] fully described the different parts. How the tailings would be treated: first in the breaking pans, then on to the ripple tables, then the cushion tables, grinding pans, concentrating tables and vanners. There is also a patent from Mexico or Cornwall for further treatment, which is a great saving of labour. Mr Williams tells me that they will use the shaft, which will be worked with a draw lift. It was put in position on Saturday. The counter shaft will be drawn with tension rope gear. For the night work there will be four large tramway lamps and a gasoline lamp. The large boiler is fitted with galloway tubes. It was tested last week and stood the test well--a pressure of 70 lb. It will work with about 50 lb. Connected with the machinery shed is the retort and assay office ... Mr Williams tells me that they are giving £2 a ton for picking out the antimony from the tailings. Here is a chance for some of the unemployed of Heathcote and Costerfield.[32]

August 1893. Tailings from Costerfield Co. treated at Bendigo, 23 tons yielded 15.95 oz.[33]

August 1893. New Costerfield plant "christened".[34]

February 1894. New Costerfield Metals Extracting and Mining Works. Tailings to be treated by the new chlorination method.[35]

March 1894. The New Costerfield Company is keeping the furnaces going day and night, burning sand ... chlorination works are nearly completed ... [sand] will be treated by what is known as the chlorination process.[36]

April 1894. NCME & M Co. First clean-up after chlorination. 104 tons of tailings yielded 13 oz 5 dwt. This was disappointing in view of what was expected. Poor recovery was due to inefficient filtering. Asaay of sand treated was 16 dwt per ton, and after chlorination found to contain 2-3 dwt per ton, but most lost in liquors which were not filtered satisfactorily.[37]

July 1894. Costerfield. Trial of New Costerfield Mine resulted in 6 dwt to the ton being saved through the pan process.[38]

August 1898. A cyanide plant has been put up at South Costerfield by Mr McFadgean to treat the tailings from the battery there by that process. Work has been progressing for some time.[39]

1900. At Costerfield itself there are two smaller mines besides the large one that is so well known, but none of these were open, being full of water.
On the western side of the road is the shaft of the "Morning Star", reported to being down 200 feet on a lode up to 2 feet thick.
The "Bombay" is said to be down 340 feet, with several levels. This mine has been taken up by Mr Debney, of Heathcote, and partners, but after putting down machinery they were unable to unwater the mine, owing to the requirement of Act of Parliament that their winding engine must only be used by a first-class driver, notwithstanding that it was only to be used for baling water, and that one of the working party possessed a 2nd class certificate. The syndicate was not able to afford the wages of a 1st class driver for the purpose, and thus the mine is full of water, idle, and the party losing, although material is believed to be opened all ready below for stoping.
The "Bombay" and "Morning Star" are probably on different lodes from that of the large Costerfield mine.
Near by the road on this side is a long bedded reverberatory furnace with condensing flues and stack, and a Newbery Vautin Chlorination plant, with 4 feet by 4 ft 6-in. barrel. This is still in such order to admit of repair, but is fast going to wreck.
During the latter days of the [large] mine as a going concern a new shaft, intended to cut the lode in depth, was started midway between the north and the Minerva shafts. This was not completed. Preparations, also never finished, were made recently to equip the north main shaft, and some of the pieces of a winding engine still lie about the surface as a result. I gathered that the pumps at present on the shaft have merely been used for the purpose of supplying the battery with water, the shaft being used as a well.
The Mill displays the name of the New Costerfield Metals Extracting and Mining Company. It is arranged as shown in sketch, and has ten head of stamps, amalgamated plates, Halley tables, Berdan and grinding pans, through which the pulp was intended to be passed, and finally longitudinally shaking tables with deerskin surfaces.
On the refuse heaps near the Mill are to be seen the remains of very costly abortive experiments made by a Mr Herrenschmidt, in which the practice of endeavouring to drive off the antimony by heat from the ore, itself an unintelligent proceeding, unless a very large excess of sulphur be present, which is not the case here, had been further attempted by the aid of appliances, namely, a rotating cylindrical furnace and accessories, utterly unsuited to any operations whatever upon the ore at furnace temperature. A few days' work seem to have satisfied those interested upon this point, but this was not before several thousands of pounds had been expended.[40]

1903. Prospecting work being done by the Felix Brown and Quarry Hill mines.[41]

1903. By the long arm of coincidence, a namesake of the discoverer of the field ... was deputed by London capitalists to visit the Commonwealth and inquire into the conditions and prospects of antimony mining in the eastern States. Arriving in Victoria in 1903, Mr J.J. Doyle ... reached Costerfield and soon satisfied himself that the deposits there well fulfilled the conditions required by his principals who held the patent rights of what is known as the Plews process for the treatment of antimonial ores. The ground then held by the Victoria Syndicate (late Bombay Syndicate) was taken over on behalf of the London people, and with additional areas pegged by Mr Doyle, the Costerfield Mining Company now [1926] holds some 306 acres.[42]

1903. A more prosperous era commenced in 1903 with the advent of the Bombay Syndicate Ltd, which changed into the Victorian Syndicate Ltd and then developed into the present [1922] Costerfield Mining Company.[43]

1903-20. From 1903 to 1920 Costerfield has produced the whole of the Victorian production [of antimony].[44]

Erection of milling & cyanide plant at Bombay mine site

1904. At the Bombay Mine, which is owned by an English company, progressive work is being carried on, the principal object being to work the mine for antimony. The ore is being carefully picked and sent to England for treatment, and from the results so far obtained it is hoped that it will be the means of resuscitating the mining industry in this place. I am informed that it is the intention to erect a large concentrating plant to facilitate the treatment of ores.

Costerfield Tailings Company apparently intends to vigorously work the large amount of antimonial tailings that are distributed over the lease. For their treatment they have erected an up-to-date plant, which consists of two Merton patent roasting furnaces, which are a three-hearth type, 6 ft 6 inches in width, by a length of 32 ft, and one worked by wormed gearing, driving five vertical shafts. Attached to each shaft are rabbles for mechanically stirring the ore. The rabble on the lower finishing hearth is water-cooled. From the fire-hole the flames pass along the lower hearth; and after reaching the end of the furnace, ascend to the next hearth; after traversing this, they return along the top hearth to the flue, and thence into a brick stack 60 ft high ... From the cooling floor the ore is filled into trucks and hauled by means of wire rope up an inclined tramline, over the tops of three cyanide vats, the latter being 24 ft diameter and 6 ft deep ... The exhausted tailings are shovelled through bottom discharge doors into trucks under the vats, and thence conveyed to the dump. The storage and water tanks, each 12 x 7 ft are made of galvanised iron and set on wooden frames. The sumps are built of brick and cement, 18 ft diameter by 7 ft deep. Precipitation by zinc has been adopted. The motive power is an 8 hp Tangye engine and 10 hp Tangye boiler. A 3-inch centrifugal pump is used for pumping solutions from sumps to storage tanks. The company has put down a tramline, 19 chains in length, from the tailing heap to the furnaces, over which the ore is trucked into a 40-ton bin. An efficient assay house, well equipped, completes the plant and the lighting of the works at night is effected by means of 700-candle power Lux lamps. It is expected that this plant will conveniently handle 1,000 tons of tailings per month.[45]

February 1905. Cyanide works at Costerfield which is in the course of erection over last six months are now completed and the treatment of sand has begun. Plant consists of 2 iron four-tiered furnaces for roasting, and three 20 ft diameter vats of cyanide solution. There are also two large underground tanks.[46]

November 1905. Costerfield cyanide works have yielded “it is stated in some quarters” over 360 oz in 10 weeks.[47]

1905-1922. In 1905 mining operations were resumed [at Costerfield] and continued for a period of seventeen years. The gold produced in that period was valued at £240,280, and the antimony at £348,645.[48]

January 1906. Part of the machinery for the Bombay Mine, Costerfield, was delivered at the Heathcote Railway Station. The mine will be developed as soon as possible after the remainder of the machinery arrives.[49]

May 1906. London Price Rise of antimony to £100 per ton should give an impetus to mining in the district.[50]

November 1906. Bombay Company--80 tons of antimony ore shipped to England.[51]

1906. The Costerfield Tailings Co. has not yet been at work for months past, consequent upon the ineffective system applied to the treatment of ores, rendering the same unremunerative.
Elsewhere in the division, a few private parties are prospecting in a desultory kind of way.[52]

c. early 1900s. After chlorination and cyaniding had been resorted to with indifferent success, it was shown by assays that there still remained about 4 dwt of gold per ton.[53]

Old Costerfield shaft re-opened and worked by Heathcote Syndicate

January 1907. Bombay mine. Over 120 men and boys employed. Company spends £1400 per month on the mine. Reef is taken out systematically from stopes and stopes refilled with mullock.
Old Costerfield shaft is being re-timbered and will be dewatered in a few weeks.[54]

April 1907. Old Morning Star shaft is being repaired prior to underground operations with same object in view, a party of men are negotiating with the management of the Minerva shaft, situated close to the Cyanide Works.[55]

Bombay syndicate taken over by Victoria Syndicate

1907. The "Victoria" Syndicate Ltd are operating on the "Bombay" line of reef with a very marked measure of success ... The ore produced from the mine, chiefly antimony, containing gold up to 2 oz to the ton, is shipped to England for treatment ... working mine with a duplex 8-inch diameter cylinder air winch. Total output of 4,500 tons of ore ... This has yielded 620 tons of picked ore of average value of 45% antimony and 35 dwts gold per ton. Additions made to the machinery and buildings--cost £14,350; a new set of high-speed crushing rolls with elevator, hopper and sizing trammel; one No. 8 Blake pump; one large Cornish boiler, built in with brickwork. An air compressor has been erected ... A new GCI [galvanised corrugated iron] building has been built covering boiler and air compressor. A new ore-drying hearth and bagging shed, also an office and store room. Three additional jigs have been purchased and also another pair of fine crushing rolls.
Heathcote Syndicate Ltd has operated intermittently during the year ... repairing old shaft, preparatory to sinking same to 1,000 ft, the present depth being 650 ft. From old circulars and reports, together with the fact that all the appliances for treating low-grade ore were very primitive when this mine was last worked ... A winding engine and boiler, poppet heads, with new pulley and winding ropes, and other plant were placed in position ... During the first half year £1,084 was spent on the shaft and No. 1 level, together with the cost and erection of machinery.[56]

1907. The Victoria Syndicate Limited, Costerfield. A total output of 4,500 tons of original ore, inclusive of quantities taken on terms from the "Heathcote Syndicate and other contracting parties", was raised and treated. This has yielded 620 tons of picked ore of an average assay value of 45 per cent antimony and 35 dwts of gold per ton. The milling ore after being reduced by careful picking has yielded 280 tons of concentrates, with an average assay value of 50 per cent antimony and 38 dwts of gold per ton. The total of 900 tons has been shipped to England at an advance of £15 per ton. for further treatment the whole of the tailings, which average 6 per cent antimony and 4 dwts 20 grs of gold per ton have been stored. Sixty ounces of gold have been recovered from the battery. The expenditure on the mine for the year amounted to £14,350. Additions have been made to machinery and buildings as follows: a new set of high-speed crushing rolls with elevator, hopper and sizing trommel; one No. 8 Blake pump for returning the water to the service tank. One large Cornish high-pressure boiler has been built in with brickwork. an air-compressor has been erected. an air-receiver and 4,000 feet of new steel pipes have been put down, making a connection with the Costerfield main shaft. A new GCI building has been built covering boiler and air compressor. A new ore-drying hearth and bagging shed, also an office and store room have been built ... Three additional jigs have been purchased and also another pair of fine crushing rolls. These have not yet been put in position. These additions for purchase and labour have cost £2,000.
The Heathcote Syndicate Limited. Costerfield mine. From old circulars and reports, together with the fact that all appliances for treating low grade ore were very primitive when this mine was last worked, it appeared that if access to No. 1 level were made possible ore from the old stopes could be obtained. A new collar was put on the shaft, and all bad timbers were renewed down to 180 feet, at which depth water was found. A winding engine and boiler, poppet heads, with new pulleys and winding ropes, and other plant were placed in position.[57]

January 1908. Bombay Co. During past 12 months, total of 900 dressed ores has been treated. About 630 tons of this assays 45% antimony and 1.75% gold ... Sixty ounces of gold have been recovered from the battery. Expenditure on the mine for the year amounts to £17,000. Additions include new high speed rolls with elevator, hopper and sizing trammels. No. 1 Blake pump for returning water to service tank. High pressure Cornish boiler, air compressor, etc. [Bombay--Victoria Syndicate][58]

May 1908. Cyanide Co. Rebuilding furnaces etc. with a view to recommencing operations shortly.[59]

1908. At the antimony mines in this district, work has been carried on this year on an extensive scale; owing to the low price of antimony the results have not been so successful during the latter part of the year, and work is at present being carried out on rather restricted lines whilst the company is reconstructing.
Victoria Syndicate Ltd. Amount of ore treated, 3,679 - 869 tons of concentrates, total of £10,428.
Additions made to the plant in the year. Also the old Costerfield mine has been de-watered and opened up to 420 ft and the Bombay shaft sunk another 100 ft. The company is being re-organised and more capital raised to carry out developmental work on a larger scale.[60]

1909. Principal work in this portion of the district carried on by the antimony mines at Costerfield, where a fair number of men are employed.
At Costerfield, operations are limited to that carried on by the Victorian Syndicate, which is working steadily on the auriferous antimony ores that failed to pay under the poor extraction methods pursued in earlier years.
Victoria Syndicate Ltd. The above company has raised from the old Costerfield and Bombay mines 1,750 tons of original ore, which has yielded 340 tons of concentrates of an assay value of 46% metallic antimony and 2 oz gold per ton, which have been shipped to the order of St Helen's Smelting Co. ltd, England. The concentrating plant has been remodelled ... The plant is now complete, both in crushing and concentrating arrangements. In addition to the mine output, 2,929 tons of residues have been run through for the yield of 160 tons of fine concentrates assaying 45% antimony and 2-1/2 oz gold per ton.[61]

Property passes into hands of Costerfield Mining Company

1910. At Costerfield, operations restricted to those conducted by the Victorian Syndicate, which is successfully treating the refractory auriferous antimony ores and the old-time slag and tailing heaps.
Victoria Syndicate. Ore raised, 1,262 tons--240 tons of concentrate. Tailings concentrated 8,135 tons--45- tons of concentrate. A new tailings pump has been added to the mill, and two slime concentrating machines are being erected. Underground has driven 350 ft of cross-cuts, which have opened up 40,000 tons of milling ore, of an average assay value of 7% antimony and 8 dwt of gold per ton. The property during the year has passed into the hands of Messrs C.H. Nevill, A.B. Lunham, T.C. Nevill ... whose connection with the English smelters always insures a reasonable price, with a constant market.[62]

December 1911. Bombay continues running three shifts. Thought the old slimes can be worked profitably. Roasting furnaces are being renovated. If bulk trial is a success, new plant will be erected for extraction of antimony oxide. The price of antimony is low.[63]

1911. Victoria Syndicate. 743 tons of concentrates of ore--gross value over £8,000. Winze from the 400 ft level sunk 100 ft. ... air winch installed. Two Linkenbach tables have been added to the concentrating plant. 70 men regularly employed.[64]

June 1912. Costerfield Antimony Mine. 3,663 boys recently despatched to St Helen's smelting works, Lancashire, England.[65]

1912. The Costerfield Mining company has raised and treated 2,430 tons of ore and 8,075 tons of tailings, recovering 1,475 tons of concentrates values at £16,162.
The ore is hand picked closely as it comes from the mine, all waste rock is eliminated, the rich ore is cobbled and broken, and all above 48% antimony is bagged and shipped to England. The seconds or milling ore is then passed through rock-breaker and rolls, then sized for gigs, Wilfley and card tables, the slimes going to two improved Bartch vanners. A new winding engine, boiler and air compressor have been added to the plant. The general manager has made a strenuous endeavour to find limestone and ironstone to use as fluxes to smelt the ore on the field, but the absence of railway facilities and heavy cost of cartage and labour will not allow a comparison of costs favourable to that project. The proprietor has spent over £100,000 on the property, and so far no dividends have been paid.[66]

1913. 6,251 tons of mine ore, 4,530 tons of tailings recovering 2,808 tons of concentrates, having an average assay value of 47% antimony and 2-1/2 oz gold per ton. Concentrates shipped to England. Bulk of ore mined at 500 and 600 ft levels. A new Krupp's mill has been erected to take the place of the stamps; additions have been made to the sizing arrangements at the mill, and an additional Cornish boiler has been installed. A new storeroom and office have been built, and a large fitting shop is in the course of erection; 200 men and boys employed by this company.[67]

October 1914. Mill stopped owing to lack of water.[68]

1914. 7,600 tons of mine ore, which returned 2,283 tons of concentrates; 3,370 tons of tailings, 156 tons of concentrates. The estimated value of the concentrates shipped to England is £29,350.
Antimony metal has risen in value during the last month from £30 to £63 per ton, owing to its use at the war. The antimony metal extracted from the ore mined at Costerfield is given first place in the British metal handbook, and the owner of the mine has entered into an agreement to supply the British Government with antimony for 12 months.
A new set of poppet heads erected.[69]

1916. Costerfield Antimony Mines. During 1916, the Costerfield antimony mines, Heathcote, Vic., produced 12,382 tons of ore, which yielded 3300 tons concentrates. These were shipped to the St. Helens' Smelting and Refining Company, England, which is controlled by the Imperial government under the Munitions Act, 1915.
Opening up the old South Costerfield mine proved very expensive, owing to heavy water and the bad condition of shafts. The deposit here is patchy, and the country rock broken by slices and cross-courses. The ore lenses are not continuous, and production will be expensive. The old Costerfield North shaft has been sunk to 800 feet, and cross-cuts put out to the reef ... Cross-cutting west on the 600 feet level has opened up a vein of good ore, which will add considerably to the life of the "old" mine, as it will be west of all workings in the upper levels.
Nearly all work underground at Costerfield has been carried out on the contract system. The average wage earned by contractors has been 15/- per shift. The company employs over 30 men and boys, and paid in wages, etc., £60,000 for the year.
The advisability of supplementing the concentrating equipment by the addition of a M.A. flotation unit is being considered.[70]

1920. The Costerfield antimony and gold mines, Heathcote, Vic., have been closed down, pending extensive alterations to the machinery and plant.[71]

1903-22. Costerfield Mining Company. This company's success has depended principally on the solution of the smelting problem at the smelting works of a sister company at St Helens, near Liverpool, where the gold is completely recovered from the antimony. A contributing factor has been the gradual elimination of losses in separating the ore from the mullock in the crushing and concentrating mill, and the present mill residues at Costerfield contain, on an average, only 15 gr of gold per ton and 1/2% of antimony.
The ore mined at various depths between 420 ft and 780 ft at the main mine. The ore obtained from the Alison mine, at South Costerfield, one mile south of the main shaft at Costerfield, has been of lower grade ... owing to a relatively high percentage of iron pyrites.
In May 1917, the export of the ore was suspended through lack of shipping accommodation. Production continued for a while at a diminished rate, and stocks of ore accumulated. After the close of the European War export was resumed in the early part of 1919, and the stocks reduced. Production has been reduced during the year (1921) on account of the low market combined with high freights and high costs.
[Antimony belt] extends to Redcastle, seven miles north of Costerfield, where auriferous antimony has been mined. At South Costerfield, one mile south from the main line along the lines of strike, the Alison shaft has been an important point of production. Two miles further south of the Alison shaft is Bradley's claim, from which antimony ore has been obtained. There are four equipped shafts on the field, including the Alison shaft, but for some time operations have been confined to the main shaft. The shafts are:-

Main or north shaft	1015 ft deep
Minerva shaft	295 ft deep
Bombay shaft	340 ft deep
Alison shaft	400 ft deep

[72]

1905-22. During the period 1905 to August 1922 [the Costerfield Mining Co.'s ground] has yielded 23,243 tons of ore valued at £588,925 (antimony, £348,645; gold, £240,280).[73]

1903-25. This period was characterised by efficient smelting techniques enabling complete recovery of the gold and the successful treatment of old tailings.[74]

<u>New company being floated--Antox Limited</u>
1926. The Costerfield Mining Company now holds some 306 acres ... which, during the period 1905-August 1922, has yielded 23,243 tons of ore valued at £588,925 (antimony, £348,645; gold, £240,280). Prior to 1905, but excluding the period 1883-1905 concerning which there is an entire absence of statistics, 28100 tons of antimony, value £346,500, and gold, 13,494 oz, value £53,976, were produced. To the above figures has to be added £7,500, the estimated net value of tailings still to be treated, giving in round figures an extraction of £1,000,000, practically the whole of it coming from the one mine.
The company is at present marking time pending the endeavour to float a new company to be styled "Antox Limited", with the object ... of purchasing as going concerns the auriferous antimony mines of the Costerfield Mining Company and the business and undertaking of the Antox Syndicate Limited of Sydney, New South Wales. The company will work the said mines, produce oxide of antimony for the manufacture of "Antox" non-poisonous pigment, and also recover the gold contained in the ore by a special process which has for many years been successfully employed by the Costerfield Company at their associated works at St Helens, Lancashire, England.
"It is proposed to centralise at Costerfield, Victoria, the operations of the two businesses, and to erect a plant capable of increasing the production of antimony oxide and of recovering the gold contained in the ore from which the oxide is made. This will result in a large saving being effected in the cost of production, as the ore will go straight from the mine to the furnace without entailing any charges for packing and transport ... will manufacture on the spot a commercially proved pigment" (Prospectus).
It is calculated that the ore reserves in the main mine would of themselves keep the mill employed for ten years.
No special attention has been given to the treatment of the 150,000 tons of tailings (net value £7,500) heaped on the surface, but, in course, of time, the whole of these will be absorbed by their inclusion in limited quantities ... with the ores as trammed from the mine, it having been found by experiment that owing to a certain amount of oxidation having taken place the older sand, per se, is not amenable to the treatment process now in operation.[75]

1926. According to an estimate made in 1926, after the Costerfield mine had been closed down four years, the ore reserves in sight amounted to 29,082 tons of antimony concentrates, containing antimony to the estimated value of £436,220 and gold (at standard price) £290,280.[76]

<u>Property taken over by Gold Exploration and Finance Company of Australia and new plant installed at Old Costerfield shaft</u>
1934-5. In 1934 work was resumed on a large scale, and is now in progress.[77]

1935. This field [Costerfield] is notable for its reefs bearing antimony and gold. Several reefs have been mined, some of them over a length of 2 miles. The value of the antimony produced has exceeded that of the gold, although the reefs were consistent in gold values, averaging 2-1/2 oz. to the ton of concentrate, and sometimes reaching to 7 oz. per ton.
The shaft of the Costerfield mine was sunk 936 feet, but stoping ceased at 686 feet.[78]

1935. Costerfield. Gold Exploration and Finance Company of Australia equipped the old Costerfield Antimony Mines with a power plant consisting of 3 Crossley Diesel engines, a two-stage air compressor, two generators, winding hoist and poppet heads, unwatering operations were commenced with an air lift and later the work was completed by means of multi-stage centrifugal pumps. Prospecting operations are in progress.[79]

1937. I understand the Costerfield Antox Mining Co. used some of the ore [from an iron ore deposit on Red Hill, Heathcote] for fluxing purposes and that the ore carried 20 grains of gold per ton.[80]

1937. In a recent report on the Costerfield gold-antimony mine, which is being developed by Gold Exploration and Finance Co. of Australia Ltd., Mr G. Lindesay Clark stated that the mine was operated intermittently for 60 years. Production records show a total of 77,000 oz of fine gold and 20,000 tons of metallic antimony ... Prospecting is being continued north of the shaft.[81]

1940. Production statistics. Antimony concentrate: Gold Exploration and Finance Co. Ltd, Costerfield, 21-1/2 tons, value £1,577; New Alison Mining Co., Costerfield, 7 tons, value £148.[82]

1944. The antimony mines at Costerfield and ? have been closed down.
The concentrating plant at Costerfield for the recovery of antimony from the old mine dump ceased operations.[83]

1935-51. The third and final period of operations from 1935 until 1951 when approximately 1,000 tons of concentrate were produced.[84]

1951. The increases in world-prices for base metals revived interest in the antimony field at Costerfield.[85]

1966. The major producer from the field is the Costerfield Antimony Mine which operated for two main periods, from 1860 to 1883 and 1903-1925. Recorded production is approximately 48,000 tons of stibnite concentrate containing an estimated 22,000 tons of antimony. Gold production is recorded at 77,0000 oz.
Stibnite (antimony sulphide) contains approximately 70% antimony and is the major source of this metal.
Antimony is a brittle, silver white metal with a low melting point. Its principal use is an ingredient in lead base alloys to which it adds strength and resistance to chemical attack. As an alloy it is used in battery grids, chemical pumps and pipes, tank linings, antifriction bearings, printer's type metal and in ammunition.
The oxide is used in metalware and ceramic enamels, as a white pigment in paints, in glasses, in the textile industry, and as a fire retardant in fabrics.
Typically stibnite bearing reefs are relatively small and of limited strike length. The Costerfield reefs are no exception to this rule.[86]

c.1935-85. Over the last fifty years several fresh starts have been made at [the Costerfield Gold and Antimony Mine] but none of them lasted very long. The mine is now [1985] closed.[87]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site. From what has been collected the main mining periods appear to be:

early 1860s to 1885:	Bombay Co. Installation of battery and furnace(s).
1891:	Property, and other at Upper and Lower Costerfield, taken over by New Costerfield Co. The main activity for this company appears to have been around the old Costerfield (main) shaft. The old Bombay furnaces were repaired and new poppet legs erected over the Bombay shaft.
1903-1922:	Property taken over and successively worked by Bombay Syndicate, Victoria Syndicate and Costerfield Mining Company. Erection of milling and cyaniding plant near Bombay shaft. Cyaniding carried out by Costerfield Tailings Co.
1908:	Cyaniding Co. Rebuilding furnaces etc.
1935:	Cyaniding of old dumps at Costerfield still profitable.
1950s+	Reworking of tailings.

Historical references and the nature of the visible remains suggests there are at least five phases represented on the Bombay mine site:

Latest phase (1950s+)	Remains of modern roasting oven.
Later phase of cyaniding:	Flattened tailing heap containing gal iron soaking vats, iron agitator and drainage tanks, and collapsed shed.
1903: Costerfield Tailings Co.	Row of concrete cyaniding vats and associated concrete engine beds, bedlogs and timber framework, brick Chilian wheel, concrete footings.
1890s: New Costerfield Co.	Timber framework of battery, brick Chilian mill and large concrete mining machinery foundations.
1860-1885: Bombay Co.	Dam and mullock heap.

1950s cyanide works

Positioned on the flattened top of an 8 m high tailing heap are features associated with the latest phase of cyaniding. These consist of the remains of several sunken galvanised iron vats. Depressions suggests that vats once ran along the S side of the dump, but have been quarried away. On the E side of the platform, are two in-situ vats. One has been cut in half by quarrying activities, the other is complete, but buried. The latter has a diameter of 17 ft (5.2 m). Next to the complete vat is a concrete and brick base, which contains a circular impression of a galvanised iron tank. Diameter of tank's base is 4 ¾ ft (1.45 m).

Immediately N of the brick and concrete base is an raised iron agitating vat. The agitator mechanism is still in place and is like a ship's propeller. The vat has a diameter of 13 ft (3.95 m), and has a sloping concrete base.

Immediately E of the agitator tank, positioned at its base, are two circular iron drainage vats. The vats, positioned on a levelled platform about half way down the tailing heap, stand to a height of 4 ¾ ft (1.45 m) and have a diameter of 12 ft (3.65 m). Leading from their bases are drainpipes.

New Costerfield Co.

10 m N of the two drainage vats, located at the base of the tailing heap is the substantial remains of a collapsed galvanised shed. On close inspection it was found that what survives of the south-east corner of the shed is in fact the remains of a ten-head battery. It appears that the battery's wooden framework (hewn timber) was utilised as a loading bay. What survives of the battery consists of two parallel 20 ft (6.1 m) long bedlogs, spaced 10 ft (3.05 m) apart. The bedlogs are 1 ft thick, and between them are placed two sets of three battery stumps. Each stump is 18 inches (46 cm) square and stands about 5 ft (1.53 m) above the ground. The two sets of stumps are separated by a post and crossbeam. S of the intact battery framework, are some more disturbed battery stumps which disappear into the tailing heap.

17 m NNE of the ten-head battery, towards the creek, is a circular structure which is raised 2 ½ ft (76 cm) above ground level. It comprises a 2 ¾ ft (84 cm) thick outer wall which encloses an inner space 13 ft (3.95 m) in diameter and at least 2 ft (60 cm) deep. Set in the middle of this space is a 4 ½ ft square concrete mounting block. The mounting block has bolts protruding from each corner and its top surface is set approx. 9 inches below the level of the outer wall. Running around the middle of the outer wall is a 1 ¼ ft wide (38 cm), 6 inches deep slot. The slot's exterior wall is formed by a row of bricks (machine made, shallow rectangular frog), and its inner wall by a ¾ ft thick sheet of rough concrete.

18 m SE of the ten-head battery are very substantial concrete engine beds which stand at least 1 m above existing ground level. There are 3 distinct mounting blocks, aligned E-W, all of which have protruding mounting bolts. The most northerly is an irregular shaped block, which covers an area 7 ¼ t (2.21 m) x 11 ft (3.35 m). Four feet to the S is the first of two parallel mounting blocks, which are positioned 3 t apart, and are 4 ½ ft wide and 24 ¾ ft (7.54 m) long. The bolts that have not been bent over stand 1 ft above the surface of the blocks.

Costerfield Tailings Co.

16 m south of the concrete mounting blocks, running in a south easterly direction, are six concrete cyaniding vats. The vats's concrete walls are approx. 5 inches thick and still retain the impression of galvanised iron lining on their interior surface. Each vat has a diameter of 16 ½ ft (5.02 m) and an approx. depth of 3 ft (91 cm). The vats are positioned approx 7 ft (2.13 m) apart.

To the W of the most northerly concrete vat, on a raised platform, are some concrete footings. On the highest level of the platform are two tall, but narrow concrete mounting blocks. The most northerly block has been pushed over. The surviving block, stands 4 ft high, measures 7 ft x 1 ft at its base, and slopes inwards to form a top surface measuring 4 ft x 1 ft. It has mounting bolts on each of its corners. E of the concrete footings are two parallel bedlogs with protruding mounting bolts. The bedlogs are 6 ft (1.83 m) long and 18 inches (46 cm) thick. Below the bedlogs at the base of the platform are more remains comprising timber framework, bedlogs and concrete footings.

Running south from the back (west side) of the machinery site is a dump of mullock. An extensive tailing dump is located further to the S.

Modern roasting oven

SW 100 m from the iron agitator vat is a modern brick and concrete roasting oven. The oven measures 25 (7.6 m) x 16 ft (4.9 m), is aligned N-S, and stands about 6 ft (1.82 m) above ground level. It contains six roasting chambers running E-W. Along the top of each chamber are 4 chimney openings, formed by the 44-gallon tins. The oven's concrete sides have been mostly demolished. Near the S end of the oven is the butchered remains of a riveted iron chimney stack. The stack is of similar construction to the one still standing near the Minerva mine site. Apart from some slag coated bricks (both red and firebrick) and slag lumps there is nothing visible of the earlier furnaces which once stood on the site.

To the NW of the roasting oven are several concrete mounting beds (not surveyed).

Bombay Co.

50 m S of the roasting oven is the Bombay Dam.

INTEGRITY/CONDITION: Concrete footings, battery framework & Chilian mill in good condition. Concrete footings and cyanide vats starting to deteriorate.

CULTURAL SIGNIFICANCE:

Site 5.1 has:

- Historical significance, because it:
  a) represents a sequence of uses or functions over time.
  b) is part of a group or network of sites, the totality of which is considered to be significant, namely the Costerfield gold and antimony field (Sites 1, 2, 4, 5 & 6).
  c) was a success as a tailings retreatment plant, in terms of its yields and as a business enterprise.
- Scientific significance, because it represents a particular type of process, e.g. an inventive or innovative process (tailings retreatment).

SIGNIFICANCE RANKING: Site Listed Victorian Heritage Register
Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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2 Mining Surveyors' Reports, June 1864
3 Mining Surveyors' Reports, December 1879
4 McIvor News, 24 December 1879
5 Stillwell, 1922, p. 357
6 Mining Surveyors' Reports, June 1880
7 Mining Surveyors' Reports, December 1880
8 Mining Surveyors' Reports, March 1881
9 Mining Surveyors' Reports, September 1881
10 Mining Surveyors' Reports, December 1881
11 Mining Surveyors' Reports, June 1882
12 Mining Surveyors' Reports, December 1883
13 Mining Surveyors' Reports, September 1884
14 Mining Surveyors' Reports, June 1885
15 McIvor News, 12 June 1886
16 Mining Surveyors' Reports, September 1885
17 Mining Surveyors' Reports, December 1885
18 Mining Surveyors' Reports, December 1886
19 Mining Surveyors' Reports, March 1887
20 F. Debney, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
21 McIvor News, 23 September 1892
22 McIvor News, 15 December 1892
23 McIvor News, 2 March 1893
24 McIvor News, 30 March 1898
25 McIvor News, 27 April 1893
26 McIvor News, 4 May 1893
27 McIvor News, 11 May 1893
28 McIvor News, 18 May 1893
29 McIvor News, 11 May 1893
30 McIvor News, 8 June 1893
31 McIvor News, 13 July 1893
32 McIvor Times, 10 August 1893
33 McIvor News, 24 August 1893
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35 McIvor News, 22 February 1894
36 McIvor News, 8 march 1894
37 McIvor News, 5 April 1894
38 McIvor News, 13 July 1894
39 McIvor News, 25 August 1898
40 Jenkins, 1900, pp. 66-7

41 Mining Surveyors' Annual Reports, 1903
42 Whitelaw, 1926, p. 7
43 Stillwell, 1922, p. 357
44 Stillwell, 1922, p. 357
45 Mining Surveyors' Annual Reports, 1904
46 McIvor Times, 16 February 1905
47 McIvor Times, 2 November 1905
48 Victoria: Gold and Minerals, 1935, p. 50
49 McIvor Times, 25 January 1906
50 McIvor Times, 31 May 1906
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53 Whitelaw, 1926, p. 6
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55 McIvor Times, 2 May 1907
56 Mining Surveyors' Annual Reports, 1907
57 Annual Report of the Secretary of Mines, 1907
58 McIvor Times, 30 January 1908
59 McIvor Times, 14 May 1908
60 Mining Surveyors' Annual Reports, 1908
61 Mining Surveyors' Annual Reports, 1909
62 Mining Surveyors' Annual Reports, 1910
63 McIvor Times, 28 December 1911
64 Mining Surveyors' Annual Reports, 1911
65 McIvor Times, 3 June 1912
66 Mining Surveyors' Annual Reports, 1912
67 Mining Surveyors' Annual Reports, 1913
68 McIvor Times, 29 October 1914
69 Mining Surveyors' Annual Reports, 1914
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71 Chemical Engineering and Mining Review, 5 May 1920, p. 280
72 Stillwell, 1922, pp. 358-60
73 Whitelaw, 1926, p. 7
74 Bowen, 1966, p. 1
75 Whitelaw, 1926, pp. 7-10
76 Victoria: Gold and Minerals, 1935, p. 50
77 Victoria: Gold and Minerals, 1935, p. 50
78 Victoria: Gold and Minerals, 1935, p. 50
79 Mining Surveyors' Annual Reports, 1935
80 Kingston, 1937
81 Chemical Engineering and Mining Review, 15 December 1937, p. 108
82 Department of Mines Annual Report, 1942
83 Department of Mines Annual Report, 1944
84 Bowen, 1966, p. 1
85 Department of Mines Annual Report, 1951
86 Bowen, 1966, p. 1
87 Randell, 1985, p. 29

SITE NO. & NAME: **6.1** **COSTERFIELD MINE SITE**

LOCATION: **Upper Costerfield**

VHR NO: **H1298**

HI NO: **H7824-0031**

DIRECTIONS: North of Costerfield Post Office

MUNICIPALITY: Greater Bendigo City

LAND STATUS: Unreserved Crown Land

HISTORY:

Main prospecting shaft

1853-4. Antimony [at Costerfield] was first discovered and worked on the Moorabie Station (on Wapentake Creek, between Heathcote and Costerfield) in 1853, by a man named Doyle who, in the following year, dispatched a parcel of oxide to Melbourne only to be informed that the demand for the material was so limited that its marketing would not be a profitable proposition. (It would seem that at that time the presence of gold in the reef had not been recognised).[1]

1860. No further attempt, apparently was made to test the ore until Messrs Youle, Coster, and Field came on the scene in 1860, and, in prospecting north of Doyle's old claim, unearthed, in Kelburn Creek, a tributary of Wapentake Creek, some boulders of oxy-sulphide containing coarse specks of gold. On their exhibiting these specimens to Mr Patterson, the then owner of Moorabie, a shepherd (McNichol) in his employ informed the prospectors that he knew of a deposit, *in situ*, of mineral resembling that on view, and offered, for £10, to guide them to the occurrence. An agreement being come to, he led them to a spot about 100 yards south of the present [1926] Costerfield Antimony Company's main shaft where, it is said, the oxidized outcrop of what is now known ... as the Costerfield main reef, projected above the surface 4 feet high by 4 feet wide by 20 feet long ... Viewing it through the timber of Tin Pot Gully, from a distance of a quarter of a mile, Youle pronounced the find a "buck" quartz reef similar to others on his original claim and which were then being broken down for road metal, left the party at that juncture, returned to Kelburn Creek, and later, moving to Heathcote, was no further heard of. The remaining members camped on the ground, and with picks and hammers soon found the white surface to be an envelope covering a heavy lead-grey mass of antimony sulphide in which free gold was plainly visible. Coster and Field secured the prospecting claim while others pegged northward to Redcastle (6 miles) and southward for 3 miles to the hills beyond Wapentake Creek. The ore broken from an open cut on the outcrop was handpicked pending the purchase of a crushing mill, and that portion of the sulphide in which gold was visible was sent to Melbourne. At £6 per ton this returned to the claim-holders sufficient capital to enable them to purchase and erect a six-head battery. Although Coster and Field held the pick of the shallow level ground, the claim-holders southward were well in the running, and in the ground afterwards worked by the Minerva and Bombay companies, Coster's shoot was followed by them to water level.[2]

1860. The field was discovered in 1860 by two prospectors, Coster and Field, who were guided there by a shepherd, M'Nicol. Coster and Field had already discovered an antimony load about three miles nearer Heathcote, when M'Nichol offered to guide them to the larger outcrop ... No alluvial gold of any consequence was obtained at Costerfield, but a little was obtained at Redcastle, 7 miles to the north, and in some of the gullies to the east.
The early success of mining at Costerfield was due to the gold values.[3]

March 1861. Rich antimony reefs discovered on Robertson's station, at the Wappingstack. Reef of great purity, 3 ft 6 inches thick, is opened up 10 ft long, almost due N-S, 3 ft deep. Owners Coster, Youle and Field.
Quality very fine ... numerous reefs in vicinity ... Distance 8 miles from Heathcote, 1-1/2 miles from old antimony workings. People arriving daily, tents and huts being built.
Same line of reef opened up 1 mile nearer Heathcote.[4]

July 1861. The earliest available record of values is a crushing of Coster and Co. on the Antimony reef (now known as the Costerfield reef), when 200 tons from a depth of 70 ft averaged 4 oz per ton in July 1861. At this time a crushing mill had not yet been erected at Costerfield, and the ore was carted and treated at Redcastle. The massive antimony ore, consisting of mixed oxides and sulphides, was separated by hand-picking as "marketable ore", and the remainder crushed for gold.[5]

July 1861. There was a rush [to Costerfield] in July 1861, and the ground was pegged for 3-1/2 miles.[6]

September 1861. A 15 cwt parcel of ore, obtained by Morris and Co. from a depth of 45 ft on the Kilburn reef, averaged 9 oz 16 dwt per ton.[7]

February 1862. Youle, Coster and Field buying crushing machine and two tailing amalgamators.[8]

1862. The [Costerfield gold and antimony] mine continued to be worked for some time without machinery, the antimony being carted to Melbourne and the quartz to Redcastle for crushing. In 1862 a six head battery and two amalgamating tables were erected.[9]

May 1862. Largest claim is original claim by Youle, Coster, Field and Co ... well slabbed shaft 110 feet deep ... water at 110 feet ... own crushing machinery ... Antimony sent to Melbourne.[10]

August 1862. Great impetus by the introduction of capital and energy from Melbourne. Splendid, continuous gold yields from the claim of Messrs Coster, Field and Co., at Costerfield and Messrs Morris and Co. at Lower Costerfield. Comparatively small operating costs of small companies, with less overhead expenses, attract new capital. Purchasing out original claim holders and applying for new leases. Whole of ground has been pegged off. Machinery is being introduced.[11]

Early 1860s. All was plain sailing at both ends of the field until the sulphide zone was reached and the metallurgical problem of the recovery of the gold from the stibnite presented itself. That the earliest method of treatment, which did not aim at the recovery of the antimony after the ore was crushed, was primitive is shown by the fact that the tailings when recrushed--and still without giving up their all--yielded as high as 3 oz per ton.[12]

February 1863. Costerfield antimony mines greatest attraction for speculation in this district. Large amount of capital being invested, after granting of mining lease applications pending, considerable population expected.[13]

March 1863. Upper Costerfield has about 120 population. Here is Youle, Coster and Field's machinery ... Stewart Town, 1 mile nearer Heathcote, 200 population, Morris and 3 other claims.[14]

April 1863. Coster, Field and Co. average tonnage crushed over 100 tons of antimony per fortnight, yielding 150 oz gold.
Another crushing engine will work for the public. Erected 500 yards from Coster, Field and Co.'s claim.[15]

March 1864. Coster and field--crushing from 120 feet.
Messrs Coster, Field and Co. are still engaged in the erection of their engine; they have sunk their shaft to 170 feet, and are expected to strike the lode at 300 feet. The reef has widened to 12 feet at the northern end.[16]

June 1864. Coster and Field, Antimony Reef, crushing from 120 feet. Coster and Field have nearly completed the erection of their machinery, and their mine continues to yield well.[17]

July 1864. Coster, Field and Co. are putting in levels ... Fine new crushing machinery almost completed. Best in district.[18]

December 1864. Coster, Field and Co. Crushing from various depths to 180 ft.
Difficulty in extracting the gold from the stone and antimony are universal: from this cause Messrs Coster and Field have desisted from crushing quartz, except in as small a quantities as possible, just sufficiently to enable them to re-crush the quartz tailings, from which they obtain large results.[19]

January 1865. Costerfield Gold and Antimony Co. formed by amalgamating Coster, Field and Co. with the holders of the claims north and south.[20]

1865. Large quantities [of tailings] accumulated and were stacked on various parts of the several leases; and after the original Costerfield Company in 1865 "erected on their ground valuable machinery and plant consisting of an engine of 50 horse-power for crushing and pumping; an engine of 12 horse-power for winding; a battery of 12 heads of stamps; a smelting and reverberatory furnace and oxide flue; a Cornish buddle, &c.", a portion of tailings was included with the ore sent to the smelters and a fair extraction was made.[21]

March 1865. Messrs Coster, Field and Co. have amalgamated their ground with No. 1 North and No. 1 South and have formed a company called the Costerfield Gold and Antimony Mining Company, for the purpose of working them.[22]

April 1865. Costerfield mines improving. One of the busiest spots in the district. Companies seem to do well, but no particulars available since most companies crush their own stuff and deliver their yields to respective bankers.[23]

September 1865. Costerfield Gold and Antimony Mining Co. Yield of gold last fortnight has been 118 oz from 124 tons of stone, and 20 tons of antimony ore. The mining manager reports that the mine never looked better since it was opened up three years ago. The large battery is nearly up, but not yet covered in.[24]

October 1865. Costerfield Gold and Antimony Mining Co. (Rgd). The mine has been worked for three years by Messrs Coster, Field and Co., and was sold by them to the Costerfield Gold and Antimony Mining Co. for £20,000. The new company commenced operations in March 1865 ... The plant that has done all the work since the mine was opened, consists of a small 7 horse-power engine, and a battery of six heads of stamps. The company has, however, a 50 horse-power engine ready for work, and 12 heads of stamps nearly completed, which will be at work in November.[25]

December 1865. The winding engine and new battery of 12 stamps ... are now in full working order.[26]

1860-66. The Costerfield reef was ... the main [gold] producer [at Costerfield], and up till March 1866, averaged about 1 oz per ton on a weekly tonnage of 50. In the subsequent years the gold recovery was much lower ... The gold production of the early days decreased as mining operations approached the sulphide zone, where the miners were faced with the metallurgical problem of the recovery of the gold from the antimony. Not more than 20% of the gold in the reefs is amenable to amalgamation with mercury, and various attempts to recover the remainder by smelting were unsuccessful.[27]

June 1866. Costerfield Gold and Antimony Co. Upper Costerfield--599 tons from 220-260 feet, yielded 320 oz.[28]

September 1866. Costerfield Co. Mine and machinery in good order ... arrangements being made for smelting ore and tailings on the claim. Chilian mill experiments tend to prove that large gold quantity has been carried off with the tailings.[29]

1866-68. As a result of the early operations a large quantity of rich tailings accumulated. These were estimated by a mining manager in 1866 to be worth 1/2 to 3 oz of gold per ton, and they were re-treated in 1868 for the first time. The losses were still considerable, and large heaps remained containing 6% Sb and 7 dwt and over of gold per ton. Various efforts were subsequently made to recover these, without success.[30]

December 1866. Costerfield Co. Smelting furnace completed, to begin operations in the new year.[31]

January 1867. Tailings ... Costerfield Co ... there are at lease 20,000 tons on the ground (besides many thousands of tons of sluch from the dam, rich in antimony, and likely gold also). A sample of firebrick made at Costerfield from material abounding in the mine will answer for lining future furnaces instead of imported English bricks.[32]

March 1867. The Costerfield Gold and Antimony Mining Co. have suspended operations in mining, and are now experimenting on the antimony tailings, with a view of extracting the gold from them, for which purpose they have erected new retorts etc.[33]

October 1867. Smelting operations have not proved profitable.[34]

January 1869. Costerfield mine. Reef struck at 320-foot level. Prospects most encouraging.[35]

February 1869. Costerfield line. New reef looking splendid, gold and antimony being obtained in most satisfactory quantities.[36]

April 1869. Costerfield Gold and Antimony Co. Re-crushing of 25 tons of tailings yielded 90 oz of gold.[37]

1870s ... the antimony production increased, benefiting in the early and late seventies by the high market for antimony caused by European wars.[38]

April 1870. Costerfield Co. Lowest drive carried south to a distance of 538 feet from bottom of shaft ... procured circular buddle to separate antimony ore from quartz in tailings.
For quarter ending February 28th:

Stone crushed	473 tons yielded 207 oz
Tailings re-crushed	1024 tons yielded 214 oz
Revenue for gold	£1629
Revenue for antimony	£2635[39]

June 1872. Report that the Costerfield mining company offered the Government, if a railway would be built from Kilmore, carriage of 140 tons of antimony per month.[40]

May 1874. Costerfield Co. Erecting furnaces for smelting antimony. London smelter has been engaged.[41]

c. 1869 A recital of the method of the original company [at Costerfield] makes interesting reading. It is thus given by Captain Couchman, Chief Mining Surveyor of the Mines Department, in a report to the Secretary for Mines of the day and published in Brough Smyth's *Goldfields and Mineral Districts of Victoria*, [1869] pp. 417-418.
"The company at the present time are treating their ore in the following manner. That portion of it free from quartz is picked out and set aside for smelting, the remainder being crushed to extract the gold".
"The tailings which consist of antimony and a little quartz sand, are then conveyed to the heaps, and are subsequently prepared for smelting by a process of buddling, as follows: A sluice box, into which a stream of water is turned, is fed with tailings, which are made to pass thence into a triangular tray forming an inclined plane, so arranged as to cause the water and tailings to flow over it in a broad shallow stream, into an oblong receiving pit below; the purest antimony ore, from its greater specific gravity, settles in the pit at the end nearest the tray; as the sediment recedes from this end, it gradually becomes mixed with an increasing proportion of sand, but much of the latter is carried away in the overflow of water from the pit".
"On clearing out the receiving pit, that portion of its contents containing quartz sand is returned to the heaps, to be again passed through the buddle, and the pure ore is collected in bags and sent to the boiler house to be dried; it is then placed in the smelting furnace, with equal proportions of uncrushed ore, and reduced to crude antimony (regulus), the slag and cinder resulting from this process being further treated by roasting or calcining in the reverberatory furnace, to free the oxide, which passes off in the fume from both furnaces into the oxide flue, and as the fume cools on its passage to the smoke stack the oxide is deposited in chambers constructed in the flue to receive it.
"The residue from the reverberatory furnace is afterwards crushed to extract any gold it may contain".
"The process of smelting the antimony ore has only been lately commenced by the Costerfield Company. I am informed by the manager that the gold obtained from the mineral they are now raising defrays the whole of the company's working expenses, and that the yield of crude antimony and oxide is clear profit; none of the latter has yet been brought into the market, but the shipments of rough ore hitherto sent to England have realised from £9 to £12 per ton. The ore yields about 45 per cent of crude antimony, which it is expected will fetch from £20 to £22 per ton in London; thus, by reducing it from the rough to the crude state a considerable saving would be effected in carriage and freight".[42]

1874. By 1874 the mine had been sunk to a depth of 520 feet and considerable attention was given to methods for the successful treatment of the antimony for gold results. It was known by tailing assays that a lot of gold was not being recovered and all attempts to separate it were futile.[43]

August 1875. Costerfield Co. Employing 40 or 50 men.[44]

September 1875. Little of consequence to report for the Division, excepting that the Costerfield companies seem to be prosecuting their operations with increased vigour. The Costerfield Company and South Costerfield Co. have considerably increased the number of their miners [45]

October 1875. Costerfield Co. Underground operations suspended in December 1874, as the lodes being worked from the main shaft were small, expensive to work, unremunerative. Main emphasis was put on reduction to metal of the ore contained in material on the surface. An accident in June 1874 restarted mining ... resumed with very satisfactory results in the ground purchased from the Minerva Co. and midway between main and Minerva shafts (1000 feet apart).
Flues built in connection with smelting, extend 1200 feet, with large chambers at either end, catching oxides from furnaces at Minerva end. Two furnaces working, a third nearly complete. Herrenschmidt's oxide-reducing furnace proves of great value, also renders the metal chemically pure.[46]

March 1876. Antimony smelting. Two patents granted to H. Herrenschmidt, late of Costerfield, fluid metal running off continuously; revolving conical roasting furnace set horizontally, feeding at smaller, discharging at larger end.[47]

June 1876. Smelting operations are now being carried on with great vigour at the Costerfield, Alison and Central, and South Costerfield mines, and I believe with satisfactory results.[48]

December 1876. The Costerfield Gold and Antimony Mining Company, the South Costerfield Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., the Alison and Central Gold and Antimony Mining Co., and the Butlers Reef United Quartz Mining Co. are pursuing their operations steadily.[49]

January 1878. Costerfield Co. Revolving cylindrical furnace being erected. Sludge and tailings to be passed through cylinder and met by a current of flame which drives off the antimony in the shape of oxide, to be collected in flues and converted into metal.[50]

December 1879. Costerfield Gold and Antimony Mining Co. recently struck a new reef of antimony reported to be 3 ft thick.[51]

1880s. Prices [of antimony] slumped, and production practically ceased in the beginning of the eighties.[52]

December 1880. At Costerfield, mining has slightly improved, notwithstanding the Costerfield Co. has not been doing much.[53]

December 1881. At Costerfield, a reef was struck by the Bombay Company, at the bottom of the 270 ft level, the antimony being 6 inches thick.[54]

1861-1883. 28,100 tons of antimony, value £346,500, and gold, 13,494 oz, value £53,975 were produced.[55]

June 1883. Costerfield Co. Sold on June 15th for £1000. Mine apparently intends to resume operations.[56]

December 1883. Old Costerfield Antimony and Gold Mining Co. still idle, but the sale of the mine to a new company, now in the course of formation, is an encouraging indication.[57]

1883-1903. After 1883, [antimony] operations were suspended for some twenty years.[58]

September 1884. At North Costerfield the Old Costerfield Antimony and Gold Mining Co. is still idle.[59]

September 1885. At Costerfield, everything is dull, owing to the low price of antimony.[60]

March 1886. Costerfield Co. Big engine sold. Bombay Co.--mining plant sold.[61]

September 1886. Costerfield Quartz Tribute Co. Crushed quartz tailings and slag to the extent of 342 tons, with the small result of 28 oz.[62]

December 1886. The forfeited lease of the Old Costerfield claim has been taken up with a view of treating the tailings by a new electric chemical process and re-opening the mine; on the granting of the lease the work will be commenced at once.[63]

Amalgmation of mines--New Costerfield Gold and Antimony Mining Co.
December 1890. New company called the “New Costerfield Gold and Antimony Mining Co”. being formed to work ground of Costerfield Gold and Antimony Mining Co., Bombay Gold and Antimony Mining Co., Morning Star Gold and Antimony Mining Co., Alison Star Gold and Antimony Mining Co., and South Costerfield Co.[64]

July 1891. Frederick Debney ... Had a lot to do with Costerfield ... The Costerfield Gold and Antimony mine was the principal one I was interested in. It was called Field’s mine, but it ought to have been called Debney’s mine, as I was the largest shareholder in it ... They got a gentleman from Germany, who put the company to expenses amounting to about £10,000. He was to treat our tailings and sludge, and oxidise the tailings and slum. He put in slides which were very good. One furnace was erected at a cost of £1200. When it was partly erected it fell down. Flues and furnaces were built and crushing machines erected before. They got no gold. They got dividends from the antimony. The gold was to be extracted from the antimony, but it was not done. They crushed quartz impregnated with gold. We had sent crude ore to England for assay. The ore was treated by three means, the chloral process, crushing and smelting. At the 420 feet level we put down an engine. The big one above supplied the steam to it ... At 620 feet we put in a drive of 25 feet. It showed a reef of 6 inches thick with 1 oz of gold to the ton, and a little antimony. That was the last of the workings of that mine. The company had no more money to prospect, or do anything ... Then came the Minerva, which the Costerfield Company bought out. There was a tremendous lot of gold in this mine--more than in the Costerfield mine, and also good antimony. The next claim on side line is the Bombay, to the west. The Bombay at the present time is one of the best pieces of property between here and Melbourne. The Bombay paid 11 dividends and was sunk to 350 feet ... The present company, the Albion Company, won’t let any one else work it. Had to sell out the Bombay plant for £85. The poppet heads cost £250, and the furnaces £500 ... The tailings were worked three times at the Costerfield Company’s mine. Chinamen worked them twice and now want them again. The reason there was so much gold lost was in consequence of the difficulty of separating the gold from the antimony. We had a good battery at that time. We commenced with quicksilver. The quicksilver got thick, and gold and antimony went over it ... antimony and quicksilver could not save the gold. The antimony thickened the quicksilver, and it would not pick up much gold ... We had to knock off quicksilver and use blankets. The great

difficulty was the treating the refractory ores. We had copperplates, blankets, and quicksilver. There was nothing to save the gold below the blankets. After that the tailings went to waste. The buckets were washed in tubs and what was on them and put into an amalgamating barrel. The blankets after they were worn out were burnt and the refuse put into the barrel. The gold saved was 20 percent below the assay. They were getting 5 dwts to the ton crushing the tailings over again with the blankets, but they were washed again, twice by the Chinamen. Believe there was pyrites in the ore. At South Costerfield were the South Costerfield and Alison mines. Had an interest in Alison mine, when it was paying 20 oz to the ton. It was worked to 380 feet. There was very little antimony in the mine ... Between the mines of the Upper and Lower Costerfield the distance is a mile and a quarter with no trace of an outcrop between them. Over a mile of ground has never been touched ... The South Costerfield mine is the Southernmost mine. It has not been working for 8 years. Between this and the Alison the ground has not been touched. The Albion Co. hold the Old Costerfield, the Minerva, Bombay, Morning Star, the South Costerfield (Tait's claim), and the Albion mines. In all 269 acres, and over a mile and a quarter of ground ... Mr E.Y.L. Brown was the only expert at South Costerfield. He was never engaged at the Costerfield mine. He is now Government Geologist in South Australia. The treatment of the ore at South Costerfield was a secret. They had a battery there. Mr Brown and Mr Moodie were smelting there. They smelted there on the chlorination system. They used to take from 6 to 8 oz of gold per ton from the ore from the Costerfield mine.[65]

Installation of new plant at Old Costerfield shaft

September 1892. Costerfield: Inspection of the lease for the purpose of selecting a suitable site for the putting up of machinery, which is to be of a powerful and expensive character, both for sinking shaft and driving a battery. The place decided upon for the erection of the plant is at the old shaft of the Costerfield Gold and Antimony Co., which is to be sunk a further depth of 200 ft.
Two monuments of Costerfield's former industry were destroyed this week. Two chimney stacks, one in front of the hotel, had the bricks cut from under them, and the pair came toppling down. This was in order to obtain bricks for fixing up the new machinery.[66]

December 1892. New Costerfield Co., which is setting up, includes in its program the treatment of 60,000 of tailings.[67]

March 1893. The New Costerfield Metal and Extracting Co ... has taken up a total area of 269 acres 2 roods 5 perches, embracing as it does the whole of the mines, the Old Costerfield, Bombay, Morning Star, Prince of Wales, Minerva and Alisons ... the cost of erecting the machinery will be heavy: estimated that it will cost from £15,000 to £20,000.[68]

March 1893. Costerfield. The poppet legs have already been erected, and the work of building in the boiler is now proceeding with other work. The engine bed has been completed and the engine in place.[69]

April 1893. Costerfield. Principal work done was shifting an immense boiler about 40 ft long, and weighing about 9 tons, into its bed, where it is now comfortably settled, and is now being bricked up. Clearing away old timber from the site of the battery, and making ready for putting up the stampers, etc. is now being attended to. The connecting rods of the pumps are also being put in order.

April 1893. Costerfield. The large boiler has been built in and connected with the chimney. Two engines have been placed in position, one for working the pump and the other for driving the battery. The battery is now being attended to. A couple of stamper boxes, each of which will contain 5 heads, have been raised to the place where they are to stand, and are now being fixed up ... A contract has been let for the building to contain the machinery and also for repairing the furnaces on the old Bombay lease.[70]

May 1893. New Costerfield Metal Extracting Co. Dewatering first, then treatment of antimony and tailings. Two engines, 14 and 16 inch cylinders. Percussion tables and Watson and Denny Pans to be completed. Old shaft cleaned out to a depth of 60 ft and good lode going 40% antimony and 1 oz gold per ton.[71]

May 1893. The bed of another boiler to supply steam to the winding engine has been laid down. Tenders called for putting up the battery shed. Two Denny Pans have been purchased from Rushworth.[72]

May 1893. An excavation has been made for the purpose of fixing the Watson and Denny Pans.
The bed for the winding engine is approaching completion, and the railings have been placed around the bob-pit.[73]

May 1893. New Costerfield. 10 stamps installed and bed for new boiler laid.[74]

June 1893. Two percussion tables have been fixed, as has one of the Denny and Watson pans.
The poppet legs have received a coating of paint, and look quite respectable with their white coat.
The plant expected to be working in two months.
The vanners have arrived and will shortly be fixed up.[75]

July 1893. A retort house is being erected alongside of the chimney stack. The two tailing pits are finished and part of the pumping gear fixed in the same.[76]

August 1893. A complete change has taken place since my last visit. Then all the machinery was strewn over the ground, but now there is a large machinery shed erected and poppet heads painted and union jack flying from the top, giving it all the appearance of a new industry ... [Mr Williams] fully described the different parts. How the tailings would be treated: first in the breaking pans, then on to the ripple tables, then the cushion tables, grinding pans, concentrating tables and vanners. There is also a patent from Mexico or Cornwall for further treatment, which is a great saving of labour. Mr Williams tells me that they will use the shaft, which will be worked with a draw lift. It was put in position on Saturday. The counter shaft will be drawn with tension rope gear. For the night work there will be four large tramway lamps and a gasoline lamp. The large boiler is fitted with galloway tubes. It was tested last week and stood the test well--a pressure of 70 lb. It will work with about 50 lb. Connected with the machinery shed is the retort and assay office ... Mr Williams tells me that they are giving £2 a ton for picking out the antimony from the tailings. Here is a chance for some of the unemployed of Heathcote and Costerfield.[77]

August 1893. Tailings from Costerfield Co. treated at Bendigo, 23 tons yielded 15.95 oz.[78]

August 1893. New Costerfield plant "christened".[79]

February 1894. New Costerfield Metals Extracting and Mining Works. Tailings to be treated by the new chlorination method.[80]

March 1894. The New Costerfield Company is keeping the furnaces going day and night, burning sand ... chlorination works are nearly completed ... [sand] will be treated by what is known as the chlorination process.[81]

April 1894. NCME & M Co. First clean-up after chlorination. 104 tons of tailings yielded 13 oz 5 dwt. This was disappointing in view of what was expected. Poor recovery was due to inefficient filtering. Assay of sand treated was 16 dwt per ton, and after chlorination found to contain 2-3 dwt per ton, but most lost in liquors which were not filtered satisfactorily.[82]

July 1894. Costerfield. Trial of New Costerfield Mine resulted in 6 dwt to the ton being saved through the pan process.[83]

1900. At Costerfield itself there are two smaller mines besides the large one that is so well known, but none of these were open, being full of water.
On the western side of the road is the shaft of the "Morning Star", reported to being down 200 feet on a lode up to 2 feet thick.
The "Bombay" is said to be down 340 feet, with several levels. This mine has been taken up by Mr Debney, of Heathcote, and partners, but after putting down machinery they were unable to unwater the mine, owing to the requirement of Act of Parliament that their winding engine must only be used by a first-class driver, notwithstanding that it was only to be used for baling water, and that one of the working party possessed a 2nd class certificate. The syndicate was not able to afford the wages of a 1st class driver for the purpose, and thus the mine is full of water, idle, and the party losing, although material is believed to be opened all ready below for stoping.
The "Bombay" and "Morning Star" are probably on different lodes from that of the large Costerfield mine.[84]

<u>Property taken over by Bombay Syndicate Ltd</u>
1903. By the long arm of coincidence, a namesake of the discoverer of the field ... was deputed by London capitalists to visit the Commonwealth and inquire into the conditions and prospects of antimony mining in the eastern States. Arriving in Victoria in 1903, Mr J.J. Doyle ... reached Costerfield and soon satisfied himself that the deposits there well fulfilled the conditions required by his principals who held the patent rights of what is known as the Plews process for the treatment of antimonial ores. The ground then held by the Victoria Syndicate (late Bombay Syndicate) was taken over on behalf of the London people, and with additional areas pegged by Mr Doyle, the Costerfield Mining Company now [1926] holds some 306 acres.[85]

1903. A more prosperous era commenced in 1903 with the advent of the Bombay Syndicate Ltd, which changed into the Victorian Syndicate Ltd and then developed into the present [1922] Costerfield Mining Company.[86]

1903-20. From 1903 to 1920 Costerfield has produced the whole of the Victorian production [of antimony].[87]

Erection of milling & cyanide plant at Bombay mine site

1904. At the Bombay Mine, which is owned by an English company, progressive work is being carried on, the principal object being to work the mine for antimony. The ore is being carefully picked and sent to England for treatment, and from the results so far obtained it is hoped that it will be the means of resuscitating the mining industry in this place. I am informed that it is the intention to erect a large concentrating plant to facilitate the treatment of ores.

Costerfield Tailings Company apparently intends to vigorously work the large amount of antimonial tailings that are distributed over the lease. For their treatment they have erected an up-to-date plant, which consists of two Merton patent roasting furnaces, which are a three-hearth type, 6 ft 6 inches in width, by a length of 32 ft, and one worked by wormed gearing, driving five vertical shafts. Attached to each shaft are rabbles for mechanically stirring the ore. The rabble on the lower finishing hearth is water-cooled. From the fire-hole the flames pass along the lower hearth; and after reaching the end of the furnace, ascend to the next hearth; after traversing this, they return along the top hearth to the flue, and thence into a brick stack 60 ft high ... From the cooling floor the ore is filled into trucks and hauled by means of wire rope up an inclined tramline, over the tops of three cyanide vats, the latter being 24 ft diameter and 6 ft deep ... The exhausted tailings are shovelled through bottom discharge doors into trucks under the vats, and thence conveyed to the dump. The storage and water tanks, each 12 x 7 ft are made of galvanised iron and set on wooden frames. The sumps are built of brick and cement, 18 ft diameter by 7 ft deep. Precipitation by zinc has been adopted. The motive power is an 8 hp Tangye engine and 10 hp Tangye boiler. A 3-inch centrifugal pump is used for pumping solutions from sumps to storage tanks. The company has put down a tramline, 19 chains in length, from the tailing heap to the furnaces, over which the ore is trucked into a 40-ton bin. An efficient assay house, well equipped, completes the plant and the lighting of the works at night is effected by means of 700-candle power Lux lamps. It is expected that this plant will conveniently handle 1,000 tons of tailings per month.[88]

February 1905. Cyanide works at Costerfield which is in the course of erection over last six months are now completed and the treatment of sand has begun. Plant consists of 2 iron four-tiered furnaces for roasting, and three 20 ft diameter vats of cyanide solution. There are also two large underground tanks.[89]

November 1905. Costerfield cyanide works have yielded 'it is stated in some quarters' over 360 oz in 10 weeks.[90]

1905-1922. In 1905 mining operations were resumed [at Costerfield] and continued for a period of seventeen years. The gold produced in that period was valued at £240,280, and the antimony at £348,645.[91]

January 1906. Part of the machinery for the Bombay Mine, Costerfield, was delivered at the Heathcote Railway Station. The mine will be developed as soon as possible after the remainder of the machinery arrives.[92]

May 1906. London Price Rise of antimony to £100 per ton should give an impetus to mining in the district.[93]

November 1906. Bombay Company--80 tons of antimony ore shipped to England.[94]

1906. The Costerfield Tailings Co. has not yet been at work for months past, consequent upon the ineffective system applied to the treatment of ores, rendering the same unremunerative.

Elsewhere in the division, a few private parties are prospecting in a desultory kind of way.[95]

c. early 1900s. After chlorination and cyaniding had been resorted to with indifferent success, it was shown by assays that there still remained about 4 dwt of gold per ton.[96]

Bombay Syndicate Ltd taken over by Victoria Syndicate

1907. The "Victoria" Syndicate Ltd are operating on the "Bombay" line of reef with a very marked measure of success ... The ore produced from the mine, chiefly antimony, containing gold up to 2 oz to the ton, is shipped to England for treatment ... working mine with a duplex 8-inch diameter cylinder air winch. Total output of 4,500 tons of ore ... This has yielded 620 tons of picked ore of average value of 45% antimony and 35 dwts gold per ton. Additions made to the machinery and buildings--cost £14,350; a new set of high-speed crushing rolls with elevator, hopper and sizing trammel; one No. 8 Blake pump; one large Cornish boiler, built in with brickwork. An air compressor has been erected ... A new GCI [galvanised corrugated iron] building has been built covering boiler and air compressor. A new ore-drying hearth and bagging shed, also an office and store room. Three additional jigs have been purchased and also another pair of fine crushing rolls.

Heathcote Syndicate Ltd have operated intermittently during the year ... repairing old shaft, preparatory to sinking same to 1,000 ft, the present depth being 650 ft. From old circulars and reports, together with the fact that all the appliances for treating low-grade ore were very primitive when this mine was last worked ... A winding engine and boiler, poppet heads, with new pulley and winding ropes, and other plant were placed in position ... During the first half year £1,084 was spent on the shaft and No. 1 level, together with the cost and erection of machinery.[97]

1907. The Victoria Syndicate Limited, Costerfield. A total output of 4,500 tons of original ore, inclusive of quantities taken on terms from the "Heathcote Syndicate and other contracting parties", was raised and treated. This has yielded 620 tons of picked ore of an average assay value of 45 per cent antimony and 35 dwts of gold per ton. The milling ore after being reduced by careful picking has yielded 280 tons of concentrates, with an average assay value of 50 per cent antimony and 38 dwts of gold per ton. The total of 900 tons has been shipped to England at an advance of £15 per ton for further treatment the whole of the tailings, which average 6 per cent antimony and 4 dwts 20 grs of gold per ton have been stored. Sixty ounces of gold have been recovered from the battery. The expenditure on the mine for the year amounted to £14,350. Additions have been made to machinery and buildings as follows: a new set of high-speed crushing rolls with elevator, hopper and sizing trommel; one No. 8 Blake pump for returning the water to the service tank. One large Cornish high-pressure boiler has been built in with brickwork. an air-compressor has been erected. an air-receiver and 4,000 feet of new steel pipes have been put down, making a connection with the Costerfield main shaft. A new GCI building has been built covering boiler and air compressor. A new ore-drying hearth and bagging shed, also an office and store room have been built ... Three additional jigs have been purchased and also another pair of fine crushing rolls. These have not yet been put in position. These additions for purchase and labour have cost £2,000.
The Heathcote Syndicate Limited. Costerfield mine. From old circulars and reports, together with the fact that all appliances for treating low grade ore were very primitive when this mine was last worked, it appeared that if access to No. 1 level were made possible ore from the old stopes could be obtained. A new collar was put on the shaft, and all bad timbers were renewed down to 180 feet, at which depth water was found. A winding engine and boiler, poppet heads, with new pulleys and winding ropes, and other plant were placed in position.[98]

January 1908. Bombay Co. During past 12 months, total of 900 dressed ores has been treated. About 630 tons of this assays 45% antimony and 1.75% gold ... Sixty ounces of gold have been recovered from the battery. Expenditure on the mine for the year amounts to £17,000. Additions include new high speed rolls with elevator. Hopper and sizing trammels. No. 1 Blake pump for returning water to service tank. High pressure Cornish boiler, air compressor, etc. [Bombay--Victoria Syndicate][99]

May 1908. Cyanide Co. Rebuilding furnaces etc. with a view to recommencing operations shortly.[100]

1908. At the antimony mines in this district, work has been carried on this year on an extensive scale; owing to the low price of antimony the results have not been so successful during the latter part of the year, and work is at present being carried out on rather restricted lines whilst the company is reconstructing.
Victoria Syndicate Ltd. Amount of ore treated, 3,679--869 tons of concentrates, total of £10,428.
Additions made to the plant in the year. Also the old Costerfield mine has been de-watered and opened up to 420 ft and the Bombay shaft sunk another 100 ft. The company is being re-organised and more capital raised to carry out developmental work on a larger scale.[101]

1909. Principal work in this portion of the district carried on by the antimony mines at Costerfield, where a fair number of men are employed.
At Costerfield, operations are limited to that carried on by the Victorian Syndicate, which is working steadily on the auriferous antimony ores that failed to pay under the poor extraction methods pursued in earlier years.
Victoria Syndicate Ltd. The above company has raised from the old Costerfield and Bombay mines 1,750 tons of original ore, which has yielded 340 tons of concentrates of an assay value of 46% metallic antimony and 2 oz gold per ton, which have been shipped to the order of St Helen's Smelting co. Ltd, England. The concentrating plant has been remodelled ... The plant is now complete, both in crushing and concentrating arrangements. In addition to the mine output, 2,929 tons of residues have been run through for the yield of 160 tons of fine concentrates assaying 45% antimony and 2-1/2 oz gold per ton.[102]

Property passes into hands of Costerfield Mining Company

1910. At Costerfield, operations restricted to those conducted by the Victorian Syndicate, which is successfully treating the refractory auriferous antimony ores and the old-time slag and tailing heaps.
Victoria Syndicate. Ore raised, 1,262 tons - 240 tons of concentrate. Tailings concentrated 8,135 tons--45- tons of concentrate. A new tailings pump has been added to the mill, and two slime concentrating machines are being erected. Underground has driven 350 ft of cross-cuts, which have opened up 40,000 tons of milling ore, of an average assay value of 7% antimony and 8 dwt of gold per ton. The property during the year has passed into the hands of Messrs C.H. Nevill, A.B. Lunham, T.C. Nevill ... whose connection with the English smelters always insures a reasonable price, with a constant market.[103]

December 1911. Bombay continues running three shifts. Thought the old slimes can be worked profitably. Roasting furnaces are being renovated. If bulk trial is a success, new plant will be erected for extraction of antimony oxide. The price of antimony is low.[104]

1911. Victoria Syndicate. 743 tons of concentrates of ore--gross value over £8,000. Winze from the 400 ft level sunk 100 ft. air winch installed. Two Linkenbach tables have been added to the concentrating plant. 70 men regularly employed.[105]

June 1912. Costerfield Antimony Mine. 3,663 boys recently despatched to St Helen's smelting works, Lancashire, England.[106]

1912. The Costerfield Mining company has raised and treated 2,430 tons of ore and 8,075 tons of tailings, recovering 1,475 tons of concentrates values at £16,162.
The ore is hand picked closely as it comes from the mine, all waste rock is eliminated, the rich ore is cobbled and broken, and all above 48% antimony is bagged and shipped to England. The seconds or milling ore is then passed through rockbreaker and rolls, then sized for gigs, Wilfley and card tables, the slimes going to two improved Bartch vanners. A new winding engine, boiler and air compressor have been added to the plant. The general manager has made a strenuous endeavour to find limestone and ironstone to use as fluxes to smelt the ore on the field, but the absence of railway facilities and heavy cost of cartage and labour will not allow a comparison of costs favourable to that project. The proprietor has spent over £100,000 on the property, and so far no dividends have been paid.[107]

1913. 6,251 tons of mine ore, 4,530 tons of tailings recovering 2,808 tons of concentrates, having an average assay value of 47% antimony and 2-1/2 oz gold per ton. Concentrates shipped to England. Bulk of ore mined at 500 and 600 ft levels. A new Krupp's mill has been erected to take the place of the stamps; additions have been made to the sizing arrangements at the mill, and an additional Cornish boiler has been installed. A new storeroom and office have been built, and a large fitting shop is in the course of erection; 200 men and boys employed by this company.[108]

October 1914. Mill stopped owing to lack of water.[109]

1914. 7,600 tons of mine ore, which returned 2,283 tons of concentrates; 3,370 tons of tailings, 156 tons of concentrates. The estimated value of the concentrates shipped to England is £29,350.
Antimony metal has risen in value during the last month from £30 to £63 per ton, owing to its use at the war. The antimony metal extracted from the ore mined at Costerfield is given first place in the British metal handbook, and the owner of the mine has entered into an agreement to supply the British Government with antimony for 12 months.
A new set of poppet heads erected.[110]

1916. Costerfield Antimony Mines. During 1916, the Costerfield antimony mines, Heathcote, Vic., produced 12,382 tons of ore, which yielded 3300 tons concentrates. These were shipped to the St. Helens' Smelting and Refining Company, England, which is controlled by the Imperial government under the Munitions Act, 1915.
Opening up the old South Costerfield mine proved very expensive, owing to heavy water and the bad condition of shafts. The deposit here is patchy, and the country rock broken by slices and cross-courses. The ore lenses are not continuous, and production will be expensive. The old Costerfield North shaft has been sunk to 800 feet, and crosscuts put out to the reef ... Cross-cutting west on the 600 feet level has opened up a vein of good ore, which will add considerably to the life of the "old" mine, as it will be west of all workings in the upper levels.
Nearly all work underground at Costerfield has been carried out on the contract system. The average wage earned by contractors has been 15/- per shift. The company employs over 30 men and boys, and paid in wages, etc., £60,000 for the year.
The advisability of supplementing the concentrating equipment by the addition of a M.A. flotation unit is being considered.[111]

1920. The Costerfield antimony and gold mines, Heathcote, Vic., have been closed down, pending extensive alterations to the machinery and plant.[112]

1903-22. Costerfield Mining Company. This company's success has depended principally on the solution of the smelting problem at the smelting works of a sister company at St Helens, near Liverpool, where the gold is completely recovered from the antimony. A contributing factor has been the gradual elimination of losses in separating the ore from the mullock in the crushing and concentrating mill, and the present mill residues at Costerfield contain, on an average, only 15 gr of gold per ton and 1/2% of antimony.
The ore mined at various depths between 420 ft and 780 ft at the main mine. The ore obtained from the Alison mine, at South Costerfield, one mile south of the main shaft at Costerfield, has been of lower grade ... owing to a relatively high percentage of iron pyrites.
In May 1917, the export of the ore was suspended through lack of shipping accommodation. Production continued for a while at a diminished rate, and stocks of ore accumulated. After the close of the European War export was resumed in the early part of 1919, and the stocks reduced. Production has been reduced during the year (1921) on account of the low market combined with high freights and high costs.

[Antimony belt] extends to Redcastle, seven miles north of Costerfield, where auriferous antimony has been mined. At South Costerfield, one mile south from the main line along the lines of strike, the Alison shaft has been an important point of production. Two miles further south of the Alison shaft is Bradley's claim, from which antimony ore has been obtained. There are four equipped shafts on the field, including the Alison shaft, but for some time operations have been confined to the main shaft. The shafts are:

Main or north shaft	1015 ft deep
Minerva shaft	295 ft deep
Bombay shaft	340 ft deep
Alison shaft	400 ft deep [113]

1905-22. During the period 1905 to August 1922, [the Costerfield Mining Co.'s ground] has yielded 23,243 tons of ore valued at £588,925 (antimony, £348,645; gold, £240,280).[114]

1903-25. This period was characterised by efficient smelting techniques enabling complete recovery of the gold and the successful treatment of old tailings.[115]

Costerfield Antox Company

1926. The Costerfield Mining Company now holds some 306 acres ... which, during the period 1905-August 1922, has yielded 23,243 tons of ore valued at £588,925 (antimony, £348,645; gold, £240,280). Prior to 1905, but excluding the period 1883-1905 concerning which there is an entire absence of statistics, 28100 tons of antimony, value £346,500, and gold, 13,494 oz, value £53,976, were produced. To the above figures has to be added £7,500, the estimated net value of tailings still to be treated, giving in round figures an extraction of £1,000,000, practically the whole of it coming from the one mine.

The company is at present marking time pending the endeavour to float a new company to be styled "Antox Limited", with the object ... of purchasing as going concerns the auriferous antimony mines of the Costerfield Mining Company and the business and undertaking of the Antox Syndicate Limited of Sydney, New South Wales. The company will work the said mines, produce oxide of antimony for the manufacture of "Antox" non-poisonous pigment, and also recover the gold contained in the ore by a special process which has for many years been successfully employed by the Costerfield Company at their associated works at St Helens, Lancashire, England.

"It is proposed to centralise at Costerfield, Victoria, the operations of the two businesses, and to erect a plant capable of increasing the production of antimony oxide and of recovering the gold contained in the ore from which the oxide is made. This will result in a large saving being effected in the cost of production, as the ore will go straight from the mine to the furnace without entailing any charges for packing and transport ... will manufacture on the spot a commercially proved pigment" (Prospectus).

It is calculated that the ore reserves in the main mine would of themselves keep the mill employed for ten years.

No special attention has been given to the treatment of the 150,000 tons of tailings (net value £7,500) heaped on the surface, but, in course, of time, the whole of these will be absorbed by their inclusion in limited quantities with the ores as trammed from the mine, it having been found by experiment that owing to a certain amount of oxidation having taken place the older sand, per se, is not amenable to the treatment process now in operation.

The following is an official description of the crushing and concentrating plant as now installed at Costerfield for the treatment of ore after it has been hand-picked underground by the miners:

"The run of mine ore is tipped from the mine trucks onto a grizzley, 2-1/2 in. opening between the bars. The oversize is hand-picked for clean sulphide ore and waste rock. The undersize is passed through a revolving screen 1/2-in. diameter holes, the oversize spread on to a revolving circular table 15 feet diameter, the clean sulphide ore and the waste rock picked out, and undersize and second grade ore sent to the mill".

"The milling ore ... is tipped into a large bin from which it is fed into a Blake-Marsden type of rock-breaker, which reduces it to 3/4-in. size, and which passes through a pair of 30-in. diameter high speed rolls. The ore is then screened to suit two Hartz jigs, three compartments each, which treat 1/2-in. and 1/8-in. cubes respectively ... The jig rejects are mechanically conveyed to the 25-head stamp mill, which reduces to a 30-mesh size which joins the original fine ore and is classified for Wilfley and Card tables. The concentrate carries a large percentage of iron pyrites ... but carries high gold values averaging over 4 oz per ton. The table rejects and all water with ore in suspension is lifted by a 10-in elevator to a 6-ft x 6-ft classifier, the underflow is automatically fed into a 16-ft x 5-ft tube mill, the discharge is lifted to a 6-ft x 8-ft classifier, the underflow passes over Card tables where a concentrate very rich in gold is recovered. All material is eventually slimed and passes into a Dorr Thickener and is automatically fed into a ... mineral separation machine ... The discharge from the mineral-separation machine passes over a Bartch vanner, which recovers any ore which may be partly oxidised, also any grains of solid free gold. The mill residues are then pumped on to the slime dumps ... The mill has a capacity of 4 tons per hour. The engine was built by Messrs Robinson Brothers of Melbourne, and is of the condensing type equal to 250 horse-power".

The company owns the St Helens Smelting Works in England ... This ore is there treated by the Plews process ... By this means 99 per cent of the gold is recovered from the antimony.[116]

1926. According to an estimate made in 1926, after the Costerfield mine had been closed down four years, the ore reserves in sight amounted to 29,082 tons of antimony concentrates, containing antimony to the estimated value of £436,220 and gold (at standard price) £290,280.[117]

Property taken over by Gold Exploration and Finance Company of Australia and new plant installed at Old Costerfield shaft

1934-5. In 1934 work was resumed on a large scale, and is now in progress.[118]

1935. Costerfield. Gold Exploration and Finance Company of Australia equipped the old Costerfield Antimony Mines with a power plant consisting of 3 Crossley Diesel engines, a two-stage air compressor, two generators, winding hoist and poppet heads, unwatering operations were commenced with an air lift and later the work was completed by means of multi-stage centrifugal pumps. Prospecting operations are in progress.[119]

1935. Costerfield. Gold Exploration and Finance Company of Australia equipped the old Costerfield Antimony Mines with a power plant consisting of 3 Crossley Diesel engines, a two-stage air compressor, two generators, winding hoist and poppet heads, unwatering operations were commenced with an air lift and later the work was completed by means of multi-stage centrifugal pumps. Prospecting operations are in progress.
The New Alison Mining Co. is breaking payable ore from the 100-ft level and erecting a mill. Several small parties are working on the field.
The cyaniding of the old dumps at Costerfield is still profitable.
At Costerfield the main mine is still doing developmental work. Tate's line of reef is producing some antimony as did the New Alison, but at present the work has ceased while tenders are called for sinking the shaft. The smelters at Costerfield have closed down, owing to a lack of suitable material. Ironstone was mined locally for the use of the smelters, but at present there is no demand for this commodity. Magnesite is being mined in the belt of schistose diabase near Heathcote.[120]

1937. I understand the Costerfield Antox Mining Co. used some of the ore [from an iron ore deposit on Red Hill, Heathcote] for fluxing purposes and that the ore carried 20 grains of gold per ton.[121]

1937. In a recent report on the Costerfield gold-antimony mine, which is being developed by Gold Exploration and Finance Co. of Australia Ltd., Mr G. Lindesay Clark stated that the mine was operated intermittently for 60 years. Production records show a total of 77,000 oz of fine gold and 20,000 tons of metallic antimony ... Prospecting is being continued north of the shaft.[122]

1940. Production statistics. Antimony concentrate: Gold Exploration and Finance Co. Ltd, Costerfield, 21-1/2 tons, value £1,577; New Alison Mining Co., Costerfield, 7 tons, value £148.[123]

1944. The antimony mines at Costerfield and ? have been closed down ... The concentrating plant at Costerfield for the recovery of antimony from the old mine dump ceased operations.[124]

1935-51. The third and final period of operations from 1935 until 1951 when approximately 1,000 tons of concentrate were produced.[125]

1951. The increases in world-prices for base metals revived interest in the antimony field at Costerfield.[126]

1966. The major producer from the field is the Costerfield Antimony Mine which operated for two main periods, from 1860 to 1883 and 1903-1925. Recorded production is approximately 48,000 tons of stibnite concentrate containing an estimated 22,000 tons of antimony. Gold production is recorded at 77,0000 oz.
Stibnite (antimony sulphide) contains approximately 70% antimony and is the major source of this metal.
Antimony is a brittle, silver white metal with a low melting point. Its principal use is an ingredient in lead base alloys to which it adds strength and resistance to chemical attack. As an alloy it is used in battery grids, chemical pumps and pipes, tank linings, antifriction bearings, printer's type metal and in ammunition.
The oxide is used in metalware and ceramic enamels, as a white pigment in paints, in glasses, in the textile industry, and as a fire retardant in fabrics.
Typically stibnite bearing reefs are relatively small and of limited strike length. The Costerfield reefs are no exception to this rule.[127]

c.1935-85. Over the last fifty years several fresh starts have been made at [the Costerfield Gold and Antimony Mine] but none of them lasted very long. The mine is now [1985] closed.[128]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site:

1860 to 1865:	Discovery and operations of Coster, Field & Co. Installation of battery.
1865 to 1883:	Costerfield Gold and Antimony Co. Installation of expensive and powerful machinery--including pumping, winding and crushing plant, and several smelting furnaces.
1883 to 1890:	Albion Company--very little work done on the site.

1890 to 1903:	New Costerfield Gold and Antimony Mining Co. Installation of new plant including battery, pumping and winding gear, and tailings retreatment plant.
1903 to 1922:	Property successively owned by Bombay Syndicate, Victoria Syndicate and Costerfield Mining Company. In 1907 the old Costerfield shaft was re-timbered and plant installed by a Heathcote Syndicate.
1926:	Formation of Costerfield Antox Company.
1934/35:	Gold Exploration and Finance Company of Australia. Installation of new pumping and winding plant.

Concrete footings date to the later phase, ie. the operations of the Gold Exploration and Finance Company of Australia in the mid 1930s.

Gold Exploration and Finace Company of Australia.

The site of the main shaft is dominated by substantial concrete mounting beds, two massive mullock heaps and one extensive tailing dump.

The engine beds are located on a raised level above a 40 square metre area of concrete flooring. Presumably the lower floor contained the battery. To the S of the battery floor lies an extensive dump of tailings.

There are four separate engine beds on the upper floor. They stand approx 1 m, but most of their mounting bolts have been sawn off. The most easterly bed measures 15 ¼ ft (4.65 m) x 7 ½ ft (2.3 m). To its W, 4 ½ ft (1.35 m), is the first of twin mounting blocks which measure 18 (5.5 m) x 7 ½ ft. The twin blocks are positioned 4 ½ ft apart. 10 ft (3.05 m) from the NW corner of the most westerly of the twin blocks is a 10 ft square concrete bed. I n front (or S) of this fourth block is a 10 ½ ft (3.2 m) square sunken concrete lined watertank.

5 m to the N of the concrete engine beds is a mullock heap that measures about 35 x 50 m and stands approx 5 m high. 5 m W of the fourth concrete block are two parallel concrete footings. They are at ground level, 7 ft (2.15 m) apart and measure 18 (5.5 m) x 4 ft (1.2 m). They line-up with a capped shaft which is 23 m further to the W.

5 m to the W of the capped shaft, and running N, is another mullock heap. This heap of black-looking mullock measures 70 x 76 m and stands about 12 m. Its S end has been partially quarried. On top of the heap, running NW from the direction of the capped shaft are two dumping tramlines. One still has several of its tramway's wooden legs surviving.

Near the N end of the mullock heap are some large stone blocks, presumably debris from one or other of the two stone powder magazines reported constructed on the site. An area of tailings further north is currently be mined on a small scale. At the back (W side) of the mullock heap is a dam.

INTEGRITY/CONDITION: Concrete footings and floors in good condition.

CULTURAL SIGNIFICANCE:

Site 6.1 has:

- Historical significance, because it:
  a) was part of a group or network of sites, the totality of which is considered to be significant, namely the Costerfield gold and antimony field (Sites 1, 2, 4, 5 & 6).
  b) a success as a mine in terms of its production levels, yields, as a business enterprise, and it influence on the economic development of region & state.
- Scientific significance, because its concrete foundations are evidence of the operation of a mid 1930s mine.

SIGNIFICANCE RANKING: Site Listed Victorian Heritage Register
Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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2 Whitelaw, 1926, p. 6
3 Stillwell, 1922, p. 355
4 McIvor News, 29 March 1861
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10 McIvor News, 23 May 1862
11 McIvor News, 15 August 1862
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13 McIvor News, 6 February 1863

14 McIvor News, 6 March 1863
15 McIvor News, 17 April 1863
16 Mining Surveyors' Reports, March 1864
17 Mining Surveyors' Reports, June 1864
18 McIvor News, 15 July 1864
19 Mining Surveyors' Reports, December 1864
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22 Mining Surveyors' Reports, March 1865
23 McIvor News, 21 April 1865
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26 Dicker's Mining Record, 12 December 1865, p. 387
27 Stillwell, 1922, p. 356
28 Mining Surveyors' Reports, June 1866
29 McIvor News, 15 October 1866
30 Stillwell, 1922, p. 357
31 McIvor News, 28 December 1866
32 McIvor News, 11 January 1867
33 Mining Surveyors' Reports, March 1867
34 McIvor News, 4 October 1867
35 McIvor News, 22 January 1869
36 McIvor News, 5 February 1869
37 McIvor News, 16 April 1869
38 Stillwell, 1922, p. 357
39 McIvor News, 1 April 1870
40 McIvor News, 14 June 1872
41 McIvor News, 28 May 1874
42 Whitelaw, 1926, pp. 6-7
43 Randell, 1985, p. 24
44 McIvor News, 18 August 1875
45 Mining Surveyors' Reports, September 1875
46 McIvor News, October 1875
47 McIvor News, 2 March 1876
48 Mining Surveyors' Reports, June 1876
49 Mining Surveyors' Reports, December 1876
50 McIvor News, 3 January 1878
51 Mining Surveyors' Reports, December 1879
52 Stillwell, 1922, p. 357
53 Mining Surveyors' Reports, December 1880
54 Mining Surveyors' Reports, December 1881
55 Whitelaw, 1926, p. 7
56 McIvor News, 22 June 1883
57 Mining Surveyors' Reports, December 1883
58 Whitelaw, 1926, p. 7
59 Mining Surveyors' Reports, September 1884
60 Mining Surveyors' Reports, September 1885
61 McIvor News, 19 March 1886
62 Mining Surveyors' Reports, September 1886
63 Mining Surveyors' Reports, December 1886
64 McIvor News, 4 December 1890
65 F. Debney, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
66 McIvor News, 23 September 1892
67 McIvor News, 15 December 1892
68 McIvor News, 2 March 1893

69 McIvor News, 30 March 1898
70 McIvor News, 27 April 1893
71 McIvor News, 4 May 1893
72 McIvor News, 11 May 1893
73 McIvor News, 18 May 1893
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76 McIvor News, 13 July 1893
77 McIvor Times, 10 August 1893
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79 McIvor News, 31 August 1893
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84 Jenkins, 1900, pp. 66-7
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89 McIvor Times, 16 February 1905
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108 Mining Surveyors' Annual Reports, 1913
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124 Department of Mines Annual Report, 1944
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SITE NO. **7.1** **MUNDY'S GULLY MINE SITE**

LOCATION: **Mundy's Gully, Tooborac**

HI NO: **H7823-0014**

DIRECTIONS: S side of Mundys Gully Track

MUNICIPALITY: MITCHELL SHIRE

LAND STATUS: State Forest

HISTORY:

June 1865. Miners as follows:

	European	Chinese	Total
Alluvial miners	750	70	820
Quartz miners	450	-	450
	1200	70	1270

Miners thus distributed:

Heathcote (proper) including Argyle Gully, Caledonia Gully, Long Gully, Wattle Flat, Commissioners Flat, Golden Gully, etc.--500
Redcastle, Spring Creek, Staffordshire Flat, etc.--40
Costerfield--150
Wild Duck Creek--530
Mundy Gully, Ford's Gully, etc.--40
Campaspe and Coliban--10
Total--1270

Machinery as follows:

Alluvial
Puddling machines--33 at work, 32 idle
Sluice heads--4 (idle)
Quartz
Steam engines--11 at work, 5 idle, totalling 101 head of stamps, 330 hp
Chilian wheels--4 (idle)
Horse whims--15
Horse whips--7
Total value of machinery--£39,650

Quartz mining. Rather general falling off in yields, especially at Redcastle where mining is almost completely at a standstill; and the only favourable exception is Costerfield, where, by the enterprise of the Costerfield Gold and Antimony Mining Co. and the Minerva Mining Co., extensive mining operations are being carried out, employing a large number of men.[1]

August 1867. Tooborac. New quartz crushing battery erected. Application for gold mining lease. Foot of Mundy Gully, Tooborac. Machinery for quartz crushing.[2]

April 1869. Tooborac Quartz Mining Co. Prospects improving, have sunk shaft much deeper, driving at a lower level. Crushed from a large reef 80 tons, for a yield of 24 oz.[3]

December 1881. A crushing of 27 tons from Wiley's Reef, Mundy Gully, Tooborac, yielded 14 oz 17 dwts of gold.[4]

April 1899. Mundy Gully, Syndicate Reef, Tooborac. 58 tons gave 104 oz. Sixth crushing taken out in last 14 months. During this time 242 loads gave 573 oz.[5]

July 1891. I am a miner at Tooborac. Quartz and alluvial mining are going on in that district. We have 8 alluvial gullies, terminating in the McIvor Creek. It needs prospecting. Half the place is not worked out ... 70 ozs was the weight of the largest piece I ever saw found in the locality, in Johnstone's Gully ... Would like to see a shaft sunk to test the reef in Fords Gully. The nearest reefs to it are the Mariner's and Redan in Mundy Gully.[6]

February 1901. Mundy Gully, Tooborac. Driving and stoping continues at 150 ft level. Stone is 18 inches wide. During 14 days crushed 155 ton for a yield of 54 oz.[7]

July 1901. Mundy Gully. Contractors have sunk shaft 13 ft with total 181 ft.[8]

January 1902. Mundy Gully. Cleaned and tested boilers and affected all necessary repairs.[9]

April 1902. Mundy Gully. Crushed 84 tons for 22-1/2 oz.[10]

June 1902. Mundy Gully Co. Have suspended operations.[11]

August 1902. Mundy Gully. Machinery, etc. auctioned--bought for £605 by former workers.[12]

November 1905. Government battery of 5 stamps to be sent to Mundy Gully.[13]

December 1905. Mundy Gully mine is being worked by a co-operative party of twelve. The shaft is down 240 ft. From 1901 to September 30 1905, 7,452 tons crushed yielded 2,789 oz.[14]

1905. The only mine of any importance in this division is the Mundy Gully Co-operative Co.'s mine, in which active operations have been carried out throughout 1905 by a party of 13 men, 9 of whom are employed below ground ... 1283 tons yielded 446 oz. The shaft is 260 ft deep ... the mine is well equipped with a 10-head battery and a winding winch.[15]

February 1907. Mundy Gully Syndicate, Tooborac. Cleaned up crushing of 90 tons for 75 oz.[16]

1906. Three quartz mines provided with steam machinery, viz. Mundy Gully, Peter's Gully and Williams' Reef Companies, as well as a number of co-operative parties, without steam machinery, are working.[17]

1907. Mundy Gully mine is situated in timbered ranges about 6 miles from South Heathcote, in a direction somewhat to the east of south. The alluvial gullies, a little further to the south, such as Surface or Little Surface gullies, have been extensively worked for alluvial gold. The former gully has been worked for over 2 miles in length. At present being worked by a co-operative party of twelve, with very satisfactory results.
Returns. 1901-1905--7,452 tons yielded 2,789 oz.[18]

1907. Mundy Gully Co-operative Co ... continued to work as usual, between the 250 ft level and the surface--795 tons yielded 230 oz. Thirteen men are employed.[19]

1908. Mundy Gully Co-operative Co. worked throughout the year with indifferent success--11 men employed.[20]

Early 1910. Both quartz and alluvial mining in the Division appears to be practically dead. The following quartz mines, that were in active operation at this time in 1909, have ceased operations--The Peters Gully, the Mundy Gully, the Homeland and Craven's Gold Mining Companies, and the prospects of them ever resuming operations in the near future do not appear to be bright.[21]

c. 1930s. Mundy Gully about 5 miles south of Heathcote. Mundy Gully Reef 1800' long ... Mine worked to 260 ft stoped out. Mines Department wanted four-compartment shaft. Company closed mine as shoot would be away south. New shaft would then have to be sunk ... There is also another lode south, known as Hagans [which] was a several ounce show worked to water.[22]

DESCRIPTION OF PHYSICAL REMAINS:

Mine appears to have has three main working periods:

1867 to c.1869:	Tooborac Quartz Mining Co. Installation of battery.
c.1901:	Mundy Gully Co. Battery operating.
1902 to 1909:	Mundy Gully Syndicate. Machinery auctioned and bought by mine workers, who operated the mine with some success.

The open cut would most probably belong to the 1860s phase of working. The workings associated with the shaft would date to the first decade of the 20th century. The cyaniding vats most probably date to the 1930/40s.

<u>Earliest mining period</u>
Located on the crown of a hill is an open-cut which is approx. 20 m square and 10 m deep. From the N end of the squarish open-cut runs a 30 m length of narrow, but deep tramway trench. After 30 m the trench gives way to an embankment which travels 36 m across a flattened mullock heap. The underlying mullock heap is made up of surface rubble (presumably from the opening up of the open cut) and measures approx 35 x 60 m, and is raised between 3 to 5 m above ground level. The outer (E & N) face of the mullock heap is retained by stone walling.

Mundy Gully Co.
The tramway leading from the open cut terminates at a loading bay, 2 m below which is a levelled battery platform. All that is visible of the battery is an excavation (caused by the removal of battery stumps etc) which measures 19 x 13 ft. On the NE side of the excavation is a raised area containing a partially buried engine bedlog. The bedlog, has one mounting bolt protruding, complete with nut. To the W of the bedlog is a section of stone flooring.
15 m E of the battery site, on the side of the Mundy's Gully Track that runs passed the mine site, is a large dump of ash.
Directly below the battery site, 10 m away, is the first of two dams. The second lies up the gully, to the W. The former still retains water and is signposted as Mundy's Gully Dam.
A 3-compartment shaft is located on, and sunk through, the S end of the open cut's flattened mullock heap. The 3-compartment shaft is still open, but its wooden framing is collapsing. A relatively narrow, but long (80 m) blue mullock heap runs E-W from the back of the shaft. The eastern end of this mullock heap, containing two distinct dumping lines, curves around to the S, partly covering the earlier tramway trench and spills into the open cut. The other end of the mullock heap fans out into 5 distinct dumping lines. At this W end the heap is 25 m wide and stands approx 10 m high.

Cyanding operations on the battery sand (20th century)
Located on the N slope of the gully below Mundy's Gully Dam is what survives of the stratified (in-situ) tailings dump. 70 m downstream from the original dump, on the S side of the gully, is a cyanide works and associated dumps of treated sand. The site consists of 4 sunken treatment vats, aligned E-W. The most westerly vat is buried, the next vat still retains its galvanised iron wall, and the last two only survive as depressions. The intact vat has a diameter of 20 ft, a concrete base and is 2 ¾ ft deep. 3 m N of this vat, located at a lower level (about the level of the upper vat's base) is a galvanised iron drainage tank: 16 ft diameter, 3 ¼ ft deep with concrete base.
NW of the most westerly treatment vat is a water tank. The galvanised iron tank has a diameter of 5 ¾ ft, rendered on the inside with concrete and is at least 1 1/2m deep. The tank sunken into the ground, at a level slightly below the tops of the cyanide treatment vats. The water tank still holds water. 8 m to the W of the same treatment vat, on a raised level platform (approx 3 m) is a 13 ft diameter concrete base.

Other mining relics
Apart from the above remains that provide a sequence to the workings there are numerous other distinct, but isolated, features:
5 m W of the battery site is a shaft, filled but now subsiding, and a section of open stoping. 35 m further W is a site of a blacksmith's shop: upright wooden forge (reused battery stump) associated with a scattering of iron fragments and slag. The forge lies 10 m from the base of the mullock. 10 m from the blacksmith's forge, and 22 m NW of the 3-compartment shaft, is a single concrete bed with two protruding mounting bolts. The engine bed measures 3 ½ ft x 5 ¾ ft. To the W of the concrete footing is what appears to be an intact whip shaft. Although its shaft has been filled (now subsiding), the stone work forming the passageway through the shaft's mullock paddock has survived.
Also associated with the mine site are at least 3 stone fireplaces:
Between the whip shaft and the second dam;
10 m from the E end of the blue mullock heap;
5 m from the S end of the ash dump associated with the battery site.

INTEGRITY/CONDITION: Galvanised iron of the cyanide vats in poor condition.

CULTURAL SIGNIFICANCE:

Site 7.1 has:

- Historical significance because it represents a sequence of uses or functions over time. It is one of the few sites located in the Central Victorian goldfields where remains survive in a way that clearly illustrates the shift from open cut to shaft mining.
- Scientific significance, because it represents an important mining technology. The site still retains considerable integrity and thus ability to explain the operation of a 19th century quartz mine and the subsequent cyaniding of the battery sand. The site also has a well preserved whip shaft. The survival of this type of shaft is very rare in the Central Victorian goldfields.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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3 McIvor News, 8 June 1883
4 Mining Surveyors' Reports, June 1881
5 McIvor Times, 20 April 1899

6 H. Johnstone, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
7 McIvor Times, 21 February 1901
8 McIvor Times, 25 July 1901
9 McIvor Times, 9 January 1902
10 McIvor Times, 10 April 1902
11 McIvor Times, 5 June 1902
12 McIvor Times, 29 August 1902
13 McIvor Times, 2 November 1905
14 McIvor Times, 7 December 1905
15 Mining Surveyors' Annual Reports, 1905
16 McIvor Times, 7 February 1907
17 Mining Surveyors' Annual Reports, 1906
18 Dunn, 1907
19 Mining Surveyors' Annual Reports, 1907
20 Mining Surveyors' Annual Reports, 1908
21 Mining Surveyors' Annual Reports, 1909
22 Hird, 1974, p. 7

SITE NO. & NAME: **FORD'S GULLY**
8.1 Puddler/Dam
8.2 Reef workings

LOCATION: **Tooborac**

HI NO: **H7823-0015**

DIRECTIONS: 200 m N along Munday's Gully Track from its junction with Hardy's Track. Take the most easterly branch to Mundy's Gully No 2 dam

MUNICIPALITY: MITCHELL SHIRE

LAND STATUS: State Forest

HISTORY:

June 1865: Miners as follows:

	European	Chinese	Total
Alluvial miners	750	70	820
Quartz miners	450	-	450
	1200	70	1270

Miners thus distributed:
Heathcote (proper) including Argyle Gully, Caledonia Gully, Long Gully, Wattle Flat, Commissioners Flat, Golden Gully, etc.--500
Redcastle, Spring Creek, Staffordshire Flat, etc.--40
Costerfield--150
Wild Duck Creek--530
Mundy Gully, Ford's Gully, etc.--40
Campaspe and Coliban--10
Total--1270 [1]

July 1891. I am a miner at Tooborac. Quartz and alluvial mining are going on in that district. We have 8 alluvial gullies, terminating in the McIvor Creek. It needs prospecting. Half the place is not worked out ... 70 oz was the weight of the largest piece I ever saw found in the locality, in Johnstone's Gully ... Would like to see a shaft sunk to test the reef in Fords Gully. The nearest reefs to it are the Mariner's and Redan in Mundy Gully.[2]

1907. Mundy Gully mine is situated in timbered ranges about 6 miles from South Heathcote, in a direction somewhat to the east of south. The alluvial gullies, a little further to the south, such as Surface or Little Surface gullies, have been extensively worked for alluvial gold. The former gully has been worked for over 2 miles in length.[3]

DESCRIPTION OF PHYSICAL REMAINS:

Not possible to name the gully and reef workings with any certainty--possibly Ford's Gully and Reef. Workings would most probably range from mid 19th century to early 20th century. The puddler, due to its weathered appearance is most probably a 19th century relic.

Site 8.1: puddler and sinkings
60 m E of Mundy's Gully No 2 dam is a puddler & dam. The earthen wall of the dam has been breached, and the puddler is located on the S end of the embankment. The puddler is very weathered, with the inner mound and puddling trench almost indistinguishable. It is only the raised outer mound that provided the puddler with definition. The puddler is clear of any sizeable vegetation.
40 m to the N, is a small clearing which contains the remains of a stone fireplace.
A 20 m wide band of alluvial sinkings runs along the gully for about 150 m each side (E & W) of Mundy's Gully No 2 dam. The sinkings are fairly dispersed (3 to 5 m baulks) and mounds of spoil quite small (indicating shallow sinkings).
8.2. Reef workings
Above the dam (W) a line of reef workings (marked by small mullock heaps) runs N-S across the gully. All the shafts on the S side of the gully have been filled, and those that have subsided are being used as rubbish dumps. On the N side of the gully are two open shafts surrounded by intact mullock paddocks.

INTEGRITY/CONDITION: Puddler in poor condition.

CULTURAL SIGNIFICANCE:

Site 8.1 has:

- Historical significance, because it represents a sequence of uses or functions over time.
- Scientific significance, because it has considerable integrity, representative of 19th century alluvial working in the area. It also helps mark the western boundary of the Heathcote/Waranga South alluvial ground.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 Mining Surveyors' Reports, June 1865

2 H. Johnstone, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891

3 Dunn, 1907

SITE NO. & NAME:	**CALEDONIAN GULLY REEF WORKINGS**	
	9.1	**Butlers Reef mine site**
	9.2	**Caledonia Reef mine site**
LOCATION:	**CALEDONIAN GULLY, HEATHCOTE**	
HI NO:	**9.1**	**H7824-0034**
	9.2	**H7824-0035**

DIRECTIONS: Site 9.1. Junction of Ring Road with East Bayton Road, located both sides of the latter.
Site 9.2. Track leads W from East Bayton Road to these workings

MUNICIPALITY: Greater Bendigo City

LAND STATUS: State Forest

HISTORY:

Caledonia & Butlers Reefs worked separately until c.1864

Caledonia Reef

1850s. Old Caledonia Reef. This famous reef was discovered in 1853 by MacMahon Bros., namely Hugh MacMahon, Barney MacMahon and another brother who held the prospecting claim. They held the claim for about a month without much result, and going to Tarnagulla sold it to a party consisting of Mr F. Debney, Scrivenger and Hutchinson, who were all shipmates. They erected the first battery in Victoria. It consisted of a 4 head of stamps, a big wheel and quarter inch boiler plate, in which they drilled two thousand holes. It was worked by a horse. The battery was erected by Geordie Wilson, ship's carpenter, and also a shipmate of the party, who, it will be remembered, met his death some years [later] in a very unfortunate manner, being accidentally poisoned at Mr W. Jackson's Hotel. The party worked the claim for over 12 months, and got as much as 30 oz of gold to the ton. They worked to a depth of about 70 feet, without touching the blue rock, and about 90 feet long. They had over 100 tons of stone on the surface, which they called seconds, and sold to Lewis and Nickinson, of the celebrated Balaclava mine, Whroo, for £100. The purchasers took the stone to Bendigo and got 8 oz to the ton out of it ... W. Playford worked No. 1 south for about 6 months with little success, Debney and party getting this claim afterwards. Mr James Oataway took up No. 2 South, and took in J.C. Bailey ... Morris (a Welshman), and Euston as partners. They got the reef on the surface and sunk down beside it and struck it at about 14 feet. When they broke into it the sight that met their view is described as something like a jeweller's shop with gold. They crushed the stone at the Chilian mill at Milhaven and got 22-1/2 oz to the ton, and reckoned they had only got half the gold, and that the remainder went down the creek in the tailings. They worked the claim for about 18 months or 2 years, and to a depth of about 90 feet, striking the water at about 80 feet ... Mr Henry Potter ... made a good thing out of crushing Debney and party's tailings. The claims were small in those days with 4 feet walls left between each for safety. The reef averaged about 10 or 15 inches in thickness, but when over a foot was not so rich. The late Messrs Shakespeare and Stephenson (Mr Stephenson who had the crushing plant for several years in Caledonia) who purchased the prospecting claim worked the reef down to about 150 feet and averaged about 12 oz to the ton. They worked with a whim till beaten out by the water. No. 1 South was held by Dr Robinson and Mr Hay, the late Mr van der Luft, who had the crushing plant on the McIvor Creek for many years, and Olsson, there being also four working shareholders, including Morris ... In No. 2 South there were 7 in a party, including E. Harrop and Hagan. They got very good gold at about 60 feet, the shoot of gold dipping to the south. They worked to almost 150 feet and were beaten out by the water.[1]

1850s. The old Caledonia reef was the first opened here [Heathcote]. It was about a foot wide on the surface and ran about 200 feet along the surface. It was taken up in small claims and worked down to water, about 90 feet, and gave 20 to 30 oz to the ton. There was no battery here at that time, and the stone was crushed at a very primitive kind of machine. The claims were amalgamated and made into a company and called The McIvor Caledonia Company of 40,000 shares. The company erected machinery and sank to about 300 feet.[2]

1859. In the late fifties attention was attracted to the richness of many of the quartz outcrops and a Melbourne company was formed under the title of the Caledonia Quartz Mining Company to erect crushing machinery at the mine now known as the Alabama. At the end of 1859 the quartz was yielding 6-1/2 oz to the ton and towards the end of 1860 new machinery was erected and the quartz crushed rose from 30 to 200 tons per week.[3]

August 1859. The Caledonian Reef Co. have resumed work, and have raised a considerable quantity of stone already, which is expected to yield 8 oz per ton. The depth attained is 230 feet.[4]

January 1860. The Caledonian Reef is the only one being worked with success in the Division, the number of tons raised during the month being 60-1/2, which yielded 359-1/2 oz.
The Caledonian Company supplies most of the dams in a few of the neighbouring gullies at present with water pumped from their reef.[5]

February 1860. The Caledonian Reef continues to be worked steadily, and the yield rather uniform; the quantity crushed during the month was 39-1/2 tons which yielded 205 oz.[6]

March 1860. Gold lease granted to McIvor Caledonia for 10 years, on the quartz reef in Caledonia Gully, adjoining the Old Caledonia Company's claim on the east side, and running parallel to it. Capital £5,000, pumping and crushing machinery £3,000.[7]

April 1860. General Meeting. Original shaft sunk to 243 ft. Owing to increase of water, the sinking has been discontinued.
To date, 110 tons have been raised, averaging nearly 14 tons per week for the last 2 months. Crushing of 26 tons yielded 156 oz ... Gross return £2,600, as against £1,157 expenses. Tenders called for a new shaft to be sunk.[8]

July 1860. There are over 200 tons of quartz raised by the Caledonian Company which only await the completion of the machinery now being erected (for pumping and crushing) to have it crushed.[9]

August 1860. McIvor Caledonia Quartz Mining Co. New machinery started operating. 12 head battery, 400 tons of quartz in hand. Average last crushing was 6 oz per ton.[10]

September 1860. McIvor Caledonia Quartz Mining Co. In September 1860 ... installation of pumps recommended.[11]

September 1860. The Caledonian Reef continues to be actively worked; the new crushing machinery is nearly completed, and already crushed 122 tons. During the erection of the machinery the pumping had to be suspended, hence the fact of the water in the shafts etc., rising from a depth of 235 ft to within 140 ft of the surface, the company are much cramped in their operations. At present they can raise fifty tons weekly, and they have 400 tons ready for crushing. The crushing of 122 tons yielded 514 oz--an average of 4 oz 4 dwt to the ton.
This is the only reef in Heathcote proper that promises to be at all remunerative. The McIvor Caledonian has practically suspended operations ... The stoppage of this company will have a very prejudicial effect on the prospects of the district, in preventing the investment of capital in similar operations.[12]

November 1860. A partial suspension of the work took place, in consequence of the pumps becoming injured, which had to be replaced by new ones. The engine not being sufficiently powerful to pump the water and work a battery of twelve stamps, a secondary engine of 12 hp has been erected temporarily, pending the arrival of an engine of 50 hp, which has been ordered by the company. The water is now pumped to a depth of 235 ft, so that an opportunity exists of taking out a much larger quantity of stone than previously. A new reef has been struck by the company at a depth of 180 ft to the west of the old one ... A double shaft is being sunk on the west side of the reef, consisting of two compartments, one for pumping, the other for raising stone.[13]

c. 1860. There were the three claims worked on the line, and all being driven out by the water, a company was formed, in which Mitchell and De Pass were the principal shareholders, the company purchasing the shareholders out. This company, 33 years ago [1860s] erected machinery including a 14 horse-power engine. When this failed to keep down water they erected a 60 horse-power engine. They worked the mine to 450 feet deep, and got good crushings.[14]

August 1862. McIvor Caledonia Quartz Mining Co. Results most satisfactory since introduction of tribute system.[15]

May 1863. McIvor Caledonia Mining Co. Manager, Fred Manduit. 3 steam engines of 50, 16 and 12 hp, for pumping, winding and crushing - profits during last 6 months, £2,000.[16]

May 1863. Mr Potter of Caledonia Gully discovered a highly promising reef on the south side of Caledonia Gully above the Gold Miners Arms, named Phoenix Reef.[17]

June 1863. Phoenix Reef ... the most promising in the Heathcote District. New shaft being sunk to catch the reef at 70 ft.[18]

August 1863. Phoenix Reef. A crushing of 16 tons yielded 50 oz.[19]

October 1864. Machinery and mine of McIvor Caledonia Quartz Mining Co. advertised to be sold by auction.[20]

March 1864. McIvor Caledonia Co., Caledonia Gully. Down 250 to 300 ft. Potter and Co., Phoenix Reef, Caledonia Gully, surface. Phoenix Co.--70 ft. Kirby and Co.--30 ft. Manchester Reef Co.--50 ft ... The McIvor Caledonian Co. is doing but little, the last crushing paid but bare wages to the tributors.[21]

Butlers Reef

1850s. Butler's Reef, in Caledonia Gully, has given very rich yields, both in the early days when £7 per ton was paid for crushing with the Chilian mill and later ... Besides the prospecting claim other claims were worked on this line, but heavy water beat the parties out of them and the line was idle for some time.[22]

September 1860. Butler's Reef. This long abandoned reef has been taken up by a company, and is about being energetically worked; water being within 128 ft of the surface, the company cannot carry on the workings for some time in as extensive a manner as they could wish. The Caledonian Reef drains this ground, so that, when water has been pumped from the former, a greater facility will be afforded of working the latter. In the claim (Potters) adjoining the company's ground very valuable stone has just been struck at a depth of 112 ft.[23]

1860-64. Butler's Reef which had been worked for some time without the aid of machinery and abandoned about this time was taken up by Christie, Von der Luft and Company and worked in a small way, the yields varying from 4 to 7 oz to the ton. In 1863 the claim fell into the hands of Bock and Tait who struck rich gold, their first crushing yielding 180 oz from a few tons. In the following year machinery was erected on the mine and it was placed under the management of Mr Boag and the reef placed on tribute to Parker Bros.[24]

c. 1863. About 30 years ago [pre-1893] Bock Bros. and party, including Dr Atkinson, worked the [Butler's Reef] mine and got good crushings. A party of Italians including Marchesi, Castiana and Tegasa [?] sank a shaft 200 feet in No. 3 South, by the aid of a whim, but were driven out by the water after striking the reef. The others also gave up and the line was idle again.[25]

Properties amalgamated c. 1864

c. 1864. After the [McIvor Caledonia] company ceased work the claim was idle for some time. It was afterwards purchased by a Bendigo Company, known as Tipper and Williams and Co. which included Harkness and O'Brien. The new Company, named the Alabama, worked the mine for some years, with at times good results. The machinery was afterwards removed to Ballarat.
[Butler's Reef] was again taken up by a company, including Dr Atkinson and Messrs Rigby and J.L. Carter, who erected an engine, but unfortunately the machinery was not powerful enough to cope with the water, and the line was once more deserted.[26]

c. 1864. The [McIvor Caledonia] company was sold for £1,525 to Tipper and Williams. The old Caledonia engine was the largest engine in the colony at the time, and it was afterwards sold by Tipper and Williams, and went to the Winter's Freehold. They amalgamated two reefs and the company was then known as the Alabama and Butlers. They sank down 600 feet ... Butler's Reef had plant about 300 yards distant. Dr Atkinson who was a shareholder, shifted the machinery from the mine to the old Caledonia. They shifted machinery from Butler's to the old Caledonia. They made a mistake in putting the machinery on the old Caledonia shaft ... They abandoned the claim when they had sunk 600 feet altogether, and then found they were 300 feet from the run of gold. It was never worked since. 10 oz to the load was not an unusual thing.[27]

June 1864. Miller and Co., Coronet Reef--100 ft. Potter and Co., Phoenix Reef--50 ft. Potter and Co., Manchester Reef--40-50 ft. Kirby and Co., Scandinavian Reef--50 ft.
The Butler's Reef Co., Caledonia Gully, have commenced operations; they have erected a 16 hp engine with 9-inch pumps and have cleaned out their old shaft to a depth of 161 ft ... Bock and party, adjoining their south boundary, have sunk a new shaft 165 ft and struck their old workings in an 18-ft drive. They and two other claims are waiting the deepening of the company's shaft and the draining of the reef to enable them to go to work.[28]

September 1864. Potter and Co., Manchester Reef, Caledonia Gully--100 ft. Potter and Co., Phoenix Reef, Caledonia Gully--75 ft. Parker and Co., Butler's Reef, Caledonia Gully--87 ft. Nelson and Co., Butler's Reef, Caledonia Gully--62 ft. Kirby and Co., Scandinavia Reef, Caledonia Gully--100 ft. Adelaide Reef, Caledonia Gully--35 ft.[29]

December 1864. Butler's Reef Co., Caledonia Gully--150 ft. Phoenix Co., Caledonia Gully--75 ft. Bock and Co., Butler's Reef--160 ft.
The Alabama Co.'s (formerly McIvor Caledonian Co.'s) ground, having changed ownership, is now about being re-worked after a long period of idleness. Some very good stone has been struck in the ground of the Butler's Reef Co. and by Bock and Co. adjacent.[30]

February 1865. Alluvial--8 'independents have cut a tail race into the middle of the Old Creek Lead, in McCarey's paddock ... Sluicing the wash-dirt with Caledonia water.[31]

March 1865. The Butler's Reef Co. is also in full work, and taking out some very good stone at the 200 ft level. Butler's Reef Co., Caledonia Gully crushed 166 tons from 200 ft. Scandinavian Reef, Caledonia Gully crushed 52 tons. Norris Reef Co., Caledonia Gully crushed 24 tons. Schwartz and Co., Baker's Reef, Caledonia Gully crushed 3 tons.
The Alabama Co. is now in full operation and has opened the reef at the 200-ft level. A large body of stone is exposed, from which the company is crushing with very satisfactory results.[32]

September 1865. Alabama Co. (Old Caledonia) now one of the best, if not the best mine, in the district. Old Caledonia mine was auctioned for 1/3 of the value of the machinery.[33]

June 1866. Alabama Co., Caledonia Gully crushed 493 tons from 300-330 ft, for a yield of 1026 oz. Butler's Reef Co., Caledonia Gully crushed 9 tons from 188 ft, for a yield of 4 oz.
The introduction of the Californian quartz tailing machines, which are now being erected by Messrs Perkins and Co., in connection with the machinery of the Alabama Company.[34]

July 1866. Caledonia Gully machinery for treating tailings ready soon.[35]

March 1867. The Butler's Reef Gold Mining Co. has stopped work, but I hear that a new company is about to take it in hand.[36]

December 1867. The Alabama Co., Caledonian Gully, has suspended operations.[37]

September 1874. There is a probability of mining operations being resumed on Butler's Reef in a short time. The lessees inform me of their intention to erect machinery, and to work the ground in a proper and systematic manner.[38]

December 1874. 120 oz nugget found in Caledonia Gully.[39]

December 1875. Only noticeable feature in the mining in the Division during the last quarter is the taking up of ground containing the reef known as Butler's. The lessees are prosecuting their operations with considerable vigour, erecting a powerful steam-engine and appurtenances.[40]

June 1877. A very good crushing has been cleaned up by the Butler's Reef United Quartz Mining Co.--40 tons yielded 177 oz gold.[41]

c. 1877. [Tipper and Williams] amalgamated two reefs and the company was then known as the Alabama and Butlers. They sank down 660 feet.[42]

March 1878. The Alabama and Butler's Reef Co., Heathcote, averaged a return of 1 oz per ton from quartz crushed. This company recently purchased a boiler weighing 11 tons and have called for tenders for its erection.[43]

July 1878. Alabama and Butler's Reef Co. installing an immense boiler weighing 11 tons.[44]

August 1878. Butler's Reef--last crushing yielded 186 oz.[45]

1878. After being idle for some years the [Alabama] mine was worked by Dr Atkinson, for good returns. [Butler's Reef] was taken up under lease by Dr Atkinson and Messrs Nelson Jones and Laby, who also included the Caledonia mine under lease in their ground. These three gentlemen surmounted all difficulties and worked the Butler's line with great success. For a long time they obtained yields of from 300 oz to 400 oz a fortnight, as much as 30 oz to the ton being got ... They worked to a depth of about 700 feet.[46]

August 1878. Butler's Reef, Caledonia Gully, worked with success more than twenty years since, splendid gold obtained. Then inexperience and wasteful methods set in, and the whole line of reef lay dormant for years. Splendid stone obtained by H. Brock and Dr Atkinson of Sandhurst. Stone averaged 4 oz per ton. No. 1 south taken up by Italians, sank a shaft 6 ft x 4 ft, 200 ft deep, and struck reef with great difficulty, but then gave up. Then line of reef dormant again. Soon after, an engine was erected by a company, including Dr Atkinson, but worked only temporarily and taken away ... Butlers Reef Co. has in two of its leases some of the best mining properties in Victoria.[47]

September 1878. Old McIvor Caledonia Reef in Caledonia Gully ... Once famed and exceedingly rich. Originally very small claims, about 20 x 20 ft. Yields of 20 oz per ton were common. Later made into a local company. Became one of the most prominent mines in Victoria, representing a capital of £40,000. Was worked in a most extravagant manner. Company must have got £40,000 worth of gold. Spent all this plus capital, no dividends. Mine and plant has been sold.[48]

September 1878: The Alabama and Butler's Reef Co. have crushed 900 tons, averaging a return of 1 oz per ton.[49]

September 1878. Racecourse Reef was worked at one stage by Stephenson, the owner of a crushing machine at Caledonia Gully.[50]

December 1878. Alabama and Butler's Reef Co. crushed 1,250 tons for a yield of 3,025 oz.[51]

March 1879. The Alabama and Butler's Reef Co. has had no crushing, but have been engaged sinking a shaft and opening out for a new level. On the 18 February, at the 500 ft level, struck a reef that will, in all probability, go from 4 to 6 oz per ton.[52]

June 1880. The Alabama and Butler's Reef Co., on their bottom level, at 600 ft, obtained very rich gold in the winze sunk from that level.[53]

December 1880. Butler's Reef Co. had splendid returns for the quarter. Last month gave 425 oz.[54]

June 1881. During the past quarter a crushing of 420 tons of stone from the Alabama and Butler's Reef mine, at Caledonia Gully, gave a yield of 441 oz.
Marchesi, Farley and party's reef in Caledonia Gully, promises to be a valuable property; a crushing recently of 9 tons yielded 1-1/2 oz to the ton.[55]

September 1881. Two crushings at the Alabama and Butler's Reef Co.'s mine recently gave the handsome return of 665 oz.[56]

December 1881. The Alabama and Butler's Reef Co. crushed 145 tons for a yield of 253 oz. A crushing from Messrs Hall and McKay's Reef, south of Butler's Company, of 12 tons of stone, gave a yield of 25 oz of gold. The reef, which was struck at a depth of 50 ft, is 18 inches thick.[57]

November 1882. Alabama Co. Shares in new company have been completely disposed of.[58]

September 1883. Testing the question of a Deep Lead, Heathcote ... The other projected companies include:
The No Surrender Co., 5 acres, Caledonia Gully, NW of Heathcote, application for 15 years' lease; the amount of money proposed to be invested is £1,000 in manual labour and machinery; 4 men are to be employed in the first 6 months, subsequently when in work 12 men.
The Alabama and Butler's Reef Co., 8 acres, adjoining the present claim at Caledonia Gully. It is proposed to extend the operations of this company, and for that purpose 6 men will be put on for 6 months.[59]

December 1883. Lease applied for by Mr D. Sims for 5 acres of Caledonia Gully, Heathcote.[60]

September 1884. Alabama and Butler's Reef Co. Trial crushing of 11-1/2 tons yielded 70 oz gold ... The gold was obtained at a depth of 450 ft. The reef is 9 inches thick ... 25 men are engaged, and they are now pumping out the mine and old workings prior to commencing extended operations. The company has 3 steam engines employed, of 60 hp in the aggregate.
Messrs Sims, Farley and Co. have had a trial crushing of 8 tons from a new reef struck in their lease, which is also in California Gully, but not forming part of the Alabama and Butler's Company's Reef, for a yield of a little over an ounce to the ton. The name of the claim is "The No Surrender". The stone is taken from a depth of 130 ft and the reef is 9 inches thick ... At present they are engaged in cleaning out the shaft, and it is intended when the level is struck to put on more men, and erect machinery.[61]

June 1885. Alabama and Butler's Reef Co ... the great drawbacks in working the mine are the hard ground and the smallness of the lode.[62]

December 1885. The only yield of any importance in the quarter for this Divison was that of the Alabama Co.--305 tons yielded 300 oz.[63]

March 1886. Alabama Co.--130 tons yielded 163 oz.[64]

June 1886. The Alabama Co. has stopped work.[65]

September 1886. Alabama Co. has only been working a portion of the quarter and on tribute.[66]

December 1886. Alabama Co. now idle, but the machinery is still on the ground.[67]

June 1889. Alabama Co. machinery bought by the Fontainebleau Syndicate.[68]

July 1891. Royal Commission on gold mining. Caledonia Lead--200 ft long to 1 ft wide at surface. Worked down to water at 90 ft, giving 20-30 oz to the ton. Claims amalgamated, and called the McIvor Caledonia Co. which erected machinery and sunk to 300 ft. Company put down 240 ft shaft at £20 per foot. They eventually put in a cross cut to the west ... they found they were not below the old workings. Company was sold for £1,525. Machinery went to Winter's freehold. Companies amalgamated and later called Alabama and Butler's. Machinery was moved to Old Caledonia, and after 600 ft sinking of shaft, abandoned the claim altogether Called Old Reef).[69]

October 1893. The mine has been idle now for some years, but it is considered with good machinery it could again be worked to advantage ... It was called at one time the Brasswire Tribute, on account of the stone being held together by wires of gold. It was worked on tribute from one of the companies by a party of about 10, including T. Shaw, G. Parfrey and othes.[70]

1894 [History]. Shortly after the news was spread throughout the colony, in 1853, that gold was being found at McIvor Creek, near Mount Ida, a very large population of diggers was spread over the field. Early in the following year a reef known as the McIvor was opened in Caledonia Gully, and although on the surface it was only about 1 foot wide, which afterwards increased to 2 feet, the returns were very great, many of the small claims averaging for months from 20 to 30 oz to the ton. After a while these claims were amalgamated into one company, known as the McIvor Caledonian company, which erected machinery to contend with the water, which was met at about 70 feet from the surface. This company, which afterwards amalgamated with its neighbours, the Alabama and Butler's companies, worked down to about 600 feet, when, according to competent local authorities, they discovered that they were 300 feet away from the run of gold, as the shaft had been sunk on the underlie from the 240 feet level, they found it would be necessary to sink a new shaft further south and shift the machinery. This was thought too heavy an undertaking by the shareholders, and the machinery, which was of an unusually heavy character, was sold to a Ballarat company, and the ground was left unworked. The returns show that in the upper workings this reef was unusually rich. In 1860 it is described as continuing to average 6 oz to the ton, and it was just about this time that the private claims were amalgamated into a company. Nearly £30,000 was spent during the next two years in sinking a shaft and putting in a drive for the reef, which succeeded in reaching the old workings. During this time only some 300 oz of gold were raised and a collapse of the company seemed imminent when a stone was struck that gave good returns, one parcel of 34 tons yielding 111 oz.[71]

Kyneton Road--North Butlers

January 1896. North Butlers Gold Mining Syndicate Co. Steam engine purchased from Birmingham, and work on foundations has been proceeding.[72]

February 1896. North Butlers Gold Mining Co. Machinery in position and capable of mining down to 1000 ft.[73]

February 1896. North Butler's Gold Mining Co. Mine formerly belonged to Eyre Bros. and was known as the Reward Claim, and is situated 2 miles from Heathcote on the Kyneton Road. Mine is on the same line of reef as the South Butler's Mine which has erected a 16 hp winch and vertical boiler.[74]

March 1896. North Butlers. Trial crushing. 15 tons yielded 0.35 oz. per ton.[75]

1900. Butler's Reef. Several shafts were pointed out to me as being of considerable depth, but have long been abandoned, and none could be descended before a considerable amount of preparation and pumping is first done. Amongst these were the Italian Shaft, reported to be 240 feet in depth; the "Butler's Shaft", reported to be 700 feet in depth; the "Old Air Shaft", also several hundred feet deep; and some smaller ones. The "Butler's Shaft" is now sollered over.
Mr Hall, of South Heathcote ... now owns a small Customs battery, erected near to the Alabama shaft.
The Alabama Reef ... lies between the Butler and the Argyle lines, though in connection with the latter name it must be remembered that at different times at least two mines were so called.
The old shaft in the Alabama workings is reputed to be down to 600 feet ... The reef matter is reported to have been from 6 inches up to 2 feet wide, and of very rich class of stone, particularly near the surface, where crushings went as high as 20 oz per ton.

During the latter days of the concern a new shaft was started, and put down 800 feet, but it is said never to have cut the reef.
The stoppage of these two mines, the Butler and the Alabama, seem to have paralysed the reef-mining of the district, first by destruction of confidence, second, by leaving a heavy task of unwatering to be met by the first freshcomer; for it is held by the old miners that even the Opossum Reef and the Shakespeare Reef were both considerably affected by the pumping upon the Butler and the Alabama.
The "Scandinavia" and the "Old Crown" shafts were pointed out to me somewhat to the northward of the Alabama. The Old Crown is reported to be 300 feet deep.[76]

March 1906. Peters Gully, Alabama and Butler's Reef, and Long Gully Reef taken up again.[77]

c. 1930s. The best worked was the Butlers, it worked to 860 ft, yield 800 oz per fortnight for several years, reef 6 in. to 1" width about 11 oz per ton, except around 200' it went poor for a while ... The second one down from the Butlers is the Alabama, worked to 500' the reef was about 1' wide and around 12 to 16 oz per ton, it went wide near 500' and also the values were poor.
Scandinavian Reef. It is a cross course ... It was worked to 200' and went 11 dwts per ton and values were left in the mine, it is not far from Willans cross course.
North Butlers near Kyneton Road went 14 dwts per ton, worked into water level. It was stopped by the Mines Dept. as shaft was too small.[78]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site. Main periods of operations were:

1853:	Discovery of reef. According to one account Debney, Scrivenger and Hutchinson erected the first battery in Victoria on the reef. It was horse-powered.
1859 to 1864:	McIvor Caledonia Mining Co. Installation of pumping & winding machinery, and battery.
1864 to 1867:	Alabama Co. The amalgamation of Butlers and Caledonia reefs. Removal of Butlers reef's plant to Caledonia reef.
1877 to 1882:	Alabama and Butlers Reef Co. Installation of pumping & winding machinery, and battery.
1882 to 1889:	New company formed and machinery installed.

Difficult to date the battery site. It certainly does not date to operations of the McIvor Caledonia Company. Most probably dates to the late 1870s and the operations of the Alabama and Butlers Reef Co.

9.1: Butlers Reef mine site
Located on the W side of East Bayton Road are several dumps of blue mullock. The area has been extensively bulldozed and quarried. All shafts appear to have been filled, and apart from bulldozed heaps of brick & building stone, no indications of any engine beds or footings were found. The spread of blue mullock continues on the E side of the road.

Alabama and Butlers Reef Co.
125 m E from the Ring Road signpost there is a large dam which has been constructed across the main channel of Caledonian Gully. The dam's embankment is 75 m long and stands 2-3 m high. The top surface of the embankment has been flattened out to form a road or tramway which leads to a battery site located on the east side of the dam. The most notable feature of the battery site is a raised, 6 m square mound of stone rubble in which can be seen a section of the boiler setting. The surviving wall, running E-W, is constructed from large blocks of stone and is at least 3 m long, 2 ft thick and stands ½ m above ground level. On the SW corner of the rubble mound is a concentration of red brick: handmade and no frog. Immediately N of the boiler setting is the battery platform, 5 1/2 x 3 ½ m, which is littered with ripped-up fragments of bedlogs. Immediately N of the platform is a section of in-situ bedlog with one mounting bolt protruding.
No battery stumps are visible on the platform, but there are some squarish depressions running along the western edge. Rising above these depressions is the dam's embankment which presumably functioned as the loading bay for the battery.
N of the erosion channel the gully has been cleared and developed for housing. Battery sand is exits below the dam's embankment. Presumably the bulk of the dump has been carted away, or lies under grass on the freehold land.

Site 9.2--Caledonian mine site
The reef workings run W from a large dam. The workings have been extensively bulldozed and quarried. Most shafts have been filled, and the blue mullock removed from the site. Apart from bulldozed brick and stone rubble, no in-situ evidence of engine beds or footings was detected. Costeening has recently been undertaken across the line of the reef.

INTEGRITY/CONDITION: Apart from the remains of the battery site, dams and mullock heaps, the two sites have poor integrity.

CULTURAL SIGNIFICANCE:

Site 9.1 has:

- Historical significance because it:
  a) forms part of a group or network of sites, the totality of which is considered to be significant, namely the Caledonia mine site and alluvial sites in Caledonia Gully.
  b) was a success as a mine in terms of its production levels and yields and as a business enterprise, being part of a mining property that was one of Heathcote's richest. The site was an influence on the economic development of town of Heathcote.
- Scientific significance because it represents an important mining technology, through the survival of blue mullock, dam and battery site.

Site 9.2 has:

- Historical significance because it forms part of a group or network of sites, the totality of which is considered to be significant, namely the Butlers mine site and alluvial sites in Caledonia Gully.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 McIvor Times, 19 October 1893
2 D. Sims, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
3 Randell, 1985, p. 23
4 Mining Surveyors' Reports, August 1859
5 Mining Surveyors' Reports, January 1860
6 Mining Surveyors' Reports, February 1860
7 McIvor News, 2 March 1860
8 McIvor News, 6 April 1860
9 Mining Surveyors' Reports, July 1860
10 McIvor News, 24 August 1860
11 McIvor News, 6 June 1862
12 Mining Surveyors' Reports, September 1860
13 Mining Surveyors' Reports, November 1860
14 McIvor Times, 19 October 1893
15 McIvor News, 8 August 1862
16 McIvor News, 8 May 1863
17 McIvor News, 28 May 1863
18 McIvor News, 25 June 1863
19 McIvor News, 28 August 1863
20 McIvor News, 8 October 1864
21 Mining Surveyors' Reports, March 1864
22 McIvor Times, 19 October 1893
23 Mining Surveyors' Reports, September 1860
24 Randell, 1985, p. 23
25 McIvor Times, 19 October 1893
26 McIvor Times, 19 October 1893
27 D. Sims, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
28 Mining Surveyors' Reports, June 1864
29 Mining Surveyors' Reports, September 1864
30 Mining Surveyors' Reports, December 1864
31 McIvor News, 10 February 1865
32 Mining Surveyors' Reports, March 1865
33 McIvor News, 15 September 1865
34 Mining Surveyors' Reports, June 1866
35 McIvor News, 6 July 1866
36 Mining Surveyors' Reports, March 1867

37 Mining Surveyors' Reports, December 1867
38 Mining Surveyors' Reports, September 1874
39 Mining Surveyors' Reports, December 1874
40 Mining Surveyors' Reports, December 1875
41 Mining Surveyors' Reports, June 1877
42 D. Sims, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
43 Mining Surveyors' Reports, March 1878
44 McIvor News, 4 July 1878
45 McIvor News, 15 August 1878
46 McIvor Times, 19 October 1893
47 McIvor News, 22 August 1878
48 McIvor News, 26 September 1878
49 Mining Surveyors' Reports, September 1878
50 McIvor News, 19 September 1878
51 Mining Surveyors' Reports, December 1878
52 Mining Surveyors' Reports, March 1879
53 Mining Surveyors' Reports, June 1880
54 Mining Surveyors' Reports, December 1880
55 Mining Surveyors' Reports, June 1881
56 Mining Surveyors' Reports, September 1881
57 Mining Surveyors' Reports, December 1881
58 McIvor News, 30 November 1882
59 Mining Surveyors' Reports, September 1883
60 Mining Surveyors' Reports, December 1883
61 Mining Surveyors' Reports, September 1884
62 Mining Surveyors' Reports, June 1885
63 Mining Surveyors' Reports, December 1885
64 Mining Surveyors' Reports, March 1886
65 Mining Surveyors' Reports, June 1886
66 Mining Surveyors' Reports, September 1886
67 Mining Surveyors' Reports, December 1886
68 McIvor News, 13 June 1889
69 McIvor News, 9 July 1891
70 McIvor Times, 19 October 1893
71 McIvor Times, 24 May 1894
72 McIvor News, 23 January 1896
73 McIvor News, 6 July 1896
74 McIvor News, 27 February 1896
75 McIvor News, 19 March 1896
76 Jenkins, 1900, pp. 1-2
77 McIvor Times, 29 March 1906
78 Hird, 1974, pp. 4-5

SITE NO. & NAME:	**CALEDONIA GULLY ALLUVIAL WORKINGS**	
	9.3	**Reservoir & Alluvial Sinkings**
	9.4	**Puddling Machine & Gully Sluicing**
	9.5	**Puddling Machine & Gully Sluicing**
	9.6	**Puddling Machine & Gully Sluicing**
SITE NAME:	**Caledonia Gully, Heathcote**	
HI NO:	**9.3**	**H7824-0036**
	9.4	**H7824-0037**
	9.5	**H7824-0038**
	9.6	**H7824-0039**

DIRECTIONS: Site 9.4: Puddler No 1: 200 m down Joes Road, from junction with East Bayton Road, 20 m W from road.
Site 9.5: Puddler No 2: 200 m S down East Bayton Road from its junction with Ring Road. 70 m W of road.
Site 9.6: Puddler No 3: 150 m along track that leads from East Bayton Road to Butlers Mine. Located on N side of track.

MUNICIPALITY: Greater Bendigo City

LAND STATUS: Site 9.3. State Forest and Water Reserve; other sites are all in State Forest

HISTORY:

1894 [History]. Shortly after the news was spread throughout the colony, in 1853, that gold was being found at McIvor Creek, near Mount Ida, a very large population of diggers was spread over the field. Early in the following year a reef known as the McIvor was opened in Caledonia Gully, and although on the surface it was only about 1 foot wide, which afterwards increased to 2 feet, the returns were very great, many of the small claims averaging for months from 20 to 30 oz to the ton. After a while these claims were amalgamated into one company, known as the McIvor Caledonian company, which erected machinery to contend with the water, which was met at about 70 feet from the surface. This company, which afterwards amalgamated with its neighbours, the Alabama and Butler's companies, worked down to about 600 feet, when, according to competent local authorities, they discovered that they were 300 feet away from the run of gold, as the shaft had been sunk on the underlie from the 240 feet level, they found it would be necessary to sink a new shaft further south and shift the machinery. This was thought too heavy an undertaking by the shareholders, and the machinery, which was of an unusually heavy character, was sold to a Ballarat company, and the ground was left unworked. The returns show that in the upper workings this reef was unusually rich. [1]

Late 1850s. George Potter ran the Goldminers' Arms Hotel at Caledonia Gully, Heathcote from the late 1850s. Certainly it was licensed in 1858, with Billiards and Night Licenses. This hotel traded until late in 1861.[2]

March 1864. Caledonia Gully. A small rush has taken place to the old ground in Caledonian Gully, and also to Argyle Gully, both have been attended with poor results.[3]

February 1865. Alluvial. 8 "independants" have cut a tail race into the middle of the Old Creek Lead, in McCarey's paddock ... Sluicing the wash-dirt with Caledonia water.[4]

March 1865. Mining population as follows:

	European	Chinese	Total
Alluvial miners	720	70	790
Quartz miners	450	-	450
	1170	70	1240

Miners thus distributed:

Heathcote (proper) including Argyle Gully, Caledonia Gully, Long Gully, Wattle Flat, Commissioners Flat, Golden Gully, etc.--500
Redcastle, Spring Creek, Staffordshire Flat--70
Costerfield--130
Wild Duck Creek (new rush)--500
Mundy Gully, Ford's Gully, etc.--40
Total--1240

Machinery as follows:
Alluvial
Sluice heads--4
Puddling machines--64
Quartz
Steam engines--16, totalling 101 head of stamps, 330 hp
Chilian wheels--4
Horse Whims--15
Horse Whips--7
Number of square miles of alluvial ground--53
Number of distinct quartz reefs--93
Value of mining plant--£39,650.
Gold returns for this quarter exhibit a very considerable falling off in the yield of gold, which is in a great measure to be attributed to the scarcity of water that has existed for the last 3 months. Nearly all the puddling machines and some of the crushing machines are idle from this cause. At Redcastle, scarcely any crushing has been done within the quarter, and stacks of auriferous quartz are lying waiting for water to enable the owners to get it crushed.
The water races constructed by Messrs Debney and Co., and Bramble and Co., have been idle during the quarter for want of water.[5]

December 1874. 120 oz nugget found in Caledonia Gully.[6]

September 1883. Since my last report there has been a marked improvement in mining matters in this division, and an increased activity and desire to secure leases of unoccupied ground for mining purposes.
It has long been thought and generally believed, by old resident miners, that a deep lead exists here, and in order to test the question a company has been formed, to be named the McIvor Deep Lead Prospecting Company. Messrs W.E. Lewis and Matthias Speed have applied for a lease for 15 years of 30 acres of land, including the Barrack Reserve and other ground west of Section 6, Borough of Heathcote, £5,000 is proposed to be expended ... manual labour and machinery, and four men employed in the first year ... they have commenced operations and are down 110 feet ... the appliance used is an auger borer ... it is expected the "bottom" will be reached at 250 ft.
The other projected companies are as follows: The No-Surrender Co., Caledonian Gully; Rocky Point Gold Mining Co., McIvor Creek; Alabama and Butlers Reef Co., Caledonia Gully; John Hedley, 19 acres on Wild Duck Creek. Heathcote Sluicing Company ... still working and employing 28 men.[7]

September 1883. Testing the question of a Deep Lead, Heathcote ... The other projected companies include:
The No Surrender Co. 5 acres, Caledonia Gully, NW of Heathcote, application for 15 years' lease; the amount of money proposed to be invested is £1,000 in manual labour and machinery; 4 men are to be employed in the first 6 months, subsequently when in work 12 men.[8]

December 1883. Lease applied for by Mr D. Sims for 5 acres of Caledonia Gully, Heathcote.[9]

September 1884. Messrs Sims, Farley and Co. have had a trial crushing of 8 tons from a new reef struck in their lease, which is also in California Gully, but not forming part of the Alabama and Butler's Company's Reef, for a yield of a little over an ounce to the ton. The name of the claim is "The No Surrender". The stone is taken from a depth of 130 ft and the reef is 9 inches thick ... At present they are engaged in cleaning out the shaft, and it is intended when the level is struck to put on more men, and erect machinery.[10]

July 1891. Royal Commission on gold mining. Caledonia Lead--200 ft long to 1 ft wide at surface. Worked down to water at 90 ft, giving 20-30 oz to the ton. Claims amalgamated, and called the McIvor Caledonia Co. which erected machinery and sunk to 300 ft. Company put down 240 ft shaft at £20 per foot. They eventually put in a cross cut to the west ... they found they were not below the old workings. Company was sold for £1,525. Machinery went to Winter's freehold. Companies amalgamated and later called Alabama and Butler's. Machinery was moved to Old Caledonia, and after 600 ft sinking of shaft, abandoned the claim altogether. (Called Old Reef).[11]

June 1893. In June 1893 twenty-three tenders were received to construct the Caledonia Gully Reservoir and that of W. Marsley and Kitt Bros. of Bridgewater for £1,964/12/0 was accepted.[12]

1906. In December 1906, two hydraulic sluicing companies, the Wattle Flat Hydraulic and the Heathcote and Castlemaine Dredging, in full work, with up-to-date steam plants, manufactured by Thompson and Co., Castlemaine; and a third, the Caledonia Hydraulic Sluicing Co., preparing for the erection of machinery. An average of 50 men was employed by these companies.[13]

1907. Three hydraulic sluicing companies situated in my portion of the Heathcote Division: Wattle Flat, Heathcote Junction, Caledonia Gully. Little work done by any of these companies, owing to the shortage of water.[14]

May 1907. Caledonia Gully. Enlarged tailing dam and constructed service water dam, erected forge, shop, boxed both pumps.[15]

1907. Three hydraulic sluicing companies situated in my portion of the Heathcote Division: Wattle Flat, Heathcote Junction, Caledonia Gully. Little work done by any of these companies, owing to the shortage of water.[16]

July 1908. Sluicing plants [include] Caledonia Gully.[17]

End 1908. Of the three hydraulic sluicing companies [in the division] Wattle Flat has closed down and the other two are working with indifferent success.[18]

July 1908. Caledonia Gully. Ground averages 11 ft in depth.[19]

DESCRIPTION OF PHYSICAL REMAINS:

The Reservoir was constructed in the early 1890s.
The puddling machines would probably all date to the late 19th century. As a rule, in areas where water races were constructed and hydraulic sluicing carried out, puddling machines soon died out. Hedley's water race (McIvor Hydraulic Sluicing Co.) would have reached the area in the late 1870s, so presumably the sites date to around this time, or earlier.

Site 9.3: Reservoir and alluvial sinkings
A 30 m wide band of alluvial sinkings commences running in a northerly direction from just below Caledonian Reservoir. The sinkings are fairly intense, separated by 1-3 m baulks, and associated with low mounds (indicating quite shallow sinkings). After crossing Joes Road the guts of the alluvial sinkings have been removed by hydraulic sluicing, leaving behind a narrow but very deep gully (approx 5 m).
Site 9.4: Puddler No 1
At the commencement of the deeply sluiced gully is an erosion control embankment. Downstream from this concrete wall is a puddler. It is located 20 m W of Joes Road. The puddler is beginning to weather badly: its inner mound is eroding into, and filling, the puddling trench. This erosion has been accelerated by some fossicking. There is no central post present and the outer mound is flattened, 3-5 m wide, and raised ½ m above ground level. The diameter of the puddler is 22 ft, and the machine site is bare of any vegetation. The puddler is located on the E end of an earthen embankment. Unlike any other puddling dams recorded for this Division, the inner face of this embankment is lined with stone. The western end of the embankment has been partly bulldozed.
Below the puddler, the surviving alluvial sinkings becomes less defined. Attributing to this lack of definition is the nature of the ground; it is very swampy hence holes have silted-up. Also mullock from the Alabama mine has covered some of the alluvial workings. The sinkings run down the gully until the Alabama mine's dam. Past the dam, Caledonian Gully has been cleared and developed for housing.
Two other puddlers were found in Caledonian Gully. Both were found on the W side of the gully, utilising the water coming down small feeder gullies:
Site 9.5: Puddler No 2
The 90 m long embankment of the dam runs E-W across the side gully. The puddler is located below the dam, towards the N end. It is very weathered. The inner mound is still visible and retains its central post. The puddling trench is almost buried. The flattened outer mound has eroded through in one section, but is still quite substantial and raised 1 m above ground level.
Diameter of puddler is 22 ft. Three trees grow on the puddler machine site, the largest has a diameter of over 1 m.
16 m N of the puddler is a fireplace constructed out of blue mullock. There are also some red brickbats associated with the stonework.
Site 9.6: Puddler No 3
This puddler is located on a side gully, 50 N of Butler's mine dam. The puddler is fairly well defined, with a raised inner mound which still contains the remains of its central post. The puddling trench is beginning to be filled, but its sides are still quite sheer. The trench is surrounded by a 3 m wide flattened outer mound, which is raised ¾ m above ground level. The puddler has a diameter of 22 ft, and apart from one tree (approx 40 year old) has only small bushes growing on it.
30 m E of the puddler are some stone footings. These are either associated with the puddler or the reef workings that are located on the high ground above the puddler.

INTEGRITY/CONDITION: Gully still retains some integrity in respect to its mining history--alluvial sinkings, puddling machines and evidence of quartz mining.

CULTURAL SIGNIFICANCE:

Sites 9.3 to 9.6 have:

- Historical significance, being part of a group or network of sites, the totality of which is considered to be significant, namely the various quartz mines and alluvial sites in Caledonia Gully.

SIGNIFICANCE RANKING: Sites Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 McIvor Times, 24 May 1894
2 Randell, 1985, p. 252
3 Mining Surveyors' Reports, March 1864
4 McIvor News, 10 February 1865
5 Mining Surveyors' Reports, March 1865
6 Mining Surveyors' Reports, December 1874
7 Mining Surveyors' Reports, September 1883
8 Mining Surveyors' Reports, September 1883
9 Mining Surveyors' Reports, December 1883
10 Mining Surveyors' Reports, September 1884
11 McIvor News, 9 July 1891
12 Randell, 1985, p. 112
13 Mining Surveyors' Annual Reports, 1906
14 Mining Surveyors' Annual Reports, 1907
15 McIvor Times, 23 May 1907
16 Mining Surveyors' Annual Reports, 1907
17 McIvor Times, 9 July 1908
18 Mining Surveyors' Annual Reports, 1908
19 McIvor Times, 16 July 1908

LOCATION NO.	**LONG GULLY REEF WORKINGS** **10.1 Long Gully reef mine** **10.2 Cosmopolition mine site**
SITE NAME:	**LONG GULLY REEF, HEATHCOTE**
HI NO:	**H7824-0040**
DIRECTIONS:	1.25 km S of junction of Spring Flat Road & Jackson's Lane
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	State Forest

HISTORY:

c. 1860-1870. The Long Gully Reef, situated between Long and Argyle gullies on the Long Gully side, and a short distance to the north of Norris's Reef, was very rich in the early days. The richness of the stone is given at from 10 oz to over 20 oz to the ton. But the career of the mine was beset with difficulties, owing to the heavy water and inadequate machinery to cope with it, &c. Messrs Walker, Sangster and J.I. Carter contributed greatly to develop this mine. Ultimately the work ceased, and the machinery was removed.[1]

c. 1860s. Norris's Reef gave very rich returns in the early days. It is situated on the hill between Long Gully and Argyle Gully. It was discovered by the late Mr Jeremiah Norris about 30 or 40 years ago [pre-1893].
The Cosmopolitan, about on the same line as Norris's reef. Gave good returns.[2]

September 1860. In consequence of the satisfactory crushings lately obtained from this reef [Long], the company by which it is worked has determined on employing a greater number of men to mine on a more systematic and enlarged manner.
Norris Reef. The proprietors of this reef are actively employed in raising large quantities of quartz.[3]

November 1860. Long Gully Reef--25 tons crushed for a yield of 27 oz. Norris Reef--16-1/2 tons crushed for a yield of 62 oz.[4]

August 1862. Balmoral Co., Long Gully, completed a shaft to a depth of 170 ft (40 ft below old workings).[5]

October 1862. New reef opened at top of Long Gully, named Morning Star. A crushing of 7 tons yielded 31 oz gold.[6]

March 1864. Long Gully Co.--160 ft. Balmoral Reef Co.--60 ft.
Alluvial. Some few men are paddocking out in Long Gully, near the Hibernia Hotel, McIvor Creek. A few Chinese are washing old dirt with tub and cradle.
Mr J.T. Stephenson is working the Long Gully Reef on tribute; he is doing pretty well, but his expenses are heavy and the water being great and the reef thin. He is erecting a 12 hp engine and battery of eight head.[7]

June 1864. Mitchell, McDonald and Co., Perthshire Reef, Long Gully--crushing from 60 ft.
Alluvial mining abandoned.[8]

September 1864. Walters and Co., Norris Reef, Long Gully--84 ft. Kirkham's Reef, Long Gully--97 ft. Humboldt Reef, Long Gully--51 ft. Baker's Reef, Long Gully--101 ft.[9]

March 1865. The Long Gully Reef Company is about to resume operations on a large scale, having purchased an engine, which they intend erecting on the ground.[10]

August 1865. Long Gully. Carter and Rigby are unwatering the mine. Then 50-60 oz per fortnight is anticipated.[11]

June 1866. Long Gully Reef Co., Long Gully--92 tons yielded 316 oz. Victoria Reef, Long Gully--106 tons from 40-60 ft yielded 121 oz.[12]

March 1867. The Long Gully Reef Mining Co. stopped for some weeks, but recommenced work about a week ago.[13]

1872-1882. [Long Gully Reef] was subsequently taken up by a company under the name of the Royal Crown. The Company's first crushing of fifty tons gave a yield of 131 oz. Other crushings that followed were from 1 oz to 3 oz to the ton. The company sank a new shaft and drove along the reef taking out the stone, and when it ceased work it is believed it would have had to go 150 feet further to strike the main run of gold.[14]

February 1872. Royal Crown Gold Mining Co., Long Gully. Machinery to be purchased.[15]

March 1875. Parker Brothers, situated on Long Gully Reef, Heathcote, are erecting machinery for working their ground effectively.[16]

September 1875. Royal Crown Quartz Mining Co. has completed the erection of a 40 hp winding and pumping engine, to work the mine on the Long Gully Reef, Long Gully. The engine commenced work on 21 June 1875.[17]

December 1875. The Royal Crown Co.'s works in Long Gully, the prospects of which were supposed to be encouraging [have been suspended]. The cause of suspension I am not in a position to state, whether it is monetary or mismanagement.[18]

September 1876. Victoria line of reef, Long Gully (ex-Italian Reef). Shaft being sunk to water level, or 200 ft.[19]

January 1879. Long Gully mine. Reef between Long Gully and Argyle Gully, let on tribute after not paying ... Some time later, after the machinery had been sold, mine was re-opened and is working with difficulty.[20]

September 1879. The Royal Crown Co., at Long Gully, has been engaged sinking a new shaft to catch the lode which the original proprietors abandoned at the 280-ft level, in consequence of excess of water. The present company has been pumping and sinking two years last August, and the capital of the company has been augmented twice during that period.[21]

February 1880. Royal Crown Mine commenced to sink shafts.[22]

March 1880. Royal Crown Gold Mining Ltd, Heathcote. Total depth of shaft from surface, 272 ft.[23]

July 1880. Royal Crown now called New Royal Crown (No Liability).[24]

September 1880. New Royal Crown. Boiler cleaned out, water cleared from mine, and operations are about to recommence.[25]

December 1880. The Royal Crown Co. still making great progress in sinking their shaft, which is down 330 ft, but the water is heavy.[26]

March 1881. The Star of the South Company obtained an excellent prospect of gold lately from a 20-inch body of stone, at a depth of 100 ft.[27]

June 1881. A recent crushing at the Royal Crown Co.'s mine, Long Gully, of 51 tons, gave a yield of 72 oz.[28]

January 1882. Sale of Royal Crown claim plant (advertisement).[29]

1893. [Cosmopolitan Reef] is in reality No. 1 south of Norris's. It was worked by Charles Husfeldt and Gorski, for good returns. They lost the gold and gave up their claim. The Cosmopolitan was last prospected by Friswell and party a few months ago, when some of the old shafts were tried, but without result.[30]

May 1894 [History]. North of the Caledonian group lies the Long Gully reefs, which for a time yielded very well, 40 tons taken from the 280 feet level averaging 4 oz 13 dwt per ton, whilst another lot of 28 tons from the same level averaged 8 oz 15dwt.[31]

c. 1930s. Long Gully cross course worked between 350 and 400', shoot at surface about 500' long, the best being 1000 oz from one ton, mostly went 3 to 4 oz per ton, but at the bottom the shoot was only 11' long going 1 oz 5 cwts per ton.
Norris or Cosmopolitan cross course, not reef. Worked a little over 200', went 5 to 6 oz.[32]

DESCRIPTION OF PHYSICAL REMAINS:

Site 10.1. Two main periods of mining:
1860s: Long Gully Co. Erection of battery.
1872 to 1882: Royal Crown Quartz Mining Co. Erection of pumping and winding machinery.
Remains appear to be related to the pumping and winding plant installed in the 1870s.
Site 10.2. Cosmopolitan worked in the 1860s and 1890s. Machinery footings would date to the later period.

10.1. Long Gully Reef Mine
Main feature of the mine site is a partially quarried blue mullock heap, measuring 17 x 25 m, and standing 3-5 m high. On the N, quarried end of the heap, is a filled, but subsiding shaft which has been used for dumping rubbish. On the other end (S) is an engine shaft. It too has been filled, subsiding to a depth of 5 m. 7 m to the E of this shaft are up to 6 parallel bedlongs. The remains and/or impressions of the logs cover an area approx 34 ft wide, and each log would have been approx 21 ft long and 18 inches square. The bedlogs run N-S. Protruding from some of the logs are mounting bolts, 3 of which still retain their nuts.
Along the N side of the bedlogs runs a section of stone wall (Boiler setting). Standing 75 cm above existing ground level, the wall is mostly obscured by rubble, but appears to be around 2 ft thick. E of the bedlogs is a mound of stones rubble; perhaps the remains of a chimney stack base. No red bricks were observed.
10.2. Cosmopolition Mine
13 m to the S of the Long Gully Reef mine is the Cosmopolitan mine's mullock heap. It too contains blue mullock and has been partly quarried leaving behind a heap measuring 17 x 18 m, and standing 3 m high. On the SE corner of this mullock heap is a filled, but subsiding shaft. 6 m to the E of this shaft is a mound of stone rubble associated with some narrow depressions belonging to decayed bedlogs. Two of the depressions are parallel, run N-S, and are at least 5 m long. Another depression runs at right-angles from the N end of the two parallel logs. One mounting bolt protrudes from the former.

INTEGRITY/CONDITION: Site 10.1. Possess some recognisable features, and thus has some integrity.
Site 10.2. In poor condition.

CULTURAL SIGNIFICANCE:

Sites 10.1 and 10.2 have:

- Scientific significance because they represent late 19th century mining technology, through the survival of blue mullock heaps, pumping/winding engine bedlogs and stone boiler setting. Survival of such remains are rare in the area.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 McIvor Times, 19 October 1893
2 McIvor Times, 19 October 1893
3 Mining Surveyors' Reports, September 1860
4 Mining Surveyors' Reports, November 1860
5 McIvor News, 22 August 1862
6 McIvor News, 10 October 1862
7 Mining Surveyors' Reports, March 1864
8 Mining Surveyors' Reports, June 1864
9 Mining Surveyors' Reports, September 1864
10 Mining Surveyors' Reports, March 1865
11 McIvor News, 25 August 1865
12 Mining Surveyors' Reports, June 1866
13 Mining Surveyors' Reports, March 1867
14 McIvor Times, 19 October 1893
15 McIvor News, 2 February 1872
16 Mining Surveyors' Reports, March 1875
17 Mining Surveyors' Reports, September 1875
18 Mining Surveyors' Reports, December 1875
19 McIvor News, 28 September 1876
20 McIvor News, 23 January 1789

21 Mining Surveyors' Reports, September 1879
22 McIvor News, 5 February 1880
23 McIvor News, 11 March 1880
24 McIvor News, 15 July 1880
25 McIvor News, 16 September 1880
26 McIvor News, 12 December 1880
27 Mining Surveyors' Reports, March 1881
28 Mining Surveyors' Reports, June 1881
29 McIvor News, 12 January 1882
30 McIvor Times, 19 October 1893
31 McIvor Times, 24 May 1894
32 Hird, 1974, p. 4

SITE NO. & NAME:	**LONG GULLY ALLUVIAL WORKINGS** **Site 10.3 Hedley's Dam & Associated Race** **Site 10.4 Alluvial Sinkings** **Site 10.5 Puddler**
SITE NAME:	**LONG GULLY, HEATHCOTE**
HI NO:	**10.3 H7824-0041** **10.4 H7824-0042** **10.5 H7824-0043**
DIRECTIONS:	Site 10.5. Puddler located 850 m N from Hedley's dam, W side of the gully. Located 30 m in from the road
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	State Forest

HISTORY:

Alluvial Sinking

March 1860. In some of the gullies puddling machines are paying better than usual, especially in Argyle Gully.[1]

July 1860. Puddling machine in Argyle Gully turned out gold to the value of £600 for one week's work.[2]

September 1860. Three nuggets weighting respectively 39 oz, 33 oz, and 7 oz have been obtained from previously worked ground in Argyle Gully.[3]

1861-62. In 1861 a Melbourne company was formed to prospect the hill next to the Criterion Hotel (Halls) for malachite. In 1862 a prospector named Harwood reported that in Long Gully he had struck a copper lode at a good depth with a thickness of 15 feet, and that samples taken to Melbourne had proved to contain a high percentage of copper.[4]

March 1864. A small rush has taken place ... to Argyle Gully ... with poor results.[5]

March 1864. Long Gully: Alluvial. Some few men are paddocking out in Long Gully, near the Hibernia Hotel, McIvor Creek. A few Chinese are washing old dirt with tub and cradle.[6]

June 1864. Mitchell, McDonald and Co., Perthshire Reef, Long Gully, are crushing from 60 ft.
Alluvial mining abandoned.[7]

March 1865. Mining population as follows:

	European	Chinese	Total
Alluvial miners	720	70	790
Quartz miners	450	-	450
	1170	70	1240

Miners thus distributed:

Heathcote (proper), including Argyle Gully, Caledonia Gully, Long Gully, Wattle Flat, Commissioners Flat, Golden Gully, etc.--500
Redcastle, Spring Creek, Staffordshire Flat--70
Costerfield--130
Wild Duck Creek (new rush)--500
Mundy Gully, Ford's Gully, etc.--40
Total--1240

Machinery as follows:
Alluvial
Sluice heads--4
Puddling machines--64
Quartz
Steam engines--16, totalling 101 head of stamps, 330 hp
Chilian wheels--4
Horse Whims--15
Horse Whips--7
Number of square miles of alluvial ground--53
Number of distinct quartz reefs--93
Value of mining plant--£39,650
Gold returns for this quarter exhibit a very considerable falling off in the yield of gold, which is in a great measure to be attributed to the scarcity of water that has existed for the last 3 months. Nearly all the puddling machines and some of the crushing machines are idle from this cause. At Redcastle, scarcely any crushing has been done within the quarter, and stacks of auriferous quartz are lying waiting for water to enable the owners to get it crushed.
The water races constructed by Messrs Debney and Co., and Bramble and Co., have been idle during the quarter for want of water.[8]

January 1869. New rush at the foot of Argyle Gully. Several holes going down for an apparent outside gutter, between two reefs, leading towards the Old Creek lead. One hole was bottomed, £10 worth of gold taken up.[9]

September 1884. A nugget has been unearthed by a miner named James Burgess in alluvial, at the junction of Opossum and Long Gullies, at a depth of 14 feet from the surface; it weighed 18 oz ... it resembled a crushed beetle, and its length was 5 inches by 3 inches, with an average thickness of about 1/4 inch.[10]

Sluicing
1874. In 1874 Mr Thomas Hedley, on behalf of the Hon. J.A. Wallace, made application for water rights on the McIvor Creek and Long Gully and proceeded to bring a race from the site of the present weir belonging to the Water Trust to Heathcote.[11]

April 1880. Mr Hedley has 40 hands employed at the rear of Heathcote Hotel on his sluicing works.[12]

October 1880. Mr Hedley's sluicing works. Alterations being carried out with the view to raising the railings higher and carrying them farther from the works.[13]

December 1882. Two important sluicing companies--the Meadow Valley Company and the McIvor Hydraulic Company--have only had two months work, owing to the water falling off, whereby no opportunity has been afforded for washing up any portion of the ground in their sluice boxes.[14]

June 1883. The Heathcote Sluicing Company is reticent with regard to the yield of gold from their claim, but they are now in full operation, and it is believed doing well. They employ about 30 men, and wages are paid regularly.[15]

September 1883. Heathcote Sluicing Company ... is still working and employing 28 men.[16]

December 1883. The Heathcote Sluicing Co. has temporarily ceased working, the race which was cut from Sugarloaf Creek, about 18 miles distant, having run dry ... Mr Hedley, the manager, reports having obtained during the past season, from all sources, 1,625 oz of gold: not a bad return by any means.[17]

September 1884. The Sluicing Company has operated on one and a half acres, from the surface to 10 feet in depth, and have not yet washed up. They have 30 chains of box sluices, and 1,000 feet of 9 inch pipes with 80 feet pressure.[18]

June 1885. McIvor Sluicing Co. Idle for last 6 months. Heavy rains have fallen, and sluicing is now being actively carried on.[19]

September 1885. McIvor Sluicing Co. are now in full work, the late rains having improved their prospects of a continued water supply. A large amount of dirt has been washed. It is the intention of this company to extend their water scheme, with a view of increasing their supply, in order to enable them to sluice all the year round.[20]

November 1886. The Sludge Question. The Sludge Inquiry Board ... sat at the Town Hall on Thursday afternoon last week, and took the following evidence.
Thomas Hedley, sworn: I carry on Sluicing operations here at present under a miner's right. The McIvor Hydraulic Sluicing Co., at whose works I am operating, would use five million gallons a day when in full work. The water is brought from Sugar Loaf creek. The race is about 26 miles long, the most part constructed by myself, and purchased from company. The company expended £10,000. Spent myself between £5,000 and £6,000. There is a log weir at the head of the race. Have a log weir also in Long Gully, which holds about seven million gallons. About 4 years ago I had 5 months sluicing, the year before about 4 months and last year about 4 months. Have not had a full head of water this year. Work eight hours a day. Worked 9 hours a day during 9 months of one year, being the most in one year. Have worked out about 20 acres up to the present, the average depth being about 10 feet, or something over. The ground left would last about 50 years, but it would hardly be so deep as that worked. It is all ground sluicing now. Used to work with boxes. Intend to relay boxes next summer. On account of the dry season this year. I worked with as little expense as possible. The fall in tail-race is about 18 inches in the chain. Deliver the tailings into a paddock worked out five years ago. The proportion of tailings to sludge is very small. In 100 loads of soil there would not be over 10 or 15 per cent. The sludge now goes down the creek. Have had levels taken to see if I could change the tail race to pass the tailings, and deposit them at Commissioners Flat. It could be done. Don't think it would effectually dispose of the sludge. The fall would be better that way. But the gravel would stop and the sludge go away with the water. One season would cover the flat as deep as I could run it on. It would be difficult to keep the sludge back. The water is so thick that it would not settle for 24 hours, and without a still dam it would not settle at all. There is not sufficient fall on Commissioners Flat to admit of building a dam. It would not pay to make small dams across the flat. It takes me all my time to make it pay now. I could not possibly do it. It would mean ruin to me. The level would not admit of dams being made in any of the gullies I have worked. Employed 7 and 8 men this year, last year 10 and 12. Have had as many as 50 employed. If I had wet seasons I would have about 30 men employed and I would remove as much stuff in one year as I have done in the last 4 years. Generally keep one or two men on tail race to keep it clear. Complaints have not been made to me on the system of the work. Have had complaints of the sludge being run into the creek, but have taken no notice. Have to employ for maintenance when the water is running--one man 25s a week to turn water off and on and to look after 7 miles of the race, another £1 to look after 12 miles of the race, and 2 boys at 5s each. The size of the race is 5 ft wide to the head of the race from the reservoir and 6 ft wide from the reservoir here. The race will carry 16 inches of water and the fall is 6 ft 8 inches per mile. Cannot suggest any remedy against the damage the agriculturalists sustain by the sludge. Since the first McIvor rush there has been puddling and the sludge allowed to run into the creek, and I started sluicing thinking to use the creek for the same purpose.[21]

June 1887. McIvor Sluicing Co. has been at work with a splendid flow of water, and with moderate rains expect to continue until October.[22]

December 1887. McIvor Sluicing Co. cleaned up for a return of 158 oz 18 dwt.[23]

1887-1892. Hydraulic sluicing by pumping was begun in Victoria in 1887. The application of pumping to hydraulic sluicing was due to the enterprise of the Hon. J.A. Wallace, assisted by the Messrs Hedley and others under Mr Wallace's employment. The works were in the experimental stage from 1887 to 1892. The principal difficulty was in getting a gravel pump which would stand the large wear and tear due to the lifting of boulders, gravel, sand, and other material. After repeated trials and much expense, a suitable centrifugal pump was devised; and in 1892 the system was so far perfected as to admit of regular working. Mr Wallace's experience is that powerful machinery should be used.[24]

June 1888. McIvor Sluicing Co. No work this quarter due to lack of water.[25]

June 1889. McIvor Sluicing Co. has resumed operations on an extensive scale.[26]

September 1889. McIvor Sluicing Co. has not, at present, cleaned up.[27]

1890. [Letter to the Editor] The Heathcote Water Supply and the McIvor Hydraulic Sluicing Company: Sir ... in view of the action of the Heathcote Borough Council, in writing to the Mining Department to request that a renewal of our Lease be refused, in the interest of the public, I am compelled to ... appeal to the public for a fair consideration of the matter ... When the members of the late Sludge Commission were at Heathcote, Cr Lewis openly advocated the course adopted, as what he pleased to call a feasible settlement of the sludge difficulty. The Commissioners told him in presence of witnesses, that his suggestion was a disgraceful one for anyone to make ... and no Government department would listen to such a proposal for a moment ... I know that our operations have done some considerable injury to the Creek and River, and been a source of considerable annoyance to people living down the River, and I am sorry for it, but I could not prevent it. But whatever cause of complaint against our operations the people down the River may have, the people of Heathcote certainly have none, they have had all the benefit and advantage of our work and enterprise. For several years I was working away, employing in addition to my own family of strong and willing young men, a large number of workmen of various kinds, and bullock teams, cutting a race, (26) twenty-six miles in length, chains of tall fluming, punching tunnels through rocky hillsides, constructing reservoirs, putting into circulation a constant stream of ready money, in the shape of wages, and bringing on to the place costly appliances in the shape of pipes and machinery, and when the water came over the Red Hill, it was greatly admired. The large amount of money necessary for carrying on the works was provided without stint. No one in the locality was asked to contribute a penny towards it. Since the completion of the works we had but one really good season for sluicing, during which we obtained a large amount of gold, but the whole of that was expended in an attempt to develop the resources of the district in another branch of Mining; in fact, the whole cost of construction, and nearly the whole proceeds of the work, amount in all to upwards of £20,000, was expended at Heathcote, and one of my sons is now carrying on at great expense the only progressive mining venture in the District worth consideration ... The Echuca papers and yourself complained of our works and advocated the using of the water for a better purpose than sluicing, but you have never advocated confiscation. I always knew we held the only available source of water supply in the district. I often offered to fill a reservoir for the town if the Council would provide one, and did fill the only one they had ... We know that ... the members of Parliament for Rodney and Mandurang will be called on to protect their constituents by doing all they can to prevent the sludge from going down the river and we know that we cannot carry on our sluicing operations without making sludge and that there is no way of dealing with two or three million gallons of sludge per diem, but to let it go down the only natural channel ... We are quite willing to let the Railway Department or the Council, or both, have our reservoir and everything connected with our scheme for the price formerly offered, but Mr Lewis or any one else may rest assured that they will never be gratified by seeing us deprived of our property by confiscation. Such a course would assist to strangle mining enterprise ... Thomas Hedley, Yackandandah.[28]

DESCRIPTION OF PHYSICAL REMAINS:

Gully was one of the gullies worked during the early years of the McIvor diggings. The puddler would certainly be an early one, pre-dating the arrival of Hedley's water race in the late 1870s/early 1880s.

Site 10.3. Hedley's dam & water race

Hedley's dam, located at the head of Argyle Gully, still retains water but is very overgrown with rushes. The water-race built in conjunction with the dam is intact and quite traceable as it winds it way to, and from, the dam along the E & W sides of Argyle Gully.

Site 10.4. Alluvial sinkings & hydraulic sluicing

A band of alluvial sinkings commences below the dam's embankment and run N down the gully. The sinkings near the dam are quite dispersed and by the size of their mullock paddocks are quite deep. Approx ¼ km down the gully from the dam the guts of the alluvial lead has been sluiced out, leaving a network of relatively narrow, but deep gutters. The band of sinkings broadens out and run for 1 ½ km.

The surviving alluvial sinkings in Argyle Gully form a chaos of mounds and holes of various sizes, shapes and distances apart. The nature of the landscape gives the impression of lots of reworking from sinking to sluicing. This confusion is exacerbated by subsequent erosion.

Site 10.5. Puddler No 1

Puddler is located on the W side of the sluiced/eroded channel, 30 m from Hedley Dam's Track. The inner mound and puddling trench of the puddler are very weathered and difficult to recognise. The distinguishable feature is a the outer mound: it is raised 2 m above ground level and 3-5 m wide. A house site lies 40 m NW of the puddling machine site.

INTEGRITY/CONDITION: Guts of the sinkings have been sluiced.

CULTURAL SIGNIFICANCE:

The integrity of the 19th century alluvial sinkings and puddler in Long Gully has been reduced to such an extent as to render their signifiance non-existent.
Hedley's dam, part of the Tooborac to Heathcote water race, has both historic and scientific significance (see Site 27).

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 Mining Surveyors' Reports, March 1860
2 McIvor News, 20 July 1860
3 Mining Surveyors' Reports, September 1860
4 Randell, 1985, p. 24
5 Mining Surveyors' Reports, March 1864
6 Mining Surveyors' Reports, March 1864
7 Mining Surveyors' Reports, June 1864
8 Mining Surveyors' Reports, March 1865
9 McIvor News, 8 January 1869
10 Mining Surveyors' Reports, September 1884
11 Randell, 1985, p. 26
12 McIvor News, 29 April 1880
13 McIvor News, 7 October 1880
14 Mining Surveyors' Reports, December 1882
15 Mining Surveyors' Reports, June 1883
16 Mining Surveyors' Reports, September 1883
17 Mining Surveyors' Reports, December 1883
18 Mining Surveyors' Reports, September 1884
19 Mining Surveyors' Reports, June 1885
20 Mining Surveyors' Reports, September 1885
21 McIvor Times, 5 November 1886
22 Mining Surveyors' Reports, June 1887
23 Mining Surveyors' Reports, December 1887
24 Department of Mines Annual Report, 1900, p. 45
25 Mining Surveyors' Reports, June 1888
26 Mining Surveyors' Reports, June 1889
27 Mining Surveyors' Reports, September 1889
28 McIvor Times, 6 March 1890

SITE NO. & NAME: **11.1** **BALD HILL MINE SITE**

LOCATION: **Bald or Hard Hill, Heathcote**

HI NO: **H7824-0044**

DIRECTIONS: North side of Hard/Bald Hill

MUNICIPALITY: Greater Bendigo City

LAND STATUS: Unreserved Crown Land

HISTORY:

December 1864. Bald Hill Reef Co. crushed 112 tons of quartz.[1]

February 1865. Gold struck at Hard Hills, 15 ft deep.[2]

1873-1877. Thomas Evans got a licence for a house at the Hard Hills, north-west of Heathcote, in March 1873 but did not renew it in December 1877 and his hotel was closed.[3]

June 1884. John Hedley applied for 20 acres at Heathcote for the Resurrection Gold Mining Co. Four men are to be employed for the first six months.
In the Resurrection claim, Hard Hills, 56 tons crushed for 20 oz 16 dwt.[4]

September 1884. A crushing of 25 tons from Mr J. Hedley's Reef, "The Resurrection" (near the Bald Hills, Heathcote) also turned out very satisfactorily, the yield being 17-1/2 dwt to the ton.[5]

July 1910. Bald Hill. Syndicate formed recently, to tunnel Bald Hill for manganese and gold. Members are Messrs Reid Clelland of Costerfield and Farnback and Colvin of Melbourne. The tunnel is on the west side of the hill and is now in a little over 100 ft. Analysis of manganese ore indicates traces of gold.[6]

DESCRIPTION OF PHYSICAL REMAINS:

Site worked intermittently between 1860 and 1910s. Single concrete footing probably relates to the attempt in 1910 to mine the hill for manganese and gold.

Mine site
Cleared, grazed paddock. Single concrete mounting blocks and several grassed heaps. Open cutting running up to, and one, the crown of the hill.

INTEGRITY/CONDITION: Poor.

CULTURAL SIGNIFICANCE:

The integrity of the site has been reduced to such an extent as to render it of no significance.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 Mining Surveyors' Reports, December 1864
2 McIvor News, 28 February 1865
3 Randell, 1985, p. 263
4 Mining Surveyors' Reports, June 1884
5 Mining Surveyors' Reports, September 1884
6 McIvor Times, 21 July 1910

LOCATION NO.	**12.1: ONE-EYE DIGGINGS**
SITE NAME:	**Wild Duck Creek**
HI NO:	**H7824-0045**
DIRECTIONS:	South of junction of Hills Road and Evans Track
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	State Forest

HISTORY:

February 1873. New rush at One-Eyed Gully, back of Speed's property, between 4 and 5 miles from Heathcote. 100 miners on the ground; yields 4dwt to 8 dwt per load, 2 ft thickness of washdirt. Sinking 5-30 ft. May be regarded as a new field.[1]

March 1873. One Eye Rush. 200 people on ground. Prospects very encouraging ... wash-dirt averaged 6 inches to 2 ft thick. Several holes have been bottomed on payable gold. Sinking deep and tough. Influx of miners going on. Run is about 3 chain wide, and has been traced a considerable distance.[2]

March 1873. Small alluvial rush has taken place about 6 miles from the township of Heathcote, and about 3/4 mile south of what is known as the Wild-Duck road, and close to Mr Speed's purchased land (allotment 27, Parish of Heathcote). There are about 300 people on the ground, but many of them are not working. There are, perhaps, about 30 shafts bottomed, in which gold was obtained--many without the "colour". The sinkings vary from about 12 ft to 18 ft, through clay, cemented gravel, and pipeclay. The wash-dirt is from about 2 inches to 6 inches in thickness, the width not yet determined. The yield of gold varies from about 5 dwts to 1 oz to the load [load = 1 drayload, 15-18 cwt--according to Jack Cox, former battery operator]. The ground is very patchy. I do not think it is likely to be a permanent digging.[3]

April 1873. One Eye Rush. No yields of much importance, but population increasing. Lead may be said to be in a "string" of patches. The few holes stand a good chance to miss these spots.[4]

June 1873. The small alluvial rush in my last report called the "One Eye" exhibits no new features.[5]

June 1873. In June 1873 John Henry Gheradine and Quong Sou applied for publican's licences at One Eye Gully but did not appear in court and both were refused.[6]

August 1873. One Eye Rush. Parties still getting good prospects.[7]

September 1873. Some claims turning out very well, especially the prospecting claims. Depth of sinking is best part of 30-40 ft, through 5-6 ft of unusually hard cement.[8]

September 1873. The small alluvial rush called the "One Eye" is, I think, in a state of decadence. I believe that the miners at work on it are barely earning moderate wages; a few of them have left, and are now working at a place about 1-1/2 miles N of the "One Eye", known as Mullocky Hill. Some of the claims at this place have proved to be tolerably remunerative.[9]

1873-74. In September 1873 Thomas Chow Mow got a hotel licence at One Eye and in December of that year Jane Chow Mow was granted the licence in here name. She did not renew it in December 1874.[10]

1873-1883. In April 1873 Charles Schrevelius was granted a publican's licence for a house at the One Eye Gully rush to the north of Heathcote ... He held the licence until ... February 1883.[11]

1900. I was able to visit Day's claim in Speeds paddock, near Wild Duck Creek. This claim is an alluvial one, it is on the "One Eye Lead" of Mr Dunn's report, 1891, and has been worked by a party of several brothers, who erected a battery, and were at one time successful but have more recently been off the run of their gold, and after spending a good deal of money in the employment of labour, besides giving their own, were seeking aid at the time of my visit.[12]

1974. One Eye Forest or North Heathcote ... There is Woolley Reef, which was worked to water level 6 & 7 oz to the ton. The Woolleys left this mine as they got the wind up as the ground became bad and water and bad rotten ground don't go together if the miners don't know their jobs.[13]

DESCRIPTION OF PHYSICAL REMAINS:
Area of sinkings covered by dense regrowth. The sinkings appear to have been reclaimed, no holes were observed. Mining operations in the 1970s have obliterated most traces of the early alluvial sinkings.

INTEGRITY/CONDITION: Poor.

CULTURAL SIGNIFICANCE:

The integrity of the site has been reduced to such an extent as to render it without significance.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 McIvor News, 13 February 1873
2 McIvor News, 20 March 1873
3 Mining Surveyors' Reports, March 1873
4 McIvor News, 14 April 1873
5 Mining Surveyors' Reports, June 1873
6 Randell, 1985, p. 263
7 McIvor News, 21 August 1873
8 McIvor News, 4 September 1873
9 Mining Surveyors' Reports, September 1873
10 Randell, 1985, p. 263
11 Randell, 1985, p. 263
12 Jenkins, 1900, p. 2
13 Hird, 1974, p. 1

SITE NO. & NAME:	**PETERS GULLY**	
	13.1	**Alluvial Sinkings & Hedley's Race**
	13.2	**Peters Gully Mine Site**
LOCATION:	**PETERS GULLY/ OLD RACECOURSE REEF, HEATHCOTE**	
HI NO:	**13.1**	**H7824-0046**
	13.2	**H7824-0047**

DIRECTIONS:	Gully crosses Spring Plains Track	
MUNICIPALITY:	Greater Bendigo City	
LAND STATUS:	Site 13.1.	State Forest
	Site 13.2.	Freehold Land

HISTORY:

(See Site 27 for complete history of Tooborac to Heathcote water race)

Quartz Mining

1855. Old Racecourse Reef. Attracted quartz miners' attention in 1855. Opened by Lewis (Balaclava Hill holder). Stephenson struck the reef crossing Peter's Gully where it was wide and very good. Williams and Tipper bought Argyle Co.'s plant and removed it to Peter's Gully, to crush stone.[1]

1850s. The Racecourse Reef is a very old and famous one, being situated at the Old Racecourse, on the south site of White's Gully. It gave very good returns to different parties in the early days, subsequently Mr Stephenson, it is stated, obtaining about £6,000 worth of gold from it. The reef was up to 80 feet in width, and gave from 1 oz to 3 oz to the ton.
The Peter's Gully Reef in Peter's Gully is on the same line as the Racecourse reef and a few hundred yards from it.[2]

June 1864: Garibaldi Co. Peters Gully, Old Racecourse--surfacing. Walters and Co., Peters Gully, Old Racecourse--surfacing. Van der Luft Co, Peters Gully, Old Racecourse--surfacing.[3]

c. 1860s. Parker Bros. obtained a lot of gold from [Peter's Gully] reef, getting as much as 2 oz to the ton from a reef taken 20 feet wide.[4]

September 1869. Williams and Tipper bought Argyle Co.'s plant, removed it to Peter's Gully, to crush stone.[5]

May 1870. Tipper and Williams' claim flooded, taken by Bendigo tribute company.[6]

1870s. After Parker Bros. had the [Peter's Gully] reef, it was worked by a party of tributers, who kept an 8-head battery going all the time with good results.[7]

September 1870. Peter's Gully Reef. Company formed to resume work. In the early winter, workings were flooded and choked by sand and mullock.[8]

March 1871: Union Jack Co. During past fortnight, tributers met a run of magnificent quartz. Reef is 3 ft thick, stone improves in richness.
Notice of application for gold mining lease: Bonaventura Gold Mining Co., Peters Gully, adjoining Union Jack Co.[9]

1871. Another claim under the name of the Bonaventura Company, which included a number of townspeople, was taken up to the south of the Bendigo Company's workings. After sinking a shaft about 100 feet, and driving nearly another 100 feet and striking the reef and opening out about 6 feet on it work was ceased. It was considered the shaft was too far to the west.

April 1871. Union Jack Co. raising splendid stone, 10 tons a day, from the reef in the new 168-ft deep shaft ... When ground opened, more stone will be got out to keep batteries supplied. Stampers to be increased.[10]

September 1871. Prospectus. The Bonaventura Gold Mining Co., near Old Racecourse. To work 7 acres adjoining Neptune. Northern boundary a short distance from Neptune workings.[11]

October 1871. Old Racecourse Reef. Splendid line of reef, fossicked for patches, with great success, but only Williams, of Peter's Gully, worked it.

Bonaventura Co ... to sink shaft 100 ft on the S end of the workings on Racecourse Reef.[12]

January 1872. Bonaventura Co. to sink shaft 50 ft further. Present depth 72 ft.[13]

January 1872. Neptune. Tributers intend to take out a block of stone to the north, left by former owners, after which they intend to sink a permanent shaft.[14]

April 1872. Bonaventura ... shaft is now down 121 ft, timbered and centred. Tenders called for driving a cross-cut ... Neptune tributers get 85% from proprietors.[15]

November 1872. Union Jack Quartz Mining Co., Peters Gully. Right, title, interest, plant, etc. to be sold by auction.[16]

1900. Old Workings at "Peters Gully" or "Road Crossing Gully". There are several open cast workings which extend for about 400 yards along the line of junction. From these workings there has evidently been a considerable amount of stone removed in the past, and a battery was at one time at work on the spot.[17]

March 1906. Peters Gully, Alabama and Butler's Reef, and Long Gully Reef taken up again.[18]

November 1906. Peters Gully mine. New company will open the old shaft and have purchased machinery from North Beehive and Derby Co. Shaft has been under water for 35 years but it is in good order.[19]

November 1906. Construction at Peters Gully is making good progress.[20]

1906. Three quartz mines provided with steam machinery, viz. Mundy Gully, Peter's Gully and Williams' Reef Companies, as well as a number of co-operative parties, without steam machinery, are working.[21]

1907. Peters Gully Company completed the sinking of a shaft to 200 ft ... Payable stone said to have been struck while the shaft was being sunk, and a good quantity of stone is stacked on the surface, awaiting the erection of a battery.
North Peters Gully Co. commenced work during the latter part of the year. A main shaft was sunk to water level, when work was suspended pending the erection of machinery.[22]

June 1908. Peters Gully. Battery to be erected.[23]

November 1908. Peters Gully No. 2. North drive extended to 494 ft. Slate and quartz leaders. Draining old workings at 2/- per week.[24]

1908. Peters Gully Co. continued work without finding anything payable.[25]

Early 1910. Both quartz and alluvial mining in the Division appears to be practically dead. The following quartz mines, that were in active operation at this time in 1909, have ceased operations: The Peters Gully, the Mundy Gully, the Homeland and Craven's Gold Mining Companies, and the prospects of them ever resuming operations in the near future do not appear to be bright.[26]

c. 1930s. Peters Gully Reef. At surface 40' wide went 1 oz per ton, worked to 218', shaft collapsed, so men sunk new shaft about 500' south, struck lode at 200', drove north but were 18' shallow, and left mine. It was started about 1837, worked for a very short time, it only went about 8 dwts to the ton, but they were above the shoot of gold. South of shaft "main", there is an open cutting worked to 90', was paying well till Mines Department inspector stopped work, he said it was dangerous.[27]

1935. An attempt is being made to open the Peter's Gully mine.[28]

DESCRIPTION OF PHYSICAL REMAINS:

Multi-phased site:

1855:	Reef opened.
1869:	Williams & Tipper installed machinery.
1870 to 1872:	Union Jack Co.
1872:	Bobaventura Co. also working.
1906:	Peters Gully Co. Machinery installed and battery erected.
1935:	Attempt to re-open mine.

Single concrete footing probably relates to the installation of winding gear in the 1930s attempt to re-open the mine.

13.1. Alluvial sinkings and water race

Alluvial sinkings run N-S from the Spring Plains Track. The alluvial sinkings are confined to a narrow band, approx. 30 m wide, with the holes situated 1-3 m apart. No puddlers were found associated with the sinkings.

700 m S of the track, Hedley's water race crosses the head of the gully by means of concrete pipeline (diameter 17 inches). Running next to the pipeline is the remains of an earlier flume. Spanning 35 m, the low (maximum height 1.5 m) flume is constructed from riveted galvanised iron sheeting. The flume, 2 ½ ft wide and 2 ft deep, is carried on wooden legs which are set diagonally. The race leading into the flume has been diverted to run through the concrete pipeline.

13.2. Quartz mine

Located in cleared paddock, E side of the gully. Site consists of a dam, which has, near its N corner, a relatively large blue mullock heap: 35 m square and approx. 5 m high. On the NE corner of the mullock heap is a shaft (filled but now subsiding). 10 m from this shaft is a single, partly buried, concrete engine bed.

INTEGRITY/CONDITION: Gal. iron of fluming starting to decay; also white ant activity in timber framing Peters Gully mine site--poor integrity.

CULTURAL SIGNIFICANCE:

Site 13.1. Hedley's race and two phases of fluming, hold both historic and scientific significance (see Site 27).
The integrity of the Peters Gully mine site has been reduced to such an extent as to render it of no significance. The alluvial sinkings, although still relatively intact, are quite dispersed and unremarkable.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 McIvor News, 17 September 1869
2 McIvor Times, 19 October 1893
3 Mining Surveyors' Reports, June 1864
4 McIvor Times, 19 October 1893
5 McIvor News, 17 September 1869
6 McIvor News, 27 May 1870
7 McIvor Times, 19 October 1893
8 McIvor News, 3 September 1870
9 McIvor News, 10 March 1871
10 McIvor News, 28 April 1871
11 McIvor News, 22 September 1871
12 McIvor News, 20 October 1871
13 McIvor News, 12 January 1872
14 McIvor News, 19 January 1872
15 McIvor News, 26 April 1872
16 McIvor News, 28 November 1872
17 Jenkins, 1900, p. 1
18 McIvor Times, 29 March 1906
19 McIvor Times, 1 November 1906
20 McIvor Times, 22 November 1906
21 Mining Surveyors' Annual Reports, 1906
22 Mining Surveyors' Annual Reports, 1907
23 McIvor Times, 18 June 1908
24 McIvor Times, 26 November 1908

[25] Mining Surveyors' Annual Reports, 1908
[26] Mining Surveyors' Annual Reports, 1909
[27] Hird, 1974, p. 5
[28] Mining Surveyors' Annual Reports, 1935

SITE NO. & NAME:	**14.1 PINK CLIFFS (Termination of Hedley's Water Race)**
LOCATION:	**McIvor Creek/Pink Cliffs Geological Reserve**
HI NO:	**H7824-0048**
DIRECTIONS:	Pink Cliffs Reserve
MUNICIPALITY:	Greater Bendigo City
LAND STATUS:	Geological Reserve

HISTORY: (Also see Site 27 for complete history of Tooborac to Heathcote water race)

McIvor Creek/Flat (including Old Creek Lead)--rich in alluvial gold. Early sluicing and deep lead mining--a prelude to Hedley's sluicing works.

1853. Old miners who have been here from the first rush, in April 1853, remember splendid coarse gold having been obtained at a depth of 80 to 120 feet, about NW of what is now [1883] Mr Begg's home station at Mt Camel, some 14 miles from Heathcote. This ground, I am informed, was then abandoned owing to the scarcity of water.[1]

1853. First rush to Creek flats in middle of May 1853, when 500-600 shafts were started. But water was too strong for buckets and windlass, and all parties left, finding remunerative work in Golden, Possum, Long, Sailor's and German Gullies, with dry, shallow workings.[2]

1855. Another attempt was made in 1855, when a paddock was bottomed and an elevator-hand pump was used. This attempt failed.[3]

1858. The Creek Lead was discovered in 1858. It was immensely rich. There were perhaps 10,000 miners on the ground. Nuggets were found up to 68 lb weight. The lead was lost and has never been found up to the present time [1891]. The extent of the lead was about a mile. The starting point was near the Lake Hotel. It went through private property ... The sinking was no more than 20 feet. In some places the lead was 3 chains wide. The depth was from a few inches to 3 or 4 feet. The ground was wet, which is one of the causes an attempt is not made to follow it.[4]

December 1858. The Creek--some parties have met with extraordinary success.
Morning Star--4 nuggets weighing 3 lb 3 oz, the largest 21 oz.
Percy claim--10 lb weight of ore nuggeted out in a day, then 30 lb, then 7 lb 6 oz (47-1/2 lbs in 3 days).[5]

January 1859. "Our Monster Nuggets"--Leslie, Atcheson and Co.--nuggeted in 4 days 260 oz, including one of 3lb.[6]

January 1859. Leslie, Atcheson and Co.--one of the smallest claims on the creek, averaged £30 per man in a week. Yielded £6000 in 3 months, 3 more months work in the claim.[7]

March 1859. Creek Claims--some have fallen off considerably, others are exceeding expectations. A fine lump of gold was found in one claim, weighing 147 oz.[8]

September 1859. Sludge nuisance is getting worse. Puddlers are believed to pay £25-30 per week to clean main sludge channels. Some profitable place, therefore, do not pay expenses.[9]

October 1859. Sludge Nuisance. Rediscovery of the far-famed McIvor Creek lead. Cheering prospects for those who touched the bottom (but whose claims are now covered by sludge). Extends right down the flat, towards the northern end of the township. Sludge must be stopped. Lead of gold believed to traverse the entire length of McIvor Valley. Sludge from machines, etc. threatens to bury the lead, to spoil the beauty of the valley, to ruin the water supply.[10]

February 1860. The portion of the ground on the McIvor Creek, to which the late rush had been, is now nearly worked out. It amply remunerated those who had claims there, and, in some instances, nuggets varying between 3 and 7 oz were found.[11]

February 1862. Extensive Rush ... reported discovery of the Creek Lead. Chinamen have, for a considerable time, been working on the east bank of McIvor Creek, at the rear of the Criterion Hotel. Suddenly their earnings rose steeply. Rumours of large nuggets, including one of 60 oz. The locality of their activity is precisely where the old creek lead ran out 4 years ago ... caused a large rush of Europeans, greater than any known here for 3 years ... Sinking is presumed to be 30 ft ... Claims are marked out 3 to 5 ft wide between the creek and range to a point nearly opposite the Victoria Hotel.[12]

May 1862. Chinese are believed to have re-discovered the Creek Lead, with great success. More Chinese coming daily.[13]

October 1862. A new company, Victoria Co. has started to work the flat between the township and Ben Neirs Hotel. Intends to work on the same principal as that used in Ballarat for working wet ground, ie slabbing and timbering, and keeping the water down with whim or steam engine.[14]

November 1862. Victoria Mining Co. commenced work on flat opposite and SW of Victoria Hotel. Ground partially worked 3 years ago, but then flooded. Shaft now 30 ft deep, expected to bottom within 2 or 3 ft. This is the first attempt in McIvor to work alluvial ground on improved mining principles.[15]

June 1864. Two parties have applied for licences to cut races from the McIvor Creek, for the purpose of sluicing some old abandoned ground near the Township of Heathcote.[16]

February 1865. Alluvial. 8 “independents” have cut a tail race into the middle of the Old Creek Lead, in McCarey’s paddock, opening out a face 150 ft long after hauling off 10 ft of top stuff. Sluicing the wash-dirt with Caledonia water.[17]

June 1865. Applications have been made for a lease of 150 acres of the low alluvial ground lying along the banks of McIvor Creek, between the township of Heathcote and the opposite ranges.[18]

June 1865. McIvor Alluvial Gold Mining Co.--ground has been surveyed, company to be formed immediately.[19]

September 1865. McIvor Flat, idle so long, is now in the hands of the McIvor Alluvial Gold Mining Co ... Several shafts sunk.[20]

October 1867. Heavy floods in McIvor and Wild Duck Creeks ... Bursting of Hydraulic Co.’s dam bank.[21]

Hedley’s Sluicing Works

April 1880. Mr Hedley has 40 hands employed at the rear of Heathcote Hotel on his sluicing works.[22]

October 1880. Mr Hedley’s sluicing works--alterations being carried out with the view to raising the railings higher and carrying them farther from the works.[23]

December 1882. Two important sluicing companies--the Meadow Valley Company and the McIvor Hydraulic Company--have only had two months work, owing to the water falling off, whereby no opportunity has been afforded for washing up any portion of the ground in their sluice boxes.[24]

June 1883. The Heathcote Sluicing Company are reticent with regard to the yield of gold from their claim, but they are now in full operation, and it is believed doing well. They employ about 30 men, and wages are paid regularly.[25]

September 1883. Heathcote Sluicing Company ... is still working and employing 28 men.[26]

December 1883. The Heathcote Sluicing Co. has temporarily ceased working, the race which was cut from Sugarloaf Creek, about 18 miles distant, having run dry ... Mr Hedley, the manager, reports having obtained during the past season, from all sources, 1,625 oz of gold: not a bad return by any means.[27]

September 1884. The Sluicing Company have operated on one and a half acres, from the surface to 10 feet in depth, and have not yet washed up. They have 30 chains of box sluices, and 1,000 feet of 9 inch pipes with 80 feet pressure.[28]

June 1885. McIvor Sluicing Co.--idle for last 6 months. Heavy rains have fallen, and sluicing is now being actively carried on.[29]

September 1885. McIvor Sluicing Co. is now in full work, the late rains having improved their prospects of a continued water supply. A large amount of dirt has been washed. It is the intention of this company to extend the water scheme, with a view of increasing their supply, in order to enable them to sluice all the year round.[30]

November 1886. The Sludge Question. The Sludge Inquiry Board ... sat at the Town Hall on Thursday afternoon last week, and took the following evidence.
Thomas Hedley, sworn: I carry on Sluicing operations here at present under a miner's right. The McIvor Hydraulic Sluicing Co., at whose works I am operating, would use five million gallons a day when in full work. The water is brought from Sugar Loaf creek. The race is about 26 miles long, the most part constructed by myself, and purchased from company. The company expended £10,000. Spent myself between £5,000 and £6,000. There is a log weir at the head of the race. Have a log weir also in Long Gully, which holds about seven million gallons. About 4 years ago I had 5 months sluicing, the year before about 4 months and last year about 4 months. Have not had a full head of water this year. Work eight hours a day. Worked 9 hours a day during 9 months of one year, being the most in one year. Have worked out about 20 acres up to the present, the average depth being about 10 feet, or something over. The ground left would last about 50 years, but it would hardly be so deep as that worked. It is all ground sluicing now. Used to work with boxes. Intend to relay boxes next summer. On account of the dry season this year. I worked with as little expense as possible. The fall in tail-race is about 18 inches in the chain. Deliver the tailings into a paddock worked out five years ago. The proportion of tailings to sludge is very small. In 100 loads of soil there would not be over 10 or 15 per cent. The sludge now goes down the creek. Have had levels taken to see if I could change the tail race to pass the tailings, and deposit them at Commissioners Flat. It could be done. Don't think it would effectually dispose of the sludge. The fall would be better that way. But the gravel would stop and the sludge go away with the water. One season would cover the flat as deep as I could run it on. It would be difficult to keep the sludge back. The water is so thick that it would not settle for 24 hours, and without a still dam it would not settle at all. There is not sufficient fall on Commissioners Flat to admit of building a dam. It would not pay to make small dams across the flat. It takes me all my time to make it pay now. I could not possibly do it. It would mean ruin to me. The level would not admit of dams being made in any of the gullies I have worked. Employed 7 and 8 men this year, last year 10 and 12. Have had as many as 50 employed. If I had wet seasons I would have about 30 men employed and I would remove as much stuff in one year as I have done in the last 4 years. Generally keep one or two men on tail race to keep it clear. Complaints have not been made to me on the system of the work. Have had complaints of the sludge being run into the creek, but have taken no notice. Have to employ for maintenance when the water is running--one man 25s a week to turn water off and on and to look after 7 miles of the race, another £1 to look after 12 miles of the race, and 2 boys at 5s each. The size of the race is 5 ft wide to the head of the race from the reservoir and 6 ft wide from the reservoir here. The race will carry 16 inches of water and the fall is 6 ft 8 inches per mile. Cannot suggest any remedy against the damage the agriculturalists sustain by the sludge. Since the first McIvor rush there has been puddling and the sludge allowed to run into the creek, and I started sluicing thinking to use the creek for the same purpose.
Richard Williams, sworn: I am a farmer here, hold 1400 acres of land about 4-1/2 miles from Heathcote, principally on the McIvor creek ... Had one or two small floods in the McIvor Creek last year. The heaviest flood occurred 3 years ago. The sluicing I believe has raised the level of the floods. The creek has been silted up, and where there were deep waterholes before there is now no water at all. The creek is now more like a sludge channel, and in dry weather you can walk up the middle of it ... The best of the land has all been flooded and silt deposited on it. Over 100 acres has suffered from the deposit of sludge. The depth of the sludge in some places is 2 or 3 ft., and in some a few inches ... There is black soil underneath he sludge. Don't think it affects the crop where the sludge mixes with black soil. If there is much silt the crop dries up. Keep 70 or 80 head of cattle, and 2,000 sheep and lambs. Have water at springs and dams. The stock don't drink at the creek in summer since the sluicing. Didn't find the water injurious to the stock. It comes down like porridge, and settles and gradually fills up the creek. If there is no sluicing the water is clear ... Have had horses and cattle lost in the creek since the sluicing. Have had over 120 sheep in the creek in one season. The wool is of no use after the sheep have been in the sludge. This happens before the creek dies up in the summer when the sludge is soft ... The land was purchased 14 or 15 years ago. The creek was quite clear then.
William Speed, sworn: I am a land owner on the McIvor and Wild Duck Creeks ... Have had numbers of cattle bogged in the sludge ... The first were bogged about 3 years ago ... Have to move them away in consequence of the sludge. Water them at dams. Would water at the creek if there were no sludge. The sludge does not come from the Meadow Valley Creek into my property.
William Duncan, sworn: I am a farmer here. Have 12-/12 acres affected by sludge on the McIvor Creek ... The sludge covered the crops last year. Lost a portion of it last year. Put it into grazing for 5 years. If you plough in the sludge you cannot touch the soil underneath in places. The sludge is 3 ft deep in some places. The land might recover in a few years. Nothing will grow where the sludge is very deep, but a little where it is not so deep. Have about 20 cows on this land. Can't water at the creek on this land. The water is too thick. Believe it would kill them. Mr Hamilton had a horse die, and he took a ball of mud out of it 11 lbs in weight. Cattle also bog in the creek. Have had some die in the creek. About a dozen were pulled out and died afterwards ... Had to make dams and lift the fences, in consequence of the sludge.

James Tehan, sworn: Am President of the McIvor Shire ... Injury has been done to the creeks by the sludge. The Council had to build a bridge in one place instead of a crossing in consequence of the sludge. The creek keeps silting up. The Council built the bridge 3 years ago. The water holes further down get silted up more and more every year. The creek is silted up for about 5 miles, and is now getting rapidly filled up lower down. Think the Council sent a deputation to the Mining Department about the sludge ... Suggest that the sludge be impounded. Don't think there are leases, &c., to render it impossible to make use of Commissioner's Flat. Think they could impound the sludge, and remove injury to farmers down the creek, by making dams and letting the water settle. Have seen it done by puddlers years ago. There would be sufficient acreage during Mr Hedley's lease. Have seen this method proved to be satisfactory. Believe vegetation would grow on the sludge after a time.[31]

June 1887. McIvor Sluicing Co. has been at work with a splendid flow of water, and with moderate rains expected to continue until October.[32]

December 1887. McIvor Sluicing Co. cleaned up for a return of 158 oz 18 dwt.[33]

1887-1892. Hydraulic sluicing by pumping was begun in Victoria in 1887. The application of pumping to hydraulic sluicing was due to the enterprise of the Hon. J.A. Wallace, assisted by the Messrs Hedley and others under Mr Wallace's employment. The works were in the experimental stage from 1887 to 1892. The principal difficulty was in getting a gravel pump which would stand the large wear and tear due to the lifting of boulders, gravel, sand, and other material. After repeated trials and much expense, a suitable centrifugal pump was devised; and in 1892 the system was so far perfected as to admit of regular working. Mr Wallace's experience is that powerful machinery should be used.[34]

June 1888. McIvor Sluicing Co.--no work this quarter due to lack of water.[35]

June 1889. McIvor Sluicing Co. has resumed operations on an extensive scale.[36]

September 1889. McIvor Sluicing Co. has not, at present, cleaned up.[37]

1890. [Letter to the Editor]. The Heathcote Water Supply and the McIvor Hydraulic Sluicing Company: Sir ... in view of the action of the Heathcote Borough Council, in writing to the Mining Department to request that a renewal of our Lease be refused, in the interest of the public, I am compelled to ... appeal to the public for a fair consideration of the matter ... When the members of the late Sludge Commission were at Heathcote, Cr Lewis openly advocated the course adopted, as what he pleased to call a feasible settlement of the sludge difficulty. The Commissioners told him in presence of witnesses, that his suggestion was a disgraceful one for anyone to make ... and no Government department would listen to such a proposal for a moment .. I know that our operations have done some considerable injury to the Creek and River, and been a source of considerable annoyance to people living down the River, and I am sorry for it, but I could not prevent it. But whatever cause of complaint against our operations the people down the River may have, the people of Heathcote certainly have none, they have had all the benefit and advantage of our work and enterprise. For several years I was working away, employing in addition to my own family of strong and willing young men, a large number of workmen of various kinds, and bullock teams, cutting a race, (26) twenty-six miles in length, chains of tall fluming, punching tunnels through rocky hillsides, constructing reservoirs, putting into circulation a constant stream of ready money, in the shape of wages, and bringing on to the place costly appliances in the shape of pipes and machiner, and when the water came over the Red Hill, it was greatly admired. The large amount of money necessary for carrying on the works was provided without stint. No one in the locality was asked to contribute a penny towards it. Since the completion of the works we had but one really good season for sluicing, during which we obtained a large amount of gold, but the whole of that was expended in an attempt to develop the resources of the district in another branch of Mining; in fact, the whole cost of construction, and nearly the whole proceeds of the work, amount in all to upwards of £20,000, was expended at Heathcote, and one of my sons is now carrying on at great expense the only progressive mining venture in the District worth consideration ... The Echuca papers and yourself complained of our works and advocated the using of the water for a better purpose than sluicing, but you have never advocated confiscation. I always knew we held the only available source of water supply in the district. I often offered to fill a reservoir for the town if the Council would provide one, and did fill the only one they had ... We know that ... the members of Parliament for Rodney and Mandurang will be called on to protect their constituents by doing all they can to prevent the sludge from going down the river and we know that we cannot carry on our sluicing operations without making sludge and that there is no way of dealing with two or three million gallons of sludge per diem, but to let it go down the only natural channel ... We are quite willing to let the Railway Department or the Council, or both, have our reservoir and everything connected with our scheme for the price formerly offered, but Mr Lewis or any one else may rest assured that they will never be gratified by seeing us deprived of our property by confiscation. Such a course would assist to strangle mining enterprise ... Thomas Hedley, Yackandandah.[38]

DESCRIPTION OF PHYSICAL REMAINS:

Majority of sluicing carried out from the late 1870s through the 1880s by James Hedley. Sluicing operations finally banned because of damage wrought to grazing land.

Sluiced landscape
Extensive sluicing has exposed the deeply weathered and coloured granite bedrock. Although eroding in some places, Hedley's race which supplied the water for the sluicing, is still traceable, running just above the exposed bedrock, S slope of McIvor Creek. The race has been obliterated by recent work at Red Hill. Beyond this the race runs to Hedley's Dam, Caledonian Reservoir and onwards to Toboorac.

INTEGRITY/CONDITION: Good.

CULTURAL SIGNIFICANCE:

As part of the Tooborac to Heathcote water race (McIvor Sluicing Co.'s operations), Site 14.1 has:

- Historical significance, because it:
  a) is part of a group or network of sites, the totality of which is considered to be significant, namely the Tooborac to Heathcote water race (Site 27, incorporating sites 10.3, 14.1, 13.2, 27.1).
  b) was a success as a sluicing operation in terms of yields and as a business enterprise. It was an influence on the economic development of town of Heathcote.
- Scientific significance because it:
  a) represents a particular type of process, eg. special process developed for the reserve or region to overcome water problems.
  b) represents an important mining technology.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

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1 Mining Surveyors' Reports, December 1883
2 McIvor News, 9 June 1865
3 McIvor News, 9 June 1865
4 D. Sims, in evidence to the Gold Mining Commission, quoted in McIvor Times, 9 July 1891
5 McIvor News, 11 December 1858
6 McIvor News, 15 January 1859
7 McIvor News, 21 January 1859
8 McIvor News, 4 March 1859
9 McIvor News, 30 September 1859
10 McIvor News, 28 October 1859
11 Mining Surveyors' Reports, February 1860
12 McIvor News, 21 February 1862
13 McIvor News, 16 May 1862
14 McIvor News, 31 October 1862
15 McIvor News, 14 November 1862
16 Mining Surveyors' Reports, June 1864
17 McIvor News, 10 February 1865
18 Mining Surveyors' Reports, June 1865
19 McIvor News, 30 June 1865
20 McIvor News, 15 September 1865
21 McIvor News, 25 October 1867
22 McIvor News, 29 April 1880
23 McIvor News, 7 October 1880
24 Mining Surveyors' Reports, December 1882
25 Mining Surveyors' Reports, June 1883
26 Mining Surveyors' Reports, September 1883
27 Mining Surveyors' Reports, December 1883
28 Mining Surveyors' Reports, September 1884
29 Mining Surveyors' Reports, June 1885

30 Mining Surveyors' Reports, September 1885
31 McIvor Times, 5 November 1886
32 Mining Surveyors' Reports, June 1887
33 Mining Surveyors' Reports, December 1887
34 Department of Mines Annual Report, 1900, p. 45
35 Mining Surveyors' Reports, June 1888
36 Mining Surveyors' Reports, June 1889
37 Mining Surveyors' Reports, September 1889
38 McIvor Times, 6 March 1890

SITE NO. & NAME: **15.1** **SAWPIT GULLY PUDDLERS**

LOCATION: **SAWPIT GULLY, HEATHCOTE**

VHR NO: **H1246**

HI NO: **H7824-0049**

DIRECTIONS: North side of Sawpit Gully Dam

MUNICIPALITY: Greater Bendigo City

LAND STATUS: State Forest

HISTORY:

August 1859. Main claims on this lead paying well. The rush extends to the Bendigo Road.[1]

September 1859. Sawpit Gully. The number of miners working is decreasing, but some of the original men are sticking to it.[2]

October 1859. Miners generally satisfied ... sinking is very shallow.[3]

November 1906. Company to sluice Sawpit and Mosquito Gullies is to be called McIvor Junction Sluicing Co.[4]

DESCRIPTION OF PHYSICAL REMAINS:

The nature of the puddlers, that is, their non-weathered/vegetated appearance, suggests they may be 20th century remains.

Puddlers
Sawpit Gully dam still retains water. The two puddlers, 7 m apart, are situated on a wide, flattened area which joins onto the dam's earthen embankment. This area is raised approx. 1 m above ground level. The puddlers are well defined, having raised central mounds with post holes. Their puddling trenches are deep, and sides sheer. Inlet and outlet channels are visible, the latter being more pronounced. Both have a diameter of 22 ft and are clear of any sizeable vegetation. The section of the hill-slope to the E of the puddlers has been surfaced to bedrock.
Below the dam and machine site is a wide flat that contains well defined, non-disturbed alluvial sinkings.

INTEGRITY/CONDITION: Puddlers in good condition.

CULTURAL SIGNIFICANCE:

Site 15.1 has:

- Historical significance because it is part of a group or network of sites, the totality of which is considered to be significant, namely the alluvial sites in Sawpit Gully.
- Scientific significance because it represents an important mining technology and helps identify the range of nature of puddling operations, by means of the well-preserved nature and unusual configuration of the puddlers.

SIGNIFICANCE RANKING: Site Listed Heritage Inventory.

Assessor: David Bannear **Date: September 1991.**

1 McIvor News, 26 August 1859
2 McIvor News, 23 September 1859
3 McIvor News, 14 October 1859
4 McIvor Times, 8 November 1906