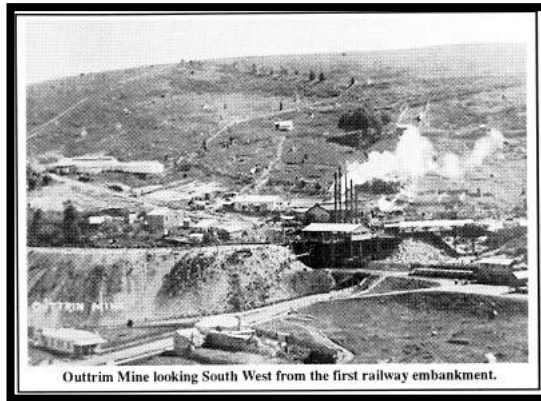




**AUSTRALASIAN  
MINING  
HISTORY  
ASSOCIATION**

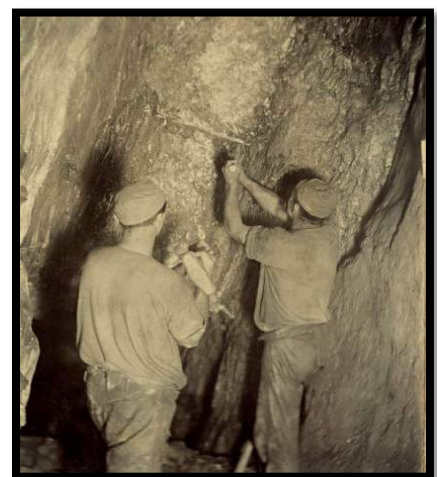


Outtrim Mine looking South West from the first railway embankment.

**23<sup>rd</sup> AMHA Annual Conference**

**Tour Notes: 24th September – 1st October 2017**

**Traralgon, Victoria**



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**Compiled by Nicola and Mike Williams**, from notes prepared by Matthew Churchward, Jim Enever, Barry Sykes and Mike Williams.

**Cover Photos:**

Sykes, Barry, "Change *Here for Outtrim*", 1997, p.23.

"*At the Coal Face*" State Coalmine collection.

Miners working at the Long Tunnel Extended Mine, SLV.

## AMHA CONFERENCE 2017, TRARALGON

Welcome to Gippsland!

For those unfamiliar with the area, here are a few of the important factors which shaped the background to Gippsland's mining history and subsequent settlement.

Gippsland can be best described as an elongated triangle: its top, or Northern side comprises the mountains of the Great Dividing Range, the apex being where the NSW and Victorian borders meet at Cape Howe. The bottom, or southern side is the sea, more precisely Bass's Strait, as the old maps described it, and the western side is closest to Melbourne. The southern section of this western side was largely impenetrable swamp, extending 20ml north from Westernport Bay into thick forest right up to the Ranges. So, unlike Bendigo and Ballarat prospectors who could travel directly to the diggings from Melbourne or Geelong, this wasn't possible in Gippsland.

In the 1830's, the early Gippsland settlers followed the southerly Monaro route (south of present-day Canberra), down as far as Omeo, then south again through the valleys of the Snowy and Tambo rivers, to the lush lakes area around Bairnsdale, called "*Caledonia Australis*" by pioneer Angus Macmillan.

In 1840, Macmillan managed to blaze a track from the Bairnsdale area to what became Gippsland's first 'real' port – Port Albert. Here the settlers' produce could be shipped out to Melbourne and Sydney, even as far as Tasmania and New Zealand, and by the 1850's it was probably the third busiest port in Victoria. Gold was discovered not far away at Stockyard Creek, (now Foster), by men cutting staves. According to Lloyd and Coombes in "*Gold in the Walhalla Region*", this was the southern boundary of the line of lode worked much further north in the Great Divide. So prospectors heading for Stockyard Creek disembarked at Port Albert, then walked or rode. Later, at nearby Toora, there was also largescale tin mining, mainly by sluicing.

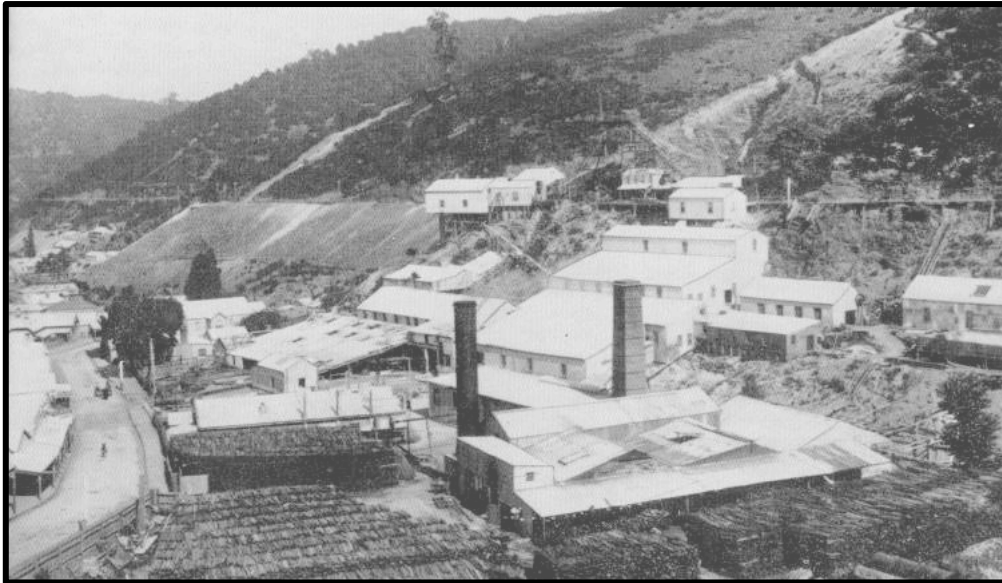
Between 1859 and 1860, prospectors began to travel east from Warburton, northeast of Melbourne, following mining and logging tracks, then out along the ridges of the Great Dividing Range. This was a very difficult route, but enabled the prospectors to pass through many sites where they did find gold, such as Wood's Point, Hillend and Aberfeldie. Then in early 1862, Ned Stringer and Company struck it rich at Cohen's Reef in Cohen's Creek, which flows through Walhalla. This area became known as North Gippsland.

Prospectors continued exploring along the ranges, through sites such as Seaton, Grant and Cassilis (see map for the general 'gold geography' of the area), then on to Omeo and Swift's Creek, north of what is now Bairnsdale. A few of the most intrepid came straight 'across the top' from the Bright and Harrietville diggings, but this is extremely rough country, impassible in winter. Apart from seasonally open 4WD tracks, there is still no direct route from the Latrobe Valley across these mountains.

Apart from gold, other minerals such as tin, copper, iron ore and bauxite were discovered in the area, but exploitation was slow. There is black coal in central and south Gippsland, but undoubtedly it is the enormous brown coal (lignite) deposits in the Latrobe Valley which are the most famous.

Much of south Gippsland was not open for settlement till the 1870's, and, as mentioned in Sykes, "*Lines, Mines, People and Places*", many of the new settlers, particularly in the Foster area, came from Ballarat, where the land was all taken up by this stage, and gold production had already moved from alluvial to reef mining.

**Barry Sykes**



Long Tunnel Mine Battery and Boiler House

*(Paull R., 'Old Walhalla', MUP, 1958, p.52)*

## Pre-Conference Tour to Walhalla

Sunday 24<sup>th</sup> September, 2017

### Mining along the Valley of Stringer's Creek

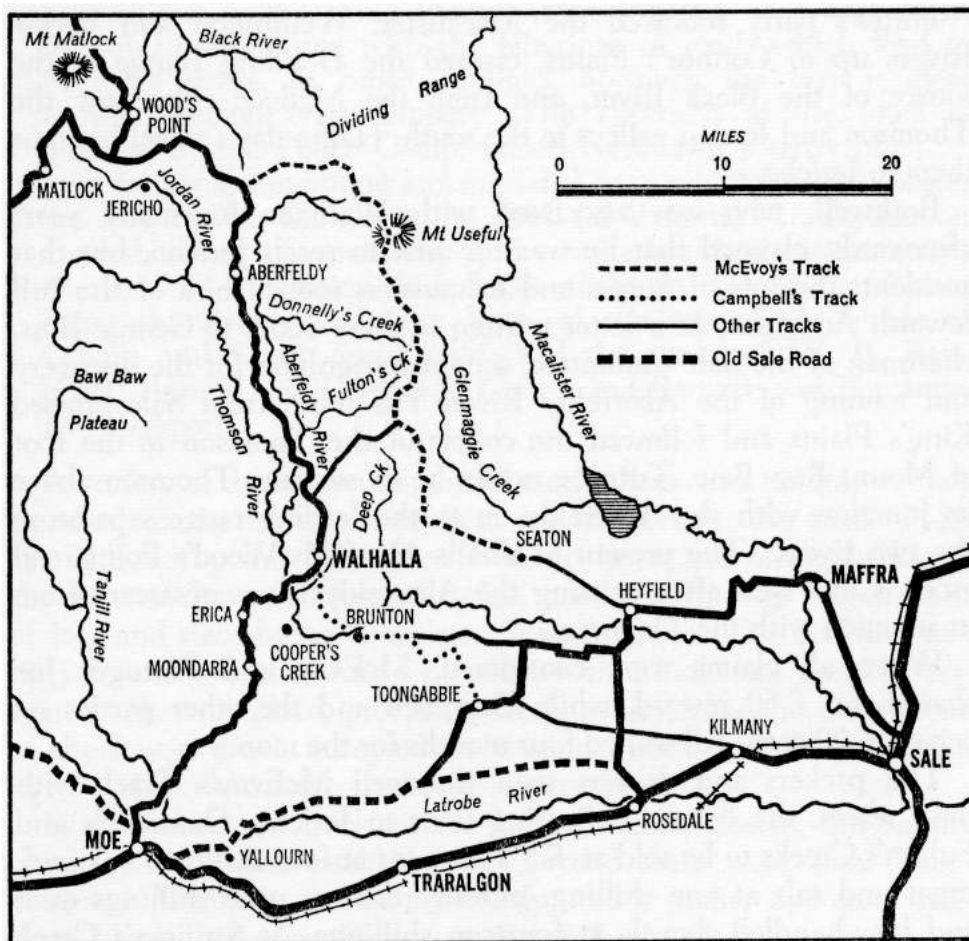
Leaving from Traralgon, this tour will wind its way into the foothills of the Great Dividing Range, making a stop where the road crosses the Thompson River 8 km below Walhalla. At the Thompson crossing, we will board the Goldfields Railway for the last leg into Walhalla along the spectacular Stringers Creek Gorge. On arrival at Walhalla Station, there will be morning tea and a short welcome to scenic Walhalla, home of the famous Long Tunnel Mine, Victoria's largest single gold producer of historic times. We will then divide into three groups preparatory to the program of alternating one hour tours planned for the rest of the day:

- An underground tour of the long tunnel extended mine.
- A walk along the Tramline Walkway past the site of Walhalla's mines.
- A tour of the town and the famous Walhalla Cemetery.

Everyone will get a chance to go on all the tours. There will be one tour before lunch, and two tours after lunch. Lunch will be held in the historic Mechanics Institute Hall. There will be some time for exploring during the tour program, or you may just like to make up your own itinerary. The buses will leave shortly after the end of the last the last tour rotation for the direct trip back to Traralgon.

## The Early Years<sup>1</sup>

Alluvial gold was found in Stringer's Creek on Boxing Day 1862. The creek was a minor tributary on the east bank of the Thomson River, by-passed by a four man prospecting party as they had gone down the main river. When they turned back, three decided to explore this small tributary, and two miles upstream they found what they were looking for. Edward Stringer, the leader of the party, walked the twenty miles to Fulton's Creek to register their claim. The creek became known as Stringer's Creek, as was the first settlement that grew along its banks. The name of Walhalla was officially confirmed towards the end of 1866. Edward (Ned) Stringer's party was at the forefront of prospecting as the search for gold crossed the Great Dividing Range from the north. The claim was at the end of supply line starting in Melbourne, skirting the western end of the Dividing Range to follow the Yarra, Ovens and other rivers to the top and over the Range to southward flowing rivers. It was a long, tedious track, fit only for packhorses over considerable distances.



**Walhalla Surrounds** (Paull, Raymond, *'Old Walhalla'* MUP, 1963, p.15.)

There were other claims of the first discovery, but the Government Select Committee administering rewards for discovery of new diggings awarded Stringer, and his companions McGregor and Griffiths £100, each on 22 May 1866. Stringer did not live to receive his reward, but died of a coughing related hemorrhage at Toongabbie on the return journey from Sale to see a doctor about a heavy cold. A deputation of miners from Stringer's creek attended the funeral to ensure a proper send off for their former mate. Rosedale Shire Council transferred the body to Toongabbie Cemetery in 1885, where it remains in an unmarked grave.

<sup>1</sup> The following notes are derived from from Paull, Raymond, *'Old Walhalla'*, MUP, Melbourne, 1964.

The alluvial claims proved very patchy, and some prospectors left, suggesting Stringer ought to be lynched for promoting the find. Successful claims meant excavations to twenty feet, the isolation of the settlement made provisions expensive and delivery unreliable, and hunger and poverty were not unknown along creek. Two severe floods in the February and May of 1863 washed out miners' dams and equipment, but the establishment of a baker and a butcher in March of the same year promised some stability for the community.

The search for a mother load ended in February 1863 in the first exposure of the reef, Cohen's Reef, which would dominate Walhalla's future. It was found at the head the Empress gully on the western side of Stringer's Creek.

On 22 July 1863 police constable Michel Feely reported that of sixteen claims taken up on the reef, seven of them had stockpiles of material waiting to be crushed. Although the local miners set up a committee to manage their affairs, they were not able to raise the capital to bring in the machinery to crush their ore. Given the frustrations of alluvial miners after two major floods, and the inability to process quartz on the part of the reef miners, it not surprising that their committee worked hard to control such violence as occurred. Earlier, during March of 1863, the Gippsland Gazette reported that food supplies had run out at Stringer's, and emergency supplies were donated from the Bald Hills business people and taken in by packhorse. Some turned back because of the roughness of the track, which had been cut using donations from the Bald Hill traders. Yet later, Archibald Campbell improved on the line of his original track to Stringer's Creek, the new route from Sale passing through Toongabbie. This became the main route, still a rough packhorse trail into Stringers Creek, but the discovery of gold at Cooper's Creek re-inforced the need for better access.

Meanwhile, the merchants of Sale saw the potential of providing the concentration of miners around Woods Point, Matlock, Jerico and Aberfeldy with their needs. Food, clothing and mining equipment were travelling to these places from Melbourne. The merchants petitioned the government for funds to build a road to these diggings from Sale. Their resolve was probably stiffened by advice from Chief Secretary O'Shanassy that the government favoured a new track to the diggings via Healsville, Marysville, Cumberland Creek, and on to Matlock. This would favour Melbourne traders, and the Sale burghers responded, by posting a reward for the discovery of a reasonable track to the Jordan from Sale. Tom McEvoy and his partner Portugee Joe won the £50 reward for a track which can be described as following the watershed between Glen Maggie Creek and the Aberfeldy River. The other parties, including that of Archibald Campbell, were awarded £20 for their efforts. The government eventually provided £500 to upgrade the pack track into a coach road.

For the Stringers Creek settlement, it was the beginning of Campbell's track that was important, as it called for a crossing of the Thomson River and opened up a route to their diggings. Even to-day (2017) the access road to Walhalla is not the easiest, but it 1863 it was an essential lifeline, which needed to be improved to allow the import of heavy machinery necessary for the extraction gold from the new found reefs.

The effect of opening up McEvoy's track and sending goods by sea to Port Albert and on land via Sale and along the track was to halve the cost flour at Jericho. Other commodities were similarly affected, and being even further overland from Melbourne, the savings for Stringer's Creek would be even greater once a satisfactory access road was available.

But by July 1863, miners were beginning to lose confidence and newspapers carried advertisements of claims offered for sale or shares in potential mines with quartz ready to crush. In the same month, Constable Feely expressed confidence that as soon as crushing equipment was available the rich quartz he had seen at the creek would yield excellent returns. He also submitted a sample of the quartz, which the chief Commissioner of Victoria Police saw fit to send on to the Minister for Mines.

In October 1863, Constable Feely again reported a shortage of provisions in the settlement, at the same time as two batteries, one for the South Gippsland and the other for the Alpine Crushing Company, lay at Port Albert waiting for an acceptable route to Walhalla to be opened.

After delays in setting up agreements for road and bridge contracts and their construction, the first two batteries arrived on site on 5 January 1864. From then, the richness of the quartz favoured the development of more mines, not all of which were successful, but over-all, Cohen's Reef was close to being the richest quartz mine in Australia.

(For more details, see the handout notes, and the supplementary notes in this volume).

### **Schedule for Walhalla tours**

8.30am – Leave Traralgon by bus.

10.00am – Leave Thompson River by train.

10.30am-11.00am – Morning tea and briefing at Walhalla Railway Station.

11.30am – First tour rotation.

12.45 – 1.45pm – Lunch in Mechanics institute Hall.

3.00pm – Second tour rotation.

3.30pm – Third tour rotation.

4.45pm – Leave Walhalla by bus.

**Tour A:** Underground tour of Long Tunnel Extended Mine.

**Tour B:** Walk along tramway walk way.

**Tour C:** Town tour and cemetery.





**Loy Yang Power Stations and Mine.**

## **Mid-Conference Tour of Brown Coal Sites**

**Wednesday 27th September, 2017**

Leaving from Traralgon, this tour will skirt along the northern boundary of the Latrobe Valley brown coal deposits, with views over the various operations, to reach the historic town of Yallourn North. Previously known as Old Brown Coal Mine, this was the birthplace of Victoria's large scale brown coal mining and power generation activities.

Latrobe Valley brown coal is young on a geological timescale, only twenty to fifty million years old, and from Yallourn eastwards the coal belt is practically continuous for fifty kilometres, and from eight to fifteen kilometres wide. Of the proved and estimated reserves of 112,000 million tonnes, some 35,000 million tonnes can be won at reasonable costs by the open cut method. Seam thickness ranges from sixty to 140 metres in the most favourable areas, although boring has found coal extending to 277 metres under twenty-seven metres of overburden: a thickness of 250 metres.

When fully operational, the Latrobe valley coalfields have met most of Victoria's power needs, along with producing 300,000 tonnes of briquettes annually.

Commencing in 1873, the Great Morwell Mine, located at what was to become Yallourn North, was the first significant operation in the Latrobe Valley. After a chequered history, by the 1920s the Great Morwell Mine morphed into the fledgling Yallourn North Mine, under the banner of the State Electricity Commission of Victoria. It was the Yallourn North Open Cut that supplied the coal for the SECV's initial activities during the time the Yallourn mine and town were being developed.

At Yallourn North we will enjoy a smorgasbord lunch at the Old Brown Coal Mine Museum, while browsing the museum collection, which highlights the early history of the area. There will be time to relax at the museum, before we head off to a series of oversight stops featuring the Latrobe Valley's major mining and power generation activities. At the Yallourn over-look, we will survey



the site of the model town, purpose built by the SECV from the 1920s to house its work force, and then subsequently demolished to make way for on-going mining activities. After driving past the Yallourn W power station with its characteristic cooling towers, the tour will move on to the central Latrobe Valley post WWII industrial area, with a stop at the Hazelwood over-look. From this vantage point we will be able to survey the Morwell Open Cut Mine, site of the disastrous recent mine fire, and the now de-commissioned controversial Hazelwood Power Station. Whilst at this stop, there will be a chance for a close-up look at the dredging technology upon which the Valley's mining activity is based. From Hazelwood, the tour will move on to Loy Yang, the most recent major development in the Latrobe Valley. At the Loy Yang look-out site, you will be able to appreciate the scale of the current mining operations, where the coal seams are at their thickest toward the southern margin of the coal basin. Loy Yang is the youngest coal fired power station in the Latrobe Valley. A short bus ride will bring the tour back to Traralgon, with time to freshen up before the evening's public lecture on the life of John Monash, the father of the SECV.

\*\*\*\*\*

### **Schedule for Sale Tour.**

8.00am Depart Traralgon Railway Station after earlier pickups.

9.15am Arrive at Sale Powder Magazine, and divide into two groups.

Group 1 begins inside the Powder Magazine with guide Peter Synan,

Group 2 begins outside, with guide Val Walker. Groups swap after about 30min.

10.15am Depart Powder Magazine.

10.30am arrive at Rest Area, McIntosh Drive, Lake Guthridge, for Morning Tea.

11.15am Depart Rest Area for the short drive to the Swing Bridge, where we again divide into two groups, about 30min for each tour.

Group 1 will walk onto the Bridge with the guide,

Group 2 will gather near the bridge with the guide.

12.15am Depart Swing Bridge, drive past the Port of Sale.

12.30pm arrive at Sale Memorial Hall.

12.30-1.30 Lunch.

1.30-3.30 Session Twelve of Conference papers.

3.30-5pm Farewell Afternoon Tea. Tidying and re-arranging Hall.

5.30pm Bus departs Hall for Traralgon.

5.30pm Bus departs Hall for Traralgon.



**Sale Swing Bridge**

*(Wikipedia)*

## **End of Conference Tour to Sale**

**Friday 29<sup>th</sup> September 2017**

### **Town and Port of Sale**

Sale evolved as a rural centre for the surrounding farming & grazing holdings. The early name of Flooding Creek reflected its low elevation, and proximity to the Thomson River and the Gippsland Lakes. Exports and imports flowed through Port Albert, and as miners crossed the Dividing Range, and were further and further from Melbourne, business people in Sale saw an opportunity to supply miners with provisions and heavy mining equipment. These loads could be more easily handled by sea from Melbourne, rather than via Warburton and over the Great Dividing Range.

Until the late 1880s, travel to the east of Melbourne was severely curtailed by the Koo-Wee-Rup swamp.<sup>2</sup> The swamp extended from the head of Western Port Bay to the southern foothills of the Great Dividing Range, and when Cobb & Co first offered a coach service from Sale to Melbourne, it was only for the summer months.

The **Powder Magazine**<sup>3</sup> is one of “... *some fifty Government powder magazines at one time in Victoria, built at points of entry, or on the goldfields; only eleven have survived demolition or*

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<sup>2</sup> Argus, 2 July 1893.

<sup>3</sup> Synan, Peter, *The Story of Sale Powder Magazine*.”

*destruction ... Sale's magazine is one of very few restored magazines which is in the public domain; and [it] is the only surviving Government powder magazine in Gippsland.*

*Severely classical in its external appearance, [it] is a red brick structure, rectangular in shape, with a gabled slate roof. There is an entry lobby, which is roofed as a continuation of the main roof. The massive brick walls, which sit on sandstone foundations, are further strengthened with solid brick buttresses.*

*The interior was highly functional...the thick walls, barrel vaulting, and off-set ventilation of the interior were designed to direct an accidental explosion upwards instead of outwards."*

The Magazine has a capacity of 26 tons of blasting and gunpowder, and was opened in 1865. It was used for the storage of explosives for use in mining, land clearing, and by the police & military. Its siting was partly for safety, being halfway between the Latrobe River wharf and the town. For the occasions when the entrance to the lakes was too shallow for shipping to reach the Latrobe River wharf, another magazine was built at Port Albert, some 50 miles to the southwest. With the advent of the more stable dynamite, the need for the magazine declined, and it closed in 1880.

The local shire purchased the building for restoration in 1996; and this was finally completed, largely by volunteers, in 2000. It is now operated under the auspices of the Sale Historical Society; and is opened by arrangement

The **Sale swing-bridge** is located just downstream from the confluence of the Thomson & Latrobe Rivers, and it was built in 1883 to replace a low-level bridge that prevented shipping from proceeding further up either river. This swing bridge was the first moveable bridge in Victoria, and is apparently the last operable swing bridge left in Australia.

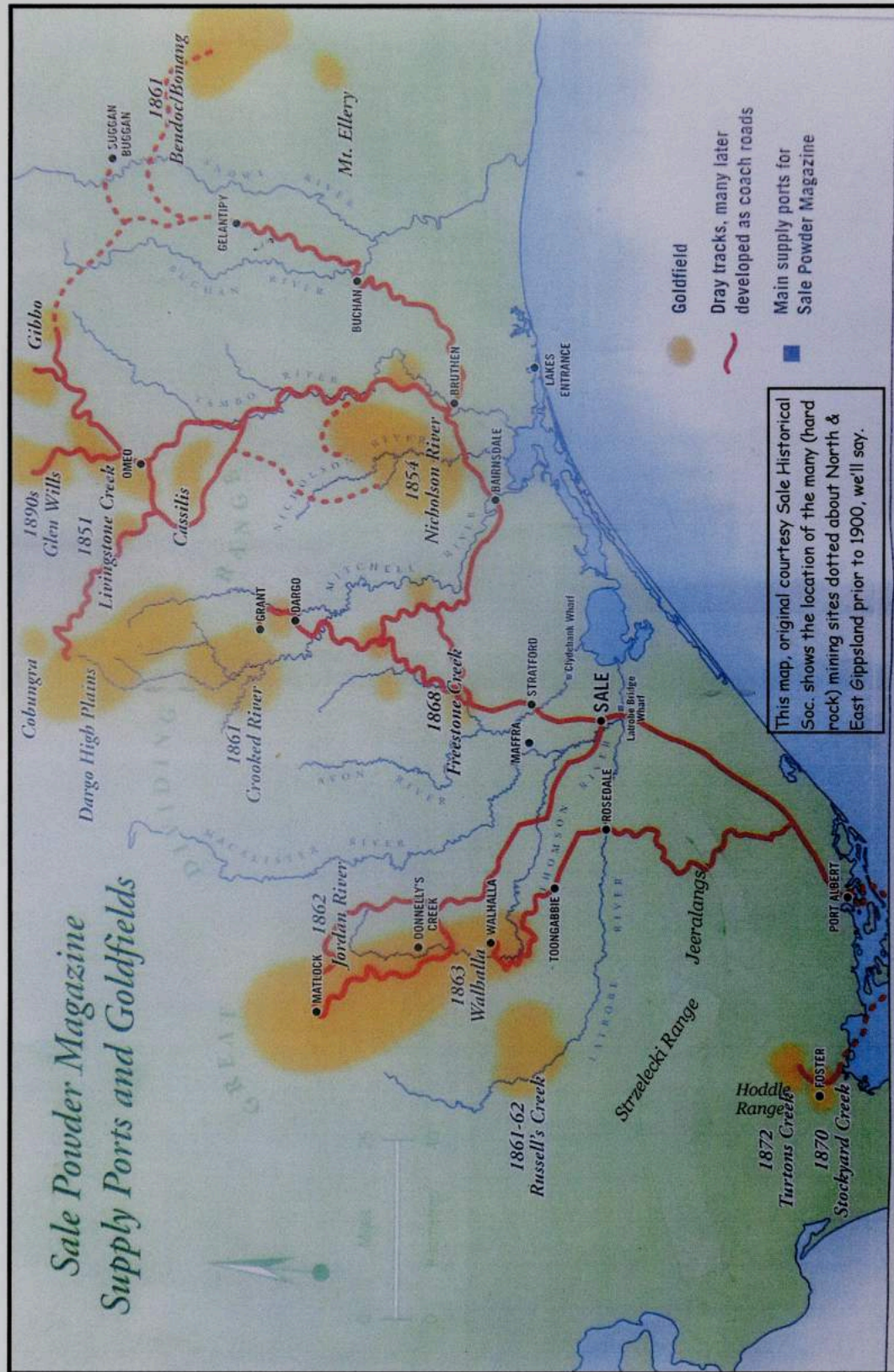
It is a wrought-iron structure, 45 meters long; and pivots on central cylindrical steel columns. The bridge was designed in 1880 by engineer and architect John Grainger, the father of the composer, Percy Grainger.

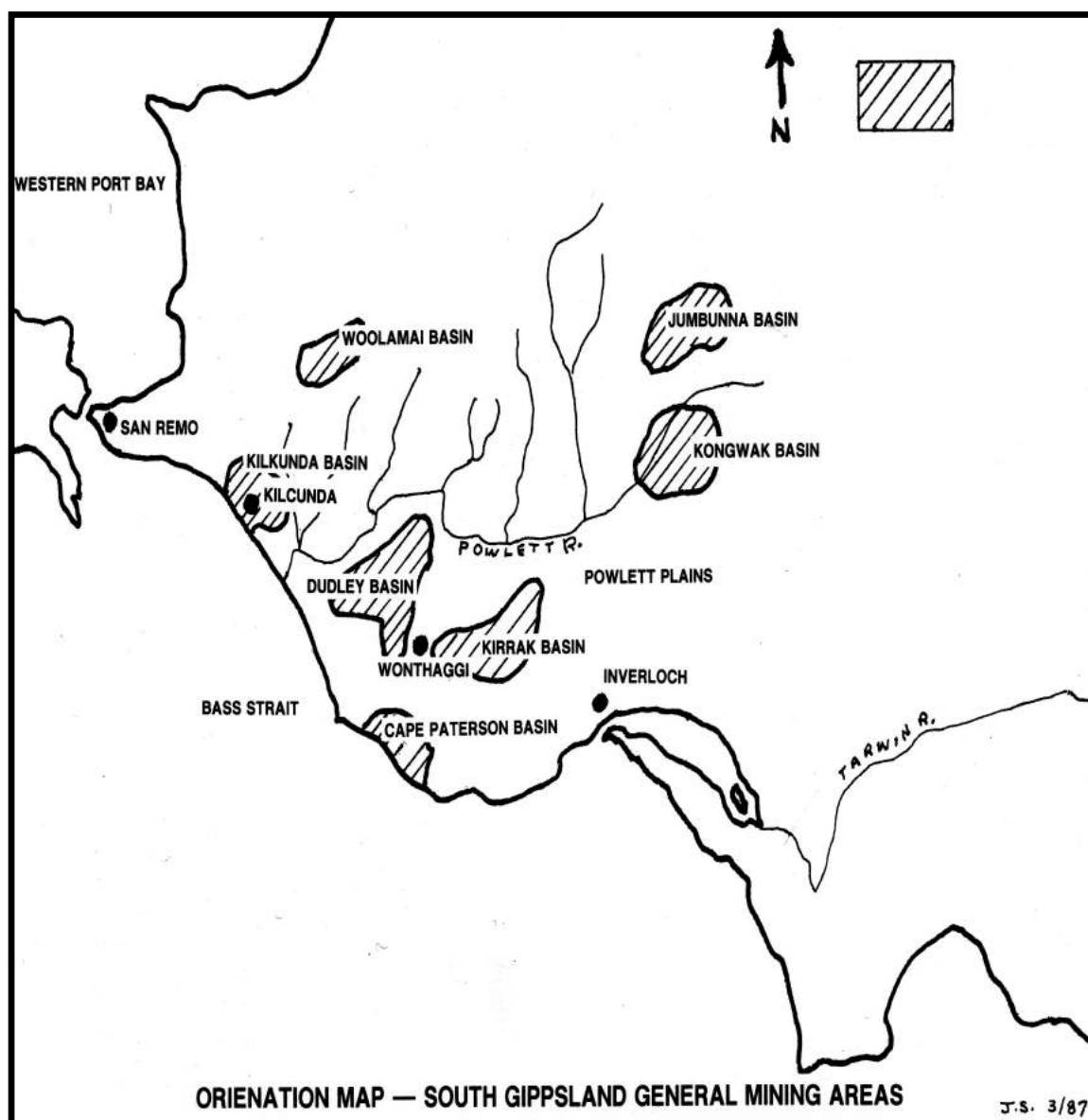
Before the advent of the swing-bridge, all cargo was landed at the Latrobe River wharf about 100yd downstream, which imposed a three-mile cartage across the wetlands to the town. The swing bridge not only enabled shipping to continue up both rivers to towns further upstream, but after the completion of the 2.5km Sale Canal in 1888, linked the Thomson River to the Port of Sale. This resulted in a considerable volume of water traffic, at its peak requiring the bridge to be opened up to 20 times a day.<sup>4</sup>

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<sup>4</sup> Synan, Peter, "*Highways of Water*".







## Post Conference tour to South Gippsland Coal Mines

30<sup>th</sup> September – 1<sup>st</sup> October 2017

## **Saturday 30/9 and Sunday 1/10.**

### **South Gippsland Coalfields Heritage Tour Itinerary**

#### **Saturday 30th September 2017**

- |                |   |
|----------------|---|
| 8:00 am        | Depart Sykes' home (10 Retreat Rd, Traralgon) for those who have dropped off their cars for parking over the weekend. Then pick-ups as scheduled.   |
| 8:30 am        | Final pick-up from Traralgon Railway Station carpark, depart Traralgon. Travel to Korumburra via Morwell and Mirboo North on Strzelecki Hwy.  |
| 10:30-11:15 am | Morning Tea and wander around at Coal Creek Historical Park, Silkstone Road, Korumburra.  |
| 11.15 am       | Depart Coal Creek for a tour of old mining and railway sites between Korumburra and Jumbunna.   |
| 12:30-1.30 pm  | Lunch at Jumbunna Hall.   |
| 1.40 pm        | Depart Jumbunna Hall for walking tour of the Jumbunna local area, then re-join bus for drive to Outtrim.  |
| 2:15-3:45 pm   | Walking tour of historic features at Outtrim, then a short drive to the Cemetery.   |
| 4:00-4:30 pm   | Stop at Outtrim Recreation Reserve for afternoon tea.   |
| 4:30 pm        | Depart Outtrim Reserve for drive to Inverloch.  |
| 5:00 pm        | Drive past Inverloch Wharf (where Wonthaggi coal was originally loaded for Melbourne).  |
| 5:15 pm        | Drop off at Inverloch Motels.   |
| 5:30 pm        | Drop off at Wonthaggi Motel.  |
| 6:45 pm        | Pickup from Inverloch Motel/s for transport to dinner.  |
| 7:00 pm        | Pickup from Wonthaggi Motel for transport to dinner.  |
| 7:20 pm        | Dinner at Wonthaggi Workmen's Club, 65-75 Graham Street, Wonthaggi<br>Chance for an informal meal and quiet drink in a relaxed Bistro setting.<br>Tour participants to order and pay for their own meals. |
| 9:20 pm        | Bus will depart Wonthaggi Workmen's Club, dropping participants back at motels in Wonthaggi and Inverloch.  |



## Sunday 1st October 2017

- 7:45 am Pickup from Inverloch Motels.
- 8:00 am Bus arrives for pickup from Wonthaggi Motel.
- 8:10 am Depart Wonthaggi Motel and drive to Pioneer Mines Area.
- 8:15-9:15 am Walking tour around Pioneer Mines Precinct, viewing of remains of McBride Tunnel, Shaft No.5 Brace & SCM Powerhouse.
- 9:30-9:50 am Inspection of Cape Patterson landing and exposed coastal coal seams.
- 10:05 am Arrive at State Coal Mine, Wonthaggi.
- 10:15-11:15am Group 1 (16-20 people) Underground Tour.  
Group 2 (16-20 people) Free time to explore surface installations (mine workshops, winding house, battery house and change-rooms, blacksmith's shop, etc)  
From 10:30 am Group 2 can take a cuppa with scones + jam & cream at SCM Café.
- 11:15am-12:15 Group 2 (20-22 people) Underground Tour.  
Group 1 (20-22 people) free time to explore surface installations (mine workshops, winding house, battery house and change-rooms, blacksmith's shop, etc)  
From 11:15 am Group 1 can take a cuppa with scones +jam & cream at SCM Café.
- 12:20-12:50pm Lunch – full tour group meets back at SCM Café.
- 1:00 pm Depart State Coal Mine Heritage Park and drive to Kilcunda.
- 1:15-1:45 pm Inspect Bourne Creek Railway Viaduct and hear about construction of the Nyora-Wonthaggi Railway, and history of mining in the Kilcunda area.
- 1:55-2:15 pm Stop at Shaft No. 19 & 20 area to view memorial to 1937 mine disaster.
- 2:30 pm Drop-offs at Wonthaggi Bus Terminus in Biggs Drive (if required), for those wishing to catch V/Line bus back to Melbourne.
- 2:30 pm Depart Wonthaggi with brief pause at Shaft 18 & Kirrak Area (Eastern Precinct).
- 2:45 pm Depart for Traralgon, via Inverloch, Leongatha & Morwell Route, via Bass Hwy & Strzelecki Hwy
- 4:05 pm **Arrive back at Traralgon Railway Station for end of tour.**  
Continue on to Skyes' home for pick-up of cars.

The itinerary for the post-conference South Gippsland Coalfields Tour has been adjusted to have our tour bus returning to Traralgon by 4:00 pm on the Sunday. This should leave participants with enough time to make any of the last three train services to Melbourne, departing Traralgon at 4:40pm, 6:03pm, and 6:49pm.

For those needing to travel through to Melbourne Airport to catch flights the same evening – assuming an hour for the Skybus connection from Southern Cross Station – you should arrive at the airport by 8:00pm, 9:19pm or 9:59pm for these three services.

For anyone needing to catch an earlier flight there is the additional option of catching a V/Line bus from Wonthaggi back to Melbourne. The bus departs Biggs Drive Bus Terminal Wonthaggi at 2:40 pm, and travels via Anderson & Koo-Wee-Rup (with a bus change), then direct to Southern Cross arriving at 4:57 pm. With one hour for a Skybus connection you should get to Melbourne Airport by 6:00pm. If you wish to follow the bus option you will be advised to pre-book a bus ticket at the Traralgon Railway Station earlier in the week and let the tour guides know. The tour bus will drop you off at the Wonthaggi bus terminus by 2:30 pm. A one-way bus fare from Wonthaggi to Southern Cross is \$16 adult /\$8 concession.

## Black Coal Mining in Victoria

### COMMENTARY FOR SATURDAY, 30 September 2017

For the Post-Conference Tour, we will travel from the brown coal [lignite] fields of the Latrobe Valley to the black coal fields of Sth Gippsland. This latter extends from the south of Moe, right down to and beyond the coastline at Wonthaggi, and further along at Kilcunda as well.

Leaving Traralgon, we will travel west on the Freeway to Morwell, passing in the process the large hospital that serves the whole of the Latrobe Valley, and further afield for more specialist cases.

Getting off the Freeway, we will travel through Morwell, where the remainder of the brown coal operations there are to be seen: viz the mine, power station, briquetting plant, and the char factory - all of which are now defunct. Since it is the only one in Australia, there are moves to have the Briquetting plant retained as a historic site.

As we pass through Morwell, we can see (as the media saw it) the now defunct Hazelwood Power Station, then where the Mirboo Nth railway branched off the main line at Morwell (now marked by a Rose Garden), and the remains of the Inter-Connecting Railway.

Over its nearly 75 year-lifetime, this line carried many millions of tons of Yallourn coal to the briquetting plant at Morwell; and was an extension of that which operated in both Yallourn & Morwell open cuts before the advent of the conveyors we see today.

For railway historians it was of interest because of its curious 90cm gauge; its strange-looking, but very powerful [electric] locomotives, and the fact that in its heyday it had all the safeworking features of a normal railway.

As far as is known, because of their mode and location of operation, many of these locomotives were equipped with 6 pantographs. Normal locomotives only have two.

The pantographs are the devices that collect the current from the overhead wire.

As we move closer to the (now defunct) Hazelwood Power Station; which until March this year generated some 25% of Victoria's (& some of S.A.'s) power.

A special line of railway was run to the site when it was being built; and as can be noted, it is a large place: the building being  $\frac{1}{3}$  mile long.

Then, joining the Strzelecki Highway for our run south to Leongatha, we pass along the fairly recent deviation, built to enable the western extension of the [Morwell] open cut, to provide further coal for Hazelwood, as well as other schemes that the Government had in mind at that time. An interesting feature of this deviation is that it incorporates a diversion of the Morwell River as well.

Rising up out of the valley of the Latrobe River, we enter a large plantation, set up many years ago to supply the quite large Australian Paper Mill at Maryvale, which you may have passed on your trip round the Valley towns; and which supplies employment for several thousand Valley residents.

From the Thorpdale road intersection we pass through a potato growing area, before entering a State Forest, which then leads us into Mirboo North.

These days, Mirboo North is basically a dormitory town for Latrobe Valley workers, but in years gone by it was the terminus of the railway from Morwell.

Originally this line was intended to run to Foster; to service the goldfield there, but they found that the grades south of Boolarra were impossible to build a railway over, and so it was terminated at Mirboo Nth instead.

Surprisingly, along with the usual agricultural products from the local butter factory, a major loading at this station for many years was bauxite, which was mined from an open cut some miles up the road north of the town. Its actual destination is unknown.

As well, in short bursts, some [black] coal was also sent from here, as well as from Boolarra,

(mentioned above) in the early 1890's.

In the main street (aptly named 'Ridgeway') is a cairn to mark the Strzelecki (actually Macarthur's) expedition through Gippsland in 1840.

Departing Mirboo Nth, the road follows the route of the Grand Ridge Road for several KMs before heading south. The Grand Ridge Road, as its name suggests, meanders along the ridges the length of Gippsland. from somewhere south of Drouin, to somewhere north of Foster. The curious thing about it is that nobody is quite sure of where it starts or finishes; but it is a very picturesque trip for anyone with the time to spend. At the point where the Strzelecki Highway veers south to continue to Leongatha, there are excellent panoramic views across the area.

We then descend south, and about half way along we pass the hamlet of Berry's Creek, near which the local coal mine was located. Trucks carted the coal to the station at Mirboo Nth.

From here, we travel along the headwaters of the Tarwin River, finally reaching the town of Leongatha, now the largest town in Sth Gippsland, and the administrative centre of the local [Sth Gippsland] Shire. As we enter the town, on the right can be seen the very large complex of the Murray-Goulburn Company, which processes milk from a wide area; and milk tankers travel daily between here and their Maffra factory (north of Traralgon) to maintain supply.

Originally, Korumburra was the larger than Leongatha, with the latter merely a potato & onion-growing area, due to its fertile red soil.

With the advent of Murray-Goulburn large-scale dairy product manufacture was transferred to Leongatha, as much as anything, due to its being located on relatively flat ground, allowing for the expansion that is very evident; compared with the hilly Korumburra, as we will find when we arrive there.

Travelling the 9 miles west along the Sth Gippsland Highway we arrive at Coal Creek Historic Village, where we will have morning tea, Coal Creek was the site of the siding from which 1¼ million tons of coal were dispatched from local mines over its 75-year history.

We will then have a subsequent look around the town, before moving south 5km to Jumbunna, one of the twin towns that were so busy at the turn of the 20th Century; but have largely disappeared, except for the influx of a number of tree-changers, who reside here, but work in places such as Dandenong.

We will have lunch at the historic hall here, before spending the afternoon looking around the town, and travelling south to see the sites of the Jumbunna & Outtrim coal mines, the which between them employed over 1000 men (& boys) at their peak; and of course had a railway constructed to convey the coal to the markets.

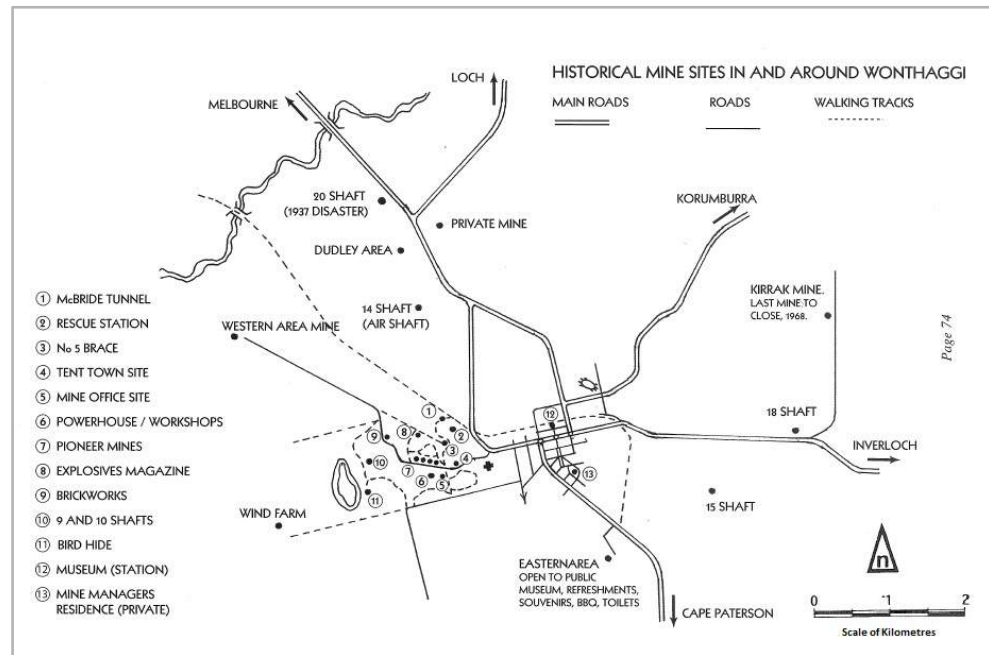
We will finish this part of the tour with a visit to the Cemetery & Recreation Reserve. At the latter we will have afternoon tea etc. Both these places are a legacy of the days when Outtrim was the largest [coal] mining town in Victoria.

Subsequently the group will move on to Wonthaggi for the evening & tour of that town & environs the next day.

## Sunday October 1<sup>st</sup>, 2017: Wonthaggi State Coal Mine Tour Notes

### *Origins of the State Coal Mine*

*Locality Map showing key heritage sites of the State Coal Mines Precinct. (Adapted from Sleeman, 2008)*



Outcrops of black coal had been discovered at various points along the southern coastline of Gippsland as early as the 1820s, and over subsequent decades several private enterprises were initiated to exploit the resource. The most concerted of these ventures were the Victorian Coal Mining Co. formed in 1859, to develop coal seams at Cape Patterson, that extracted some 2,000 tons of coal over the next five years; and the Westernport Coal Co., formed in 1870, to develop a coal seam near Kilcunda, following a Victorian government reward of £5,000 offered for the first 5,000 tons of coal produced in the colony. This latter venture fared little better producing around 15,000 tons over 15 years before folding. Perhaps the most significant development during these early years, however, was the efforts of the government geologist Arthur Selwyn, who in 1858 sunk a hand bore on the swampy coastal plains north of Cape Patterson, providing the first indications of the vast inland coal seams underling the Powlett River Valley.



*Prospective investors inspecting the entrance of the Western Port Coal Mine. at Kilcunda in 1875.*

By the 1880s, the rapid expansion of Victoria's railway network, together with a strong manufacturing sector, gas works and the emergence of the new electric power generation industry had pushed the colony's annual consumption of black coal to almost a million tons, almost all of which was being imported from New South Wales. During the late 1880s, a debilitating series of maritime and coalminers strikes in New South Wales highlighted the risks associated with being so dependent on imported coal supplies and led to

the appointment of a Royal Commission to inquire into the causes behind the failure of Victoria's early coal mining industry. Based on the recommendations of the Royal Commission, the Victorian government introduced some additional incentives for local coal production and over the next decade the industry witnessed its first significant boom with the opening of numerous private mines to exploit the black coal deposits of South Gippsland at Korumburra, Outtrim and Jumbunna.

By 1894, the Victorian Railways agreed in principal to give preference to Victorian producers in letting future long term coal supply contracts, however, arguments would continue for some years over the quality of coal supplied and the price and contract volumes offered. Boosted by the railways contracts, local production from South Gippsland mines climbed 260,000 tons in 1899, representing almost half of total Victorian coal consumption, but the following year New South Wales colliery owners slashed their prices to recapture market share. The Victorian Railways responded by reducing the contract rates they offered and on 17th January 1903, the combined Gippsland coal mine owners gave notice to their workers that unless the men were prepared to accept drastic reductions in their wages and contract prices, then their services would be dispensed with. The miners refused to accept the conditions, and were locked out. The resulting dispute dragged on for 70 weeks and as a result production plummeted by three-quarters and some 1,300 miners left the industry. Unfortunately many of the private mines were under capitalised and had been too quick to pay out lavish dividends in the good years, leaving little money for systematic mine development or improving their miners' working conditions.

The strike would prompt the Victorian Mines Department to commence a more systematic drilling program on the Powlett Plains and by 1908 a large coal resource



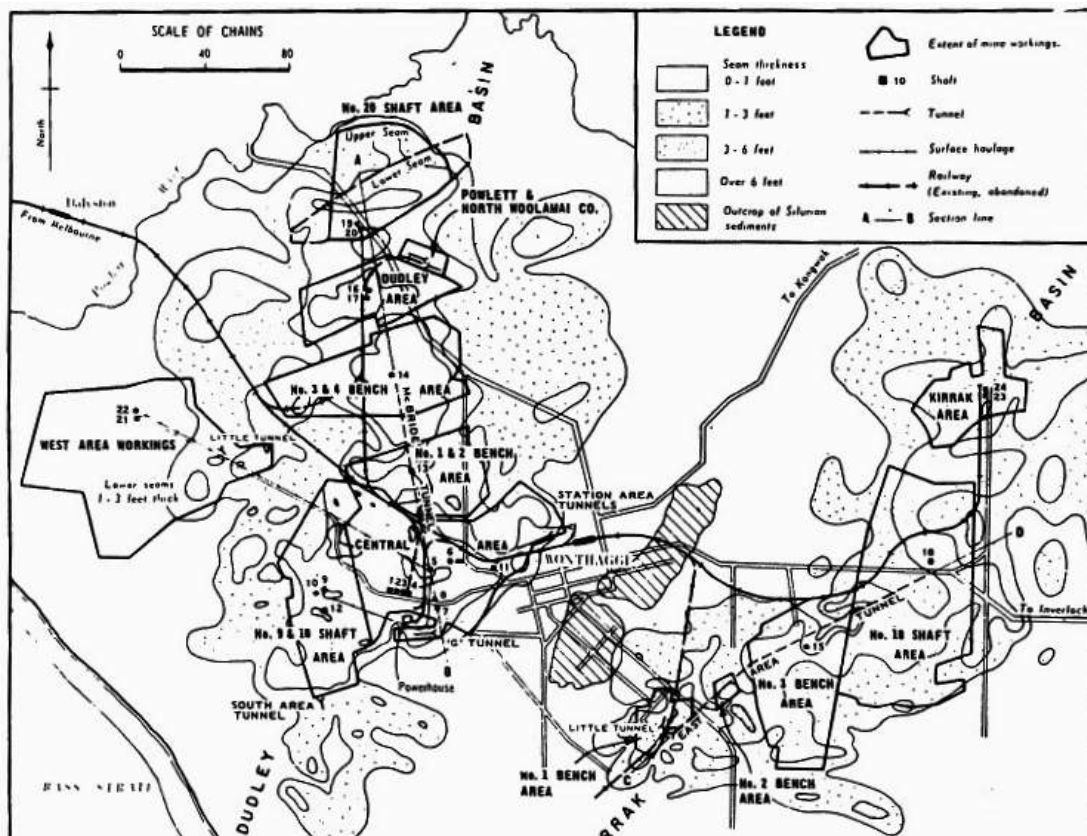
*Black coal sample from the State Coal Mine, Wonthaggi.  
(specimen E16487, Museum Victoria)*

had been proved with seams of up to 9 ft (2.74 m) in thickness at relatively shallow depths. The Powlett River Coalfields are comprised of deposits laid down in the Lower Cretaceous period some 146 to 100 million years ago over two wide depressions known as the Dudley and

Kirrak Basins. Up to eight distinct seams have been shown at depths down to

1,000 ft (306 m), although typically only the two shallowest seams were mined.

Although it is often stated that the immediate impetus leading to the creation of the State Coal Mines at Powlett River was a protracted coal miners' strike in New South Wales, the Victorian government was in truth already moving progressively towards the establishment of a state-owned coal mining enterprise in order to secure supply to the railways and key industries. The development came in the middle of a period when state own enterprises had gained widespread political support. The Victorian government had recently acquired all the State's once privately owned railways, had opened extensive government railway workshops at Newport to build and maintain locomotives and rollingstock, and was investing heavily in "nationalised" irrigation works, public water supply and sewerage schemes. Within another decade it would also establish a state-owned electricity supply commission and begin an ambitious program to develop Gippsland's massive brown coal deposits. In November 1908, following favourable boring results obtained by the staff of the Victorian Geological Survey, Donald McLeod (1837-1923), the Minister for Mines took the initiative of reserving 3,000 acres of the Powlett River coal deposits for the future development of a State Coal Mine. When Peter McBride (1867-1923), succeeded McLeod as Minister for Mines the following year, he continued to oversee a vigorous exploration program from which promising results were widely reported in the media. Thus, when another New South Wales coal miners' strike broke out in October 1909, McBride was ready to rush through Parliament a Bill for the establishment of Australia's first state-owned coal mining enterprise. Over the following decade the enterprise, soon known at the Wonthaggi State Coal Mines, would develop into one of Australia's largest coal mining operations and in time became Victoria's largest producing and longest running black coal mine.



*Map of the Powlett River Coalfields showing the location and extent of underground workings relative to the area of the Dudley and Kirrak Basin coal seams. (J.L. Knight, 1970)*



### *The Pioneer Mines Area*



*Collecting early coal output from Shafts Nos 1 to 4 (left to right) in the Pioneer mine area. January 1910. (State Library of Victoria)*

In his first annual report of operations at the State Coal Mines, the General Manager summarised early development of the enterprise as follows:

*“On the 11th November last, immediately after the sanction of Parliament had been given<sup>5</sup>, the opening up of the coal seams at the Powlett River was vigorously proceeded with, and in less than three weeks four (4) shafts were sunk to the coal. The drilling derricks were erected over the shafts, and the oil engines belonging to the drills were employed for winding the coal in small basket loads to the surface. The coal thus raised was immediately despatched by teams to Inverloch, 11 miles by road from the mine, and thence by ship to Melbourne, as the railways, owing to the miners' strike in New South Wales, were urgently in need of it. The first coal from the mine was forwarded to the railway depots in Melbourne, via Inverloch, on the 25th November, and about three months later the coal was being despatched to the same destination by rail, a railway from Nyora to the coalfield, 27 miles in length, having been constructed by the Railway Department in the record time of ten (10) weeks.”* (SCM Annual Report, 1910, p.3)

*Loading  
Wonthaggi  
coal at  
Inverloch  
for  
shipping to  
Melbourne,  
January*



<sup>5</sup> The Coal Mines Regulation Act of 1909. Authorising to proceed with development of the State Coal Mine was in fact not given by State Cabinet until 17th November 1909.

Because the initial seams developed at the SCM were relatively shallow, averaging only about 50-80 ft (15.2-24.4 m) in depth, a decision was made to open multiple shafts in close proximity in order to maximise output with the limited equipment available. A prospecting shaft sunk by geologists the previous year became the No.1 Shaft, with three additional shafts opened in close proximity. Within a few days of commencing operations in November 1909, a group of about 30 experienced miners and a mine manager from deep lead alluvial gold mines at



*Miners at the Plat wheeling wicker baskets laden with coal in the Pioneer mining operations, 4 January 1910. (State Library of Victoria)*

Rutherglen were recruited to sink and open out the first four shafts at the SCM. The area to be mined initially was under low-lying swampland. These miners were particularly experienced in the specialised techniques required to sink through boggy ground and drifts of fine waterlogged sand, without allowing a shaft to collapse or become swamped. Stanley B. Hunter (1864-1942), a geologist and mining engineer with the Geological Survey, who had previously been responsible

for supervising the boring operations at Powlett River, was given the task of managing the SCM while a worldwide recruiting drive was undertaken to find a suitable General Manager. The person ultimately appointed in March 1910, was George Herbert Broome (1866-1932), a British born and trained mining engineer with extensive experience managing coal mines in New Zealand and Canada. Broome would remain in charge of the SCM through its first two decades until his death in 1932, and was responsible for introducing many of the mine's technical innovations during these years, included the extensive use of electric-powered machinery. Broome would bring with him from New Zealand Struan Robertson as the SCM's first electrical engineer in charge of the mine's power supply.

The first accident recorded at the SCM occurred on 23rd November 1909, when Mr Leslie Ower, of the Geological Survey branch, broke his arm by falling down the No.1 Shaft.



*Shaft No.3 Poppet Head and Heapstead Brace for processing and loading the coal, 18 June 1910. (State Library of Victoria)*

Early in 1910, a contract was let to Messrs Baker, Finlayson & party, who had sunk the famous incline shaft for the Long Tunnel Co. at Walhalla in record time. By June they had sunk four further Shafts, Nos.5, 6, 7 & 8, just to the north of the first four shafts in the Pioneer Mines area. By June 1910, daily production was at 1,300 tons, with the total production to date having reached 41,274 tons, of which the first 3,526 tons had been dispatched by bullock and horsedrawn wagons to Inverloch for loading onto coastal steamers bound for Melbourne, while the remainder was dispatched over the newly completed Nyora-Wonthaggi Railway.



*Hand loading slack coal at Wonthaggi, Feb 1910. The Spotswood Pumping Station in Melbourne would become one of the leading customers for the low grade product. (Australasian, Feb*

By June 1911, three further shafts had been sunk and mining operations were rationalised with, Shafts Nos. 3, 5 & 11 focusing on winding coal.

A steam-driven 10-inch Cornish beam pumping set had been installed at No.6 shaft, capable of lifting water at up to 6,000 gallons per hour to keep the mine drained, while the remaining shafts Nos. 2, 3, 4, 7 & 8 were being used for ventilation, for lowering timber and access by miners. Large 'heapstead' structures or braces were constructed at shafts Nos. 3 & 5 where the coal was processed by screening and sorting (known as 'picking') on conveyor belts, before being loaded into railway trucks. The fine or 'slack' coal was stored in large elevated bins until it could be separately sold. Slack coal was unsuitable for burning in railway locomotives, but was used in the SCM Powerhouse and was sold at a discount to private customers and larger government departments, such as the Spotswood Sewerage Pumping Station in Melbourne. During the first full year of operations in

1910-11, 34% of the 376,070 tons of coal produced at Wonthaggi was graded as slack coal.



*Shaft No.5 Heapstead and coal loading brace with the incline haulage from McBride Tunnel at left.*

Over  
er  
the

years, many parts of the SCM were developed through the use of pairs of shafts sunk side-by-side, with one shaft being dedicated to the winding of coal and the other used for pumping, ventilation and the raising and lowering of men and materials. In 1910, shafts Nos. 9 & 10 were sunk as a pair to the south-west of the Pioneer shafts, situated on either side of a fault line to open up adjacent blocks of coal from the same seam at depths of 170 ft and 269 ft (52 & 82 m). Coal raised at Shafts Nos. 9 & 10 was transferred via a 1540 yard (1.4 km) long endless rope haulage surface tramway, back to the brace at No.5 shaft for processing and loading.

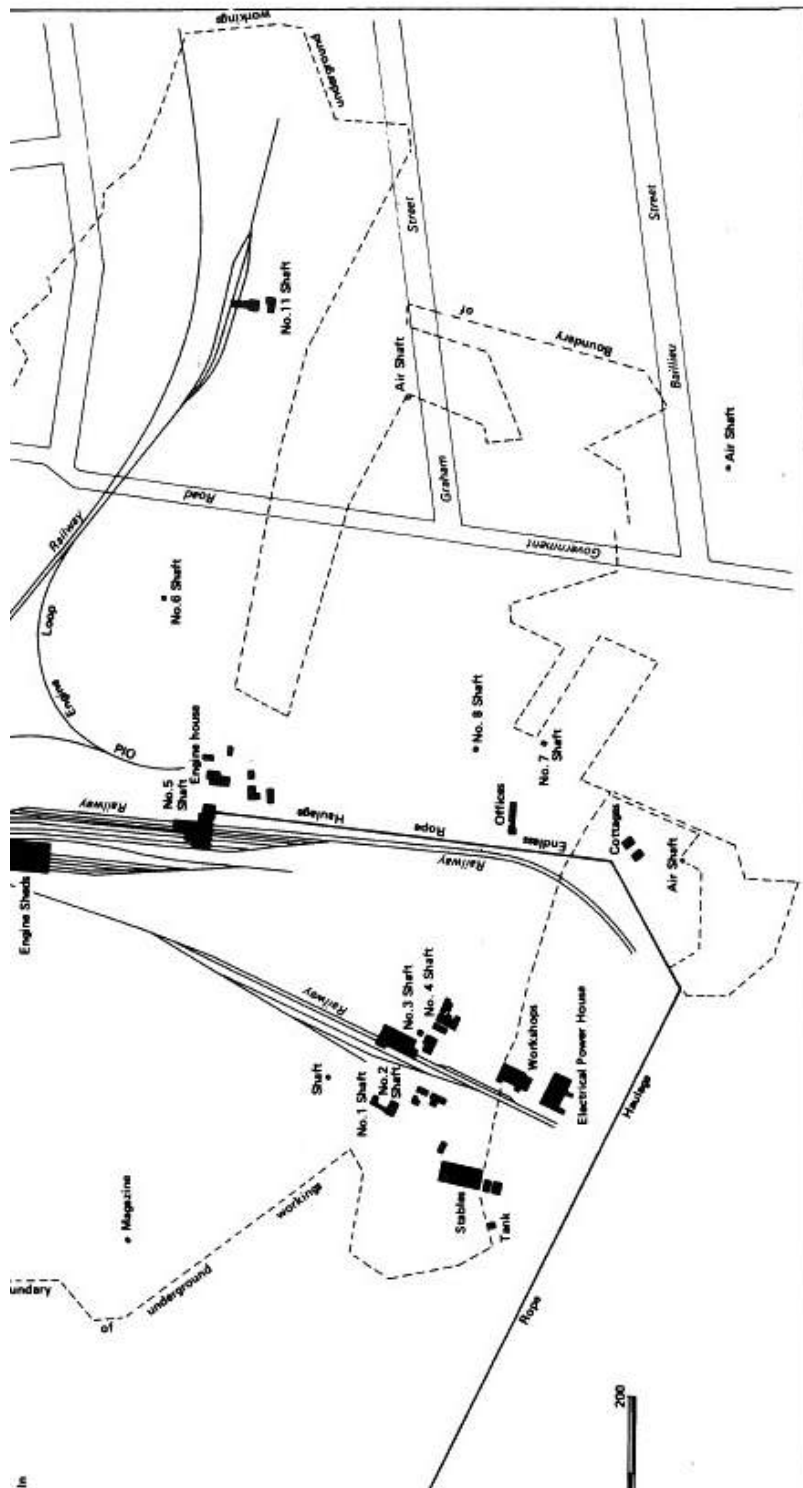


*Poppet Heads and Surface Plant of the Nos. 9 & 10 Shafts circa 1911, with No.12 Shaft at left. (State Library of Victoria)*

By mid-1911, coal was being raised at the rate of over 1,300 tons per day, with 900 men employed in mining and developmental work, and the General Manager confidently predicted that only the adequate supply of railway trucks was holding back output from reaching 2,000 tons a day, although ultimately it would take until the late 1920s for production to reach such a rate. After being under the control of the Mines Department since its inception, management of the SCM was formally handed over to the Victoria Railways Commissioners on 1st July 1911.



*Greeting the arrival of the first train at the State Coal Mine, on 23 Feb 1910, following completion of the Nyora-Wonthaggi Railway, laid at the*



*Plan showing the layout of sidings and shafts in the Central or Pioneer Mines Area of the State Coal Mines, Wonthaggi. (SCM Annual Report, 1911-12)*



### *A Model Township*

By March 1910, 730 men were employed by the Mines Department at the SCM and a population of 1,300 was estimated to be living in close proximity of the mine. Accommodation was initially provided in two vast camps or 'tent cities', one immediately to the east of the Pioneer Mines area and the other to the north closer to Powlett River. Tents to house from 2,000 to 3,000 people were supplied



and laid out by the Mines Department in

*Single men's quarters on Bourke Street Looking East, Powlett River Coalfields Camp, 4 January 1910.*

neatly

formed rows with reticulated water laid on and the provision of sanitary services, while slack coal was supplied free of charge. Residents could be thankful that the mine had not been established in the middle of winter, but as the months rolled on through summer, and hot northerly winds began to sweep across the plains, the camp became shrouded in a fine layer of dust. Dirt permeated into bedding, filled residents' nostrils and stained all clothing a uniform brown colour. One local newspaper reporter wrote how *"a gentleman of highly speculative tendencies traced a plan of the Wonthaggi township on the tablecloth and marked off the most valuable sites"* while a coating settled on the butter at the dining table so thickly *"that it resembled what is known among miners as 'the over burden'"*. Another reporter marvelled at the ingenuity shown by residents of the camp, describing the scene where:

*"A miner is busy constructing a bunk, another is making a rocking-chair, with a kerosene case for the seat. The usefulness of the kerosene case cannot be realised until one has been a few days in the Powlett River township. It acts as chair, meat-safe, or bread-bin, and with a board running through the centre as a shelf it can be made to hold all the groceries required for an ordinary establishment."*

In the irreverent way typical of miners, the main roads on which the tents were laid out were given names like Bourke Street, Spring Street and Finders Street after the main thoroughfares of Melbourne. Planning began in early 1910, for a neatly paid out model town, that was given the name "Wonthaggi" after a word from the local Bunurong indigenous language meaning "home".



*Miners Cottages, Wonthaggi, 18 June 1910. (State Library of Victoria)*

By June 1910, 100 modest two-roomed wooden cottages had been built at a cost of £20,000, to be rented out to mine workers' families, while several designs of more substantial brick houses were built for the different grades of salaried employees. In the 1911 Commonwealth Census, 3,300 inhabitants were recorded as living at Wonthaggi, while a decade later the population had grown to 5,170, making Wonthaggi the fifth largest town in Victoria. At Broome's insistence government built houses were restricted to rental only by employees of the SCM, but housing would remain an issue well into the subsequent decades and would at times restrict the recruitment of labour to the mines.



*Newly erected shops at Ludbrooks Corner, Wonthaggi township, 1910. Note the unsealed sandy road surface. (State Library of Victoria)*

### ***The Power Station***

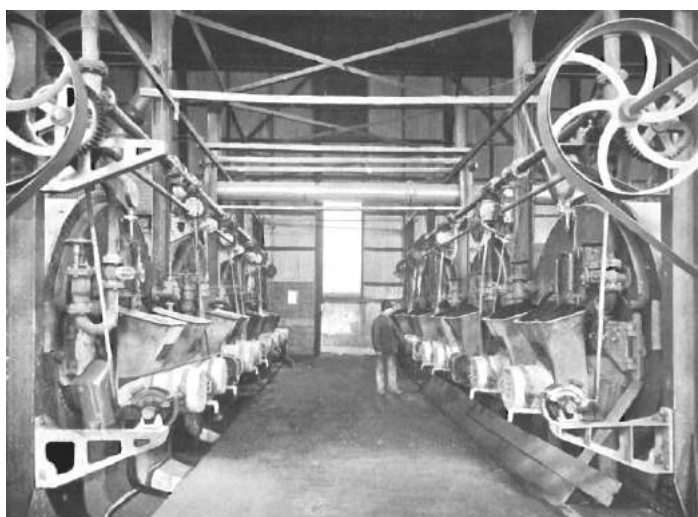
Although it is often stated that the SCM was “the first electric powered coal mine in the Southern Hemisphere”, this is not strictly speaking correct. The Coal Creek mine at Korumburra had installed an electric generating plant as early as 1900. However, in 1910, almost all of Australia's largest coal mines were still exclusively using steam-powered equipment.



*Installing Lancashire boilers at the State Coal Mine Power House in foreground, while behind the numbers indicate relative positions of the main working*

One of the early decisions made by Broome was to install a central generating station to supply electric power for all aspects of the SCM operations including winding, pumping, hauling, ventilating, surface lighting, coal cutting, and for running surface machinery such as conveyors and elevators at the heapsteads. Electricity would also be supplied for street lighting and domestic power and lighting in the township of Wonthaggi. By February 1911, contracts had been let for the main generating and distributing plant, which would initially consist of two 720 horsepower Browett-Lindley high-speed triple expansion steam engines direct-coupled to 500 kW generators, and one 530 kW Curtis mixed-pressure steam turbine driven generator set. Steam was supplied by a large bank of Lancashire double-flue boilers manufactured by Thompson & Co, of Castlemaine, operating at a pressure of 150 pounds per square inch with 100 °F of superheat. The choice of such boilers was somewhat unusual

*Interior of the Boiler House showing details of the automatic mechanical stokers adapted for burning slack coal. (SCM Annual Report 1911-12)*

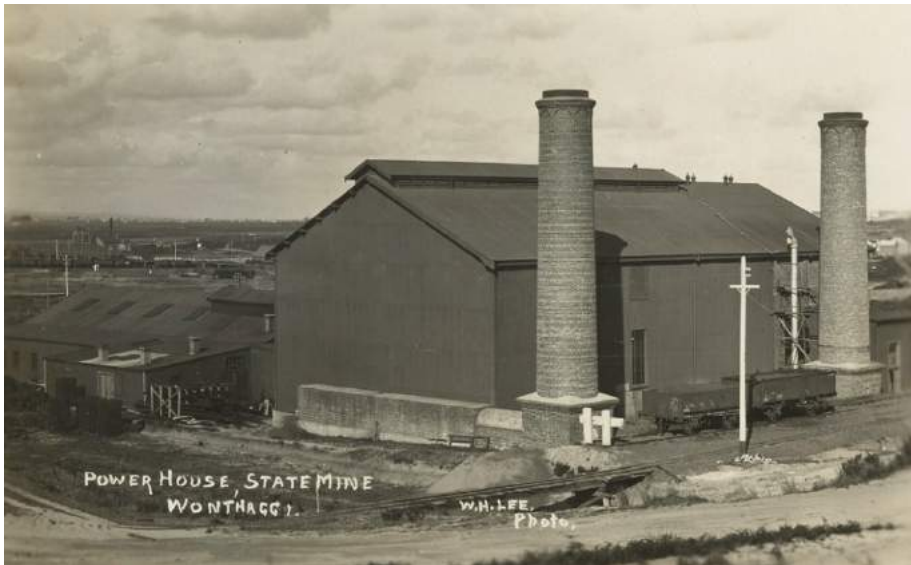


in

Victorian mining, as during this period the simpler single-flue Cornish style boiler was still very much in vogue, but the Lancashire design was ideally suited to burning slack coal. Each boiler was fitted with automatic mechanically-driven under-feed chain-grate stokers to reduce operating costs.

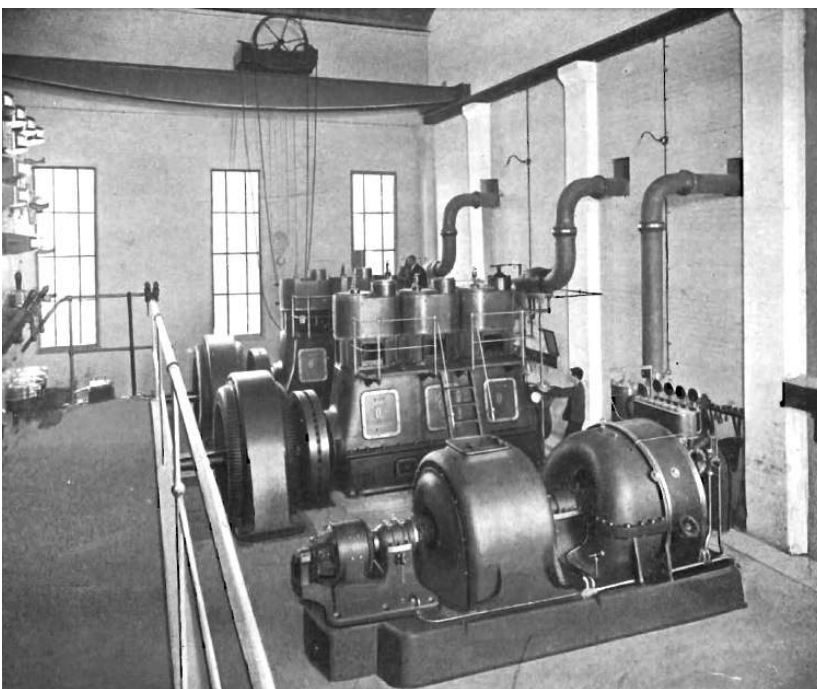
The site selected for the power house was an area of barren non coal bearing ground to the south of No.3 shaft. There a substantial brick power house building with two squat brick chimneys was erected using locally produced bricks from the SCM's own brickworks. By June 1912, the first generator had come online, and electrical current began to flow from the power house, with distribution as 3-phase alternating current at voltages of 415 for power use and 240 volts for lighting, adopting the standards that would later become universal throughout

Victoria. For the underground supply, motor generators sets were installed to convert the power to direct-current electricity at 250 volts.



*Exterior of the  
State  
Coal Mine  
Powerhouse.*

In 1934, the power plant was upgraded with the original Lancashire boilers being replaced by two pulverised coal fired Kidwell type water tube boilers providing a saving of £5,000 a year on the cost of fuel consumed. By this time one of the original reciprocating generating sets had been removed and two new Metropolitan-Vickers turbo-alternator sets, rated at 1,250 kW and 1,875 kW, were installed to supplement capacity. Following the World War II, a contract was let on 29th August 1946 for an additional 2,500 kW turbo-alternator to replace the remaining two original generating sets, however, problems with the supply of Victorian-made components saw the installation delayed for over five years.



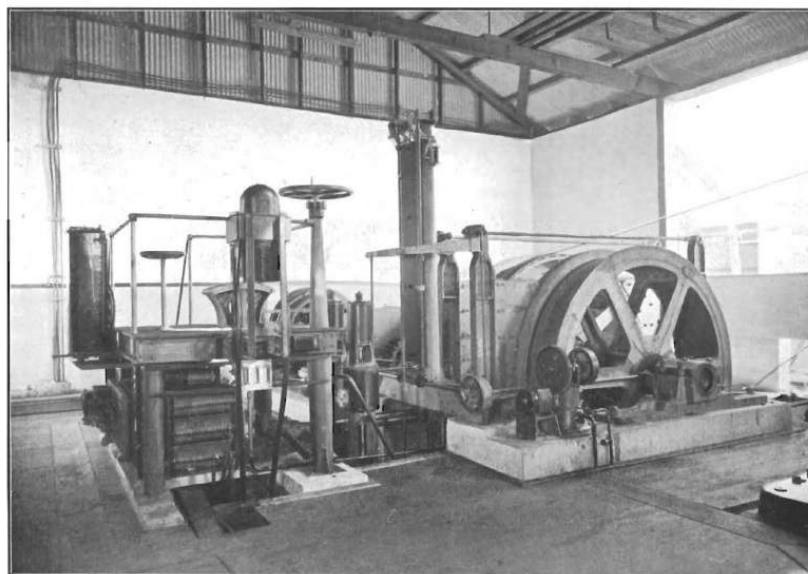
*Interior of the State  
Coal Mine  
Powerhouse, showing  
the reciprocating  
Browett-Lindley  
generating sets at  
rear and the Curtis  
mixed-pressure steam*



After discussions with the State Electricity Commission of Victoria, arrangements were completed for the State Coal Mines Power Station to cease operations on 3rd February 1967, with power supply for the mine and township being switched over to the statewide power grid.



*Sign of Winding Signal Codes from the State Coal Mine, Wonthaggi*



*Electric powered winder at No.9 Shaft Winding House. This equipment would later be transferred to Nos.16 & 17 Shafts of the Dudley Area in 1924.*

### *Mine Workshops*

By 1912, an extensive workshop complex had been developed to the north of the Powerhouse, including a blacksmith's shop, machine shop, electrical fitters' shop, truck-building & carpenters' shop. Here all the plant and equipment used in the SCM was maintained. In addition some items such as winding cages, mining skips and

parts of the winding and haulage gear were manufactured on site. Many

young apprentices received their training in the workshops over the decades.



*Interior of the machine shop at the State Coal Mines Workshops.  
(SCM Annual Report, 1911-12)*

*Working the Mines*

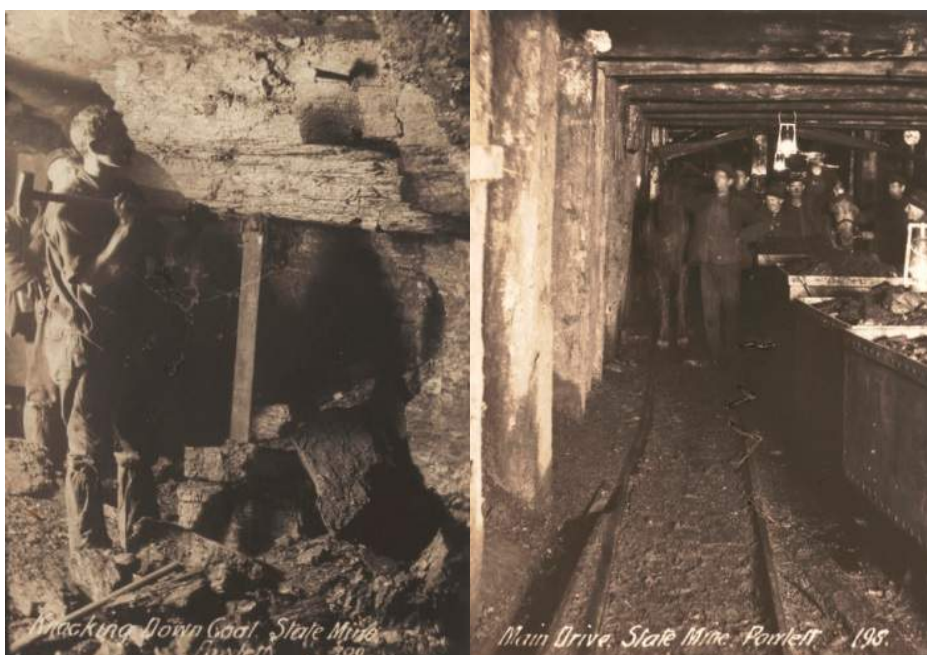
Each pit worked as part of the SCM complex was divided into working districts under the supervision of Deputies. The Deputies reported directly to Under Managers and Oversmen. By 1919, there were 49 Deputies employed at the SCM. Before the miners and other underground workers arrived for the first shift each morning, it was the responsibility of the Deputies to inspect working areas, noting the state of ventilation and equipment, if gas was present, and any changes that



*Miners Hewing Coal at the Face of a Drive from No. 9 Shaft.*

had occurred to the roof or sides that might present a danger to their men. A similar inspection would be carried out during the afternoon shift. The Deputies also directed the wheelers and roadmen. The duties of the roadmen were to lay rails into the working faces and ensure that all roads were kept clear, while the wheelers were in charge of the ponies bringing full skips from the working face back to

the plat where clipper boys took charge attaching the skips to the endless cable or loading them into a winding cage for haulage to the surface. The wheelers would also return empty skips to the working faces for the miners. In 1919, the SCM employed an average of 160 roadmen and shiftmen, 160 wheelers and 44 clippers.



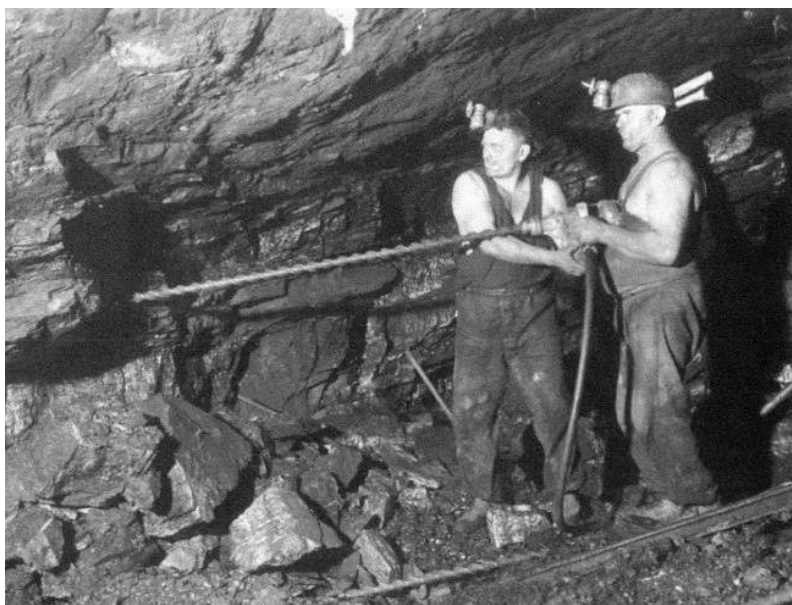
The miners were amongst the best

*(Left):  
Knocking  
down coal at  
the Longwall  
Face, State  
Coal Mine,  
Powlett River.*

*(Right):  
Wheelers with  
Pit Ponies in  
the Main  
Drive, State  
Coal Mine,  
Powlett River.  
Note the use  
of hurricane  
kerosene  
lamps*



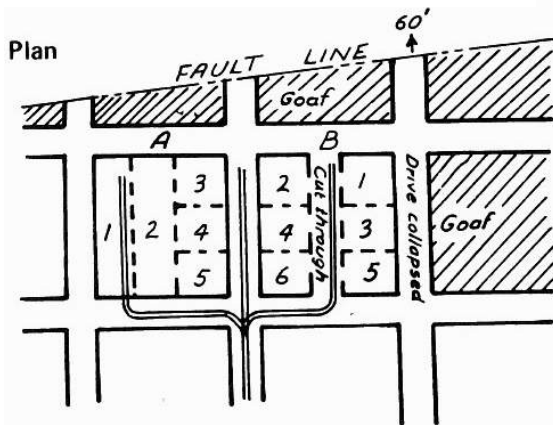
paid and most highly skilled workers. Their work was also the most arduous and dangerous, being constantly exposed to the risk of noxious gas, dust, accidents with explosives and rock falls, often having to work in spaces so low in head room that they could only kneel or crawl. For most of the life of the SCM, miners were paid by piece rates, based on the amount of coal they 'hewed' or extracted each shift, rather than by hourly wages. The traditional 'cavil' system as adopted at SCM; transferred directly from British mining practice. The miners organised themselves into



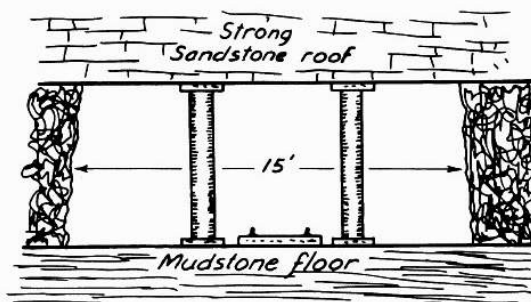
*Boring 'shot' holes for blasting coal in the Western Area, circa 1950s. The use of hand-held electric boring machines was one of the few innovations introduced after World War II. (Sleeman, 2008)*

working parties of four and every three-months a cavil ballot would be held to allocate work sites to each work party. Because the thickness of the seams and working conditions varied enormously the cavil was a means of ensure that each miner got a fair go and was not unduly disadvantaged for more than a few months by being allocated a poor work area. Different contract rates were offered in areas of the mine that were better suited to older or less fit miners and special allowances were offered for those willing to work in the most difficult or wet ground. Within each cavil two men would work the day shift and two the afternoon shit. As skips were filled they attached a numbered token or tag to them so that the tallyman could keep a record of the amount of coal extracted by each party. At the end of the fortnight all the pay earned by each party was divided evenly amongst the four men. For this reason each party was allowed to choose their own workmates.

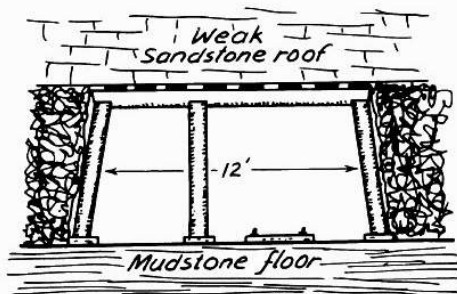
## Methods of Pillar & Bord Mining



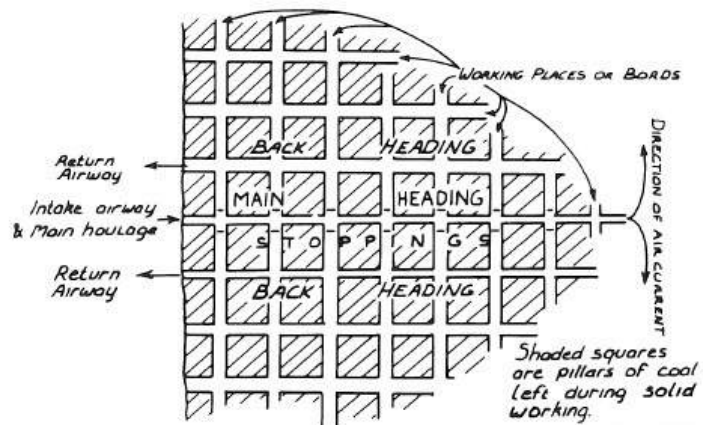
Cross-section



Cross-section



At Wonthaggi coal was extracted using traditional underground coal mining methods that had developed over centuries in Britain and Europe. The two main methods used were known as 'Pillar and Board' and 'Longwall' mining. In the early years when the Central Area of the Dudley Basin was being mined, pillar & bord was the method most commonly adopted. Once the shaft had been sunk to open up the seam, parallel headings were driven 10 ft (3 m) wide and 66 ft (20 m) apart to the boundary of the coal - generally where the seam was cut off by a fault. At intervals of 66 ft (20 m) crosswise tunnels 15 ft (4.6 m) wide, known as 'bords', were driven to divide the entire area up onto blocks known as



*Diagrams showing sequence of cutting out 'lifts' when removing a pillar (top); Timbering for*

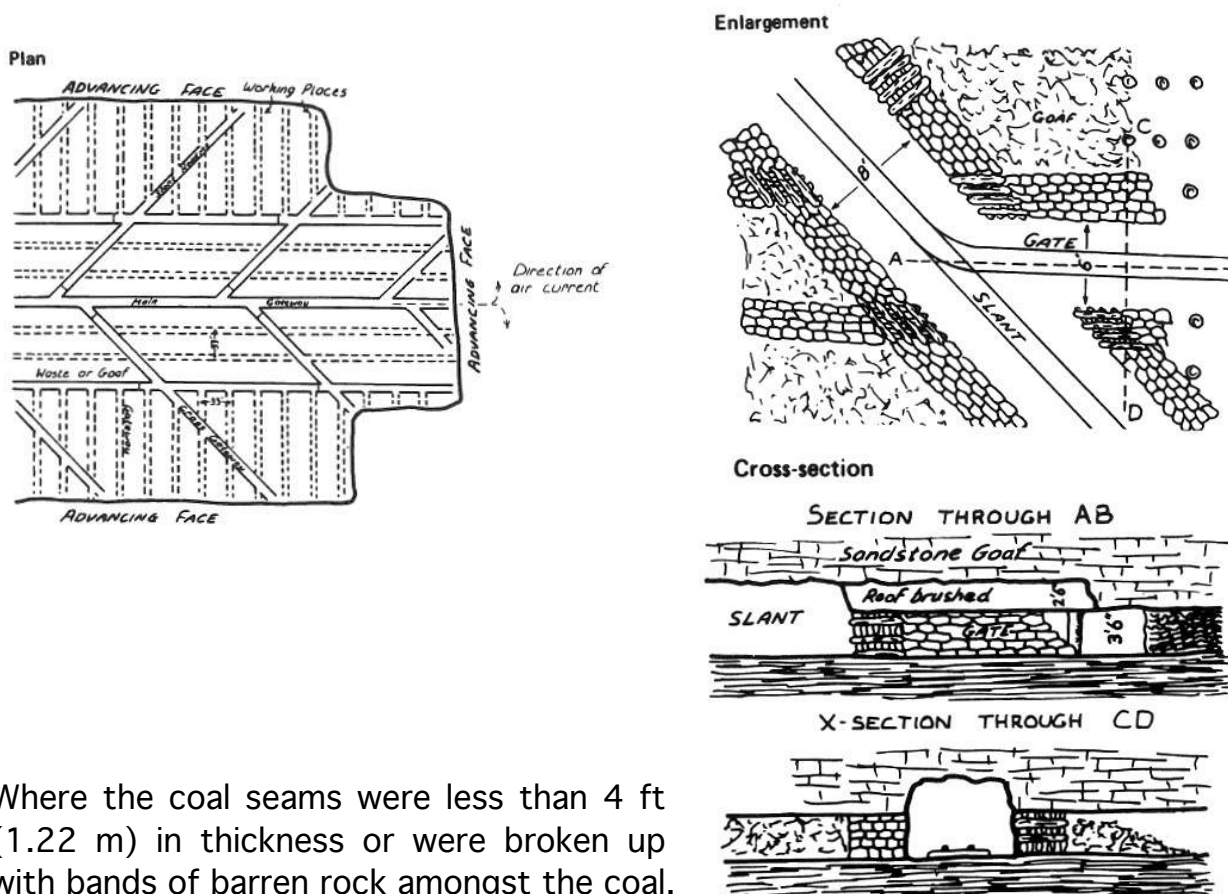
*Main Headings and Bords (left) and Typical layout of Pillar & Bord Mining (right).  
(J. McLeish, "On Practical Underground Work at the State Coal Mine", Proceedings of the Australian Institute of Mining Engineers, No.14, 1914)*

'pillars'. This process removed about 40% of the total volume of coal and opened up the seam to ventilation, allowing it to off-gas. The pillars were generally sufficient to support the roof, although square timber sets were usually inserted to support the tunnels and where the overhead rock was broken or soft, timber boards called 'laths' would be driven across the top of the sets to prevent rocks falling from the tunnel roof. The process of extracting the remaining coal was then begun from the outer extremities working back towards the shaft, in a process the miners called 'working towards home'. The pillars were extracted in a careful sequence of sections known as 'lifts' (as shown in the diagram). Once all the lifts

in a pillar had been extracted the timber props were removed and the roof was allowed to collapse, creating an area known as the 'goaf'. The pillar & bord method involved a lot of preliminary work in blocking out the ground and was generally most cost effective only where the seam was at least 4 ft (1.22 m) in thickness.

### Methods of Longwall Mining

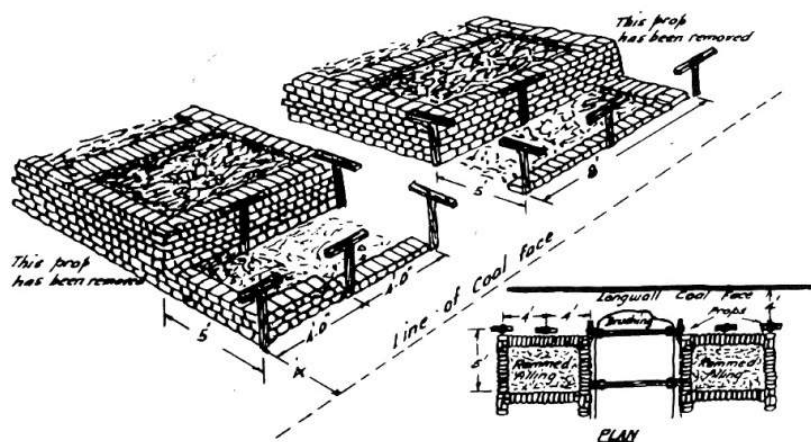
*Diagrams showing sequence of advancing the longwall face (left); Methods of forming Slant Headings and Gates for accessing the working face (right); and Method of filling worked out ground with pack walls and 'goaf' (below). (J. McLeish, "On Practical Underground Work at the State Coal Mine", Proceedings of the Australian Institute of Mining Engineers, No.14, 1914)*



Where the coal seams were less than 4 ft (1.22 m) in thickness or were broken up with bands of barren rock amongst the coal, the longwall method was generally adopted.

In this process once the shaft had been sunk, an area known as the 'shaft pillar' was marked off to protect the shaft from collapse. Then extraction of the coal began across a long line for face that proceeded forward gradually moving away from the shaft until the outer boundaries of the seam were reached. As the 'longwall' working face moved forward, the area left behind where the coal had

been extracted was filled with waste rock in order to support the roof. Packwalls of neatly stacked larger rocks like drystone walling were constructed along either side of each tunnel or heading, with the area



behind the packwalls being filled with loose rubble, again known as 'goaf'. In order to maintain access to the working face and allow efficient coal extraction and ventilation, angled drives known as 'gateways' were left open at intervals of 30 ft (10m) running diagonally outwards from the main heading. Gateways needed to have at least 5ft 5in (1.6 m) of headroom to allow for the passage of the men, ponies and skips. In order to achieve this, the roof would at times have to be ripped down or the floor excavated using a process known as 'top brushing' or 'bottom brushing'.

Once the power station came into operation in 1912, imported German electric coal cutting machines were introduced in parts of the No.5 shaft area of the SCM,



*Working an electric longwall coal cutting machine. No.5 Pit. 1912*

where the seam was only 2½ ft to 3 ft (0.75 - 0.9 m) in thickness and required longwall mining. The coal-cutting machines took the form of a large electric chainsaw that was used to make a cut along the bottom of the seam, before blasting the coal down for loading. Similar machines had previously been used in the Coal Creek mine at Korumburra as early as 1902, and at Wonthaggi were initially found to make a saving of 1 shilling a ton in the cost of

mining compared to fully hand mining, whilst the coal produced was in larger lumps with a lower proportion of slack, increasing its value by another 5d per ton. The electric coal-cutting machines were subsequently used in the areas mined from Shaft Nos.9 & 10, however, ultimately high maintenance costs, difficulties with their use in smaller broken seams and ongoing resistance from the miners' union would see the machines withdrawn in later years. A change was later made to other forms of mechanisation such as electric winch driven scrappers.

### ***Employment & the Union***

Apart from the initial parties recruited for shaft sinking and opening up the mines, other experienced miners were attracted to the Powlett River coalfields in the early years by the relatively high wages that



*Day Shift 'going on' at No.4 Shaft, State Coal Mine, Powlett River Coalfields, 4 January 1910.  
(State Library of Victoria)*

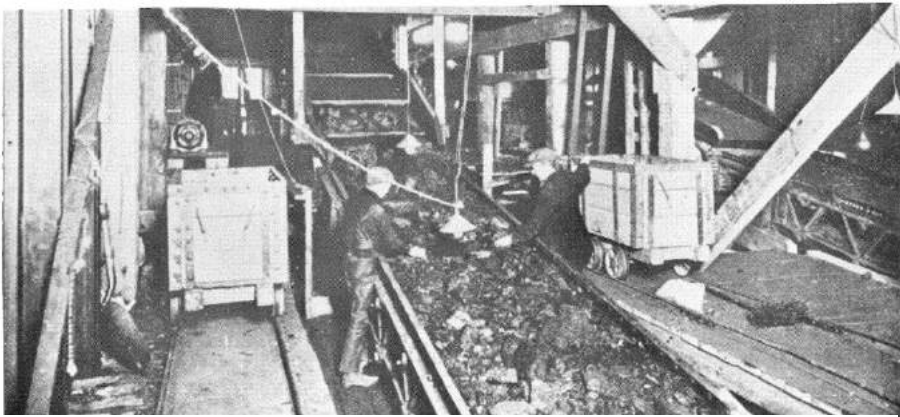
could be earned. By September 1910, miners at the SCM were earning nearly 14s 4d per shift, compared to average wages in the Victorian gold mining industry of 8s 4d to 11 s per shift, and as low as 7s 2d per shift at Bendigo. As the leading mines at Walhalla closed over the next few years, many miners' families packed up their belongings and boarded a train to Wonthaggi, while the ongoing industrial unrest and depressed wages of just 10s per shift at other black coal mines in South Gippsland saw many of Victoria's most experienced coal miners also drift to the new mines at Wonthaggi.

Initially the miners enjoyed relatively harmonious relations with the SCM management, but on 4th April 1912, the first significant labour dispute arose when employees worked off on strike over three demands:

1. The refusal of the men to continue to work on the night shift (three shifts having been worked continuously since the mine first opened);
2. Their refusal to accept the reduced hewing rate, which had been fixed for working two shifts when the piece-work rates were first introduced; and
3. Their demand that only the "first on last off" principal should be applied in dispensing with the one shift of men, nearly 400, which their refusal to work the night shift necessitated.

While the management were happy to abolish the night shift, they insisted on a reduction of the hewing rate from 3s to 2s 9d per ton and the right when reducing hands for management to consider a worker's efficiency, as well as his length of service. In the end after a six-week strike, the miners finally agreed to most of the terms sought by the management and a 12-month agreement was signed. Another agreement was signed the following year, and by the time that it had expired in March 1916, the First World War had broken out placing labour in short supply and giving the Union the upper hand.

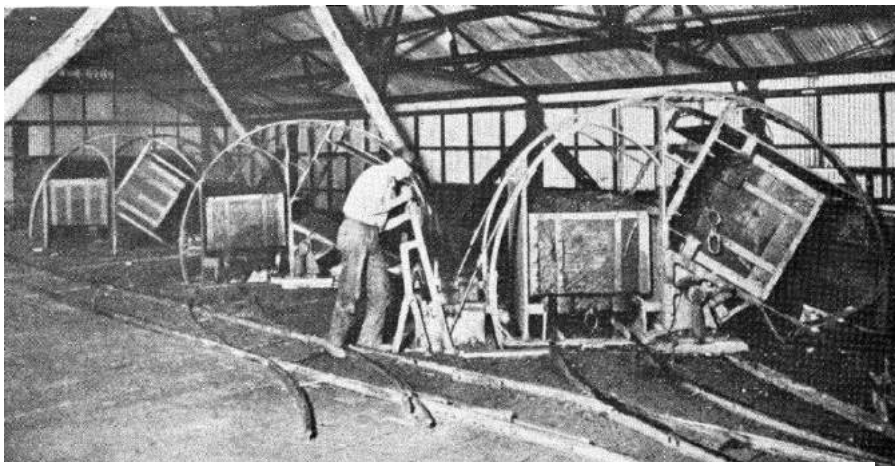
In 1916 the Victorian Coal Miners' Association which originally acted on behalf of Wonthaggi miners merged with other unions to form the Australian Coal & Shale Employees Federation. Over the next few years the Federation and new Commonwealth arbitration acts would help win significant concessions for Wonthaggi miners, with the average wage increasing from 14s per shift in 1916 to 26s shillings per shift by 1922. The fact that the miners were paid by piece rates ensured that the Union had a constant stream of work. At its simplest, the Union was responsible for conducting the quarterly cavel ballot and making sure that individuals did not abuse the system. The Union also had a role to ensure that skips and their full contents of coal were correctly weighed and awarded to each party of miners, and frequently was called on to intercede on behalf of miners at risk of being dismissed for being 'under the minimum' output, arguing for mitigating circumstances where illness or other family circumstances were a consideration.



*Workers on the 'picking' or sorting conveyor at the No.5 Heapstead. Their job was to 'pick' and remove any lumps of barren rock mixed with the coal, placing the waste in the small skips behind them. (Fahey, 1987)*

Although regularly employed miners at Wonthaggi could earn good wages throughout the 1920s, several unresolved problems threatened the future of the mine and an air of insecurity hung over the town. Because the SCM was owned and managed by the

Victorian Railways, who were also its major customer, demand for the mine's product was inevitably tied to the volume of railway traffic and the railways' decisions about whether to source coal from its own mine or on the open market from the mines of competitors in New South Wales or other privately-owned Gippsland mines. For the railways, the SCM was seen more as an insurance policy against failure of imported coal supplies or excessive prices, rather than as an enterprise that should be profitable in its own right. In 1929-1930, there was a 16-month lockout of miners in New South Wales over reductions in wages and the SCM achieved its last year in profit. For the remainder of the SCM's life the operation would be run at every increasing annual losses.



*A bracceman discharging skips of coal at the No.5 Heapstead with the aid of a 'tippie' that revolved or tumbled over automatically under the weight of the loaded skip, releasing the coal into a hopper before returning the empty skip. (Fahey, 1987)*

As the Depression began to bite, railway traffic in Victoria declined by 14% for passengers and 19% for goods and livestock. As NSW collieries returned to work a price war broke out and the cost of imported coal fell by 42%. Over the next few years management at the SCM attempted to progressively reduce

miners' wages and the size of the workforce, as it was felt that a smaller workforce more fully employed without 'short shifting' would be less likely to contribute to industrial unrest. When Broome died after a short illness in 1932, he was replaced with John McLeish, formerly Mining Manager, who was promoted to General Manager. McLeish was never as popular with the SCM workforce as Broome



had been and his abrasive manner and relentless drive for improved efficiency soon had much of the workforce on edge. A series of dismissals on matters of relating disobedience brought things to a head and led to a mass workout of the miners on 2 March 1934 beginning a five-month long strike. The dispute was finally settled on 26th July after intervention by Robert G. Menzies, then Victorian Minister of Railways, and later Prime Minister of Australia. The resolution was to prove a major capitulation for Menzies, who would never forget the role played by the militant Union officials at Wonthaggi, whom he suspected of being communist sympathisers. Unfortunately for the SCM workforce, their victory in the 1934 strike did little to restore wage levels of the late 1920s or halt retrenchments, which saw the SCM workforce decline to just 1,100 by 1935.



*Pit Ponies were a defining part of operations at the State Coal Mine throughout the operating life from 1909-1968. The ponies were stabled at the surface and lowered down the shaft each day to begin their shift. Note the carbide lamps on the men's foreheads.*  
(State Library of Victoria)

### ***McBride Tunnel***

In 1915, work commenced on opening a new area to the north of the Central or Pioneer Mines area. Instead of using shafts, an access tunnel or adit was developed, named after Sir Peter McBride (1867-1923), who had been Minister for Mines during the initial development of the SCM and a staunch ally of the state-owned enterprise. Beginning near the No.5 Brace, the McBride Tunnel was driven northwards through sandstone and mudstone at an inclined grade of 1 in 5. Due to extensive faulting, the coal was located on four separate benches, and numerous smaller blocks. Level 1 at 518 m from the tunnel portal and Level 2 at 580 m were the first benches opened. By 1921 these benches had produced almost a million tons of coal from seams two metres in thickness. By 1917, Level 3 was also opened at 1,280 m from the portal, followed by Level 4 a further 210 m beyond it. By the early 1920s the McBride Tunnel was producing almost half the total output of the SCM and was crucial to profitable operations.



*Empty skips descending through the portal of the McBride Incline Tunnel. Note the electric wires for powering underground equipment at the right.*

*(State Library of Victoria)*

Early on the morning of Sunday 10th August 1924, a thin wisp of smoke was seen issuing from the No.18 airshaft north of the McBride Tunnel, alerting management to the presence of a fire in the mine. Pumps and hoses were quickly brought into action to dampen the fire down, and a party of four led by Assistant Mine Manager Mr J. Johnson were sent below equipped with Draeger Safety

Equipment, to investigate the extent of damage. Unfortunately an explosion occurred and the party was overcome by a sudden rush of foul air before they could don their gas masks. One of the men managed to reach the surface and a second was subsequently rescued. By the afternoon the coal seam was well alight and support

*View looking down the incline haulage way from the No.5 Shaft Heapstead towards the portal of the McBride Tunnel in the background.*  
*(State Library of Victoria)*



timbers were also beginning to burn. The town water supply was cut off to allow maximum pressure for the fire-fighting efforts. Rescue parties attempting to reach the two missing men, were led by Mine Manager John McLeish, but found themselves repeatedly driven back by thick smoke and foul air. By the evening, George Broome reluctantly made the decision that they would have to seal and flood the mine. By the Monday morning miners had sealed off all openings and the town drain was diverted into the mine. It would take a month before the fire was finally put out and mine drained sufficiently to enable the two miners' bodies to be recovered.

Subsequent investigations revealed that half a mile from the mine entrance, a fall of stone at the Level 3 bench had cut electrical cables causing a short-circuit that then ignited the coal. The closure of McBride Tunnel threw 600-800 men out of employment. The Union agreed to increase operations at Nos. 9 & 10 shafts to three shifts enabling production to be lifted from 300 to 650 tons a day. Rehabilitation of the McBride Tunnel area would take over a year, with output finally returning to 1,000 tons a day by November 1925.



*Surviving remnants  
of the McBride  
Tunnel Portal.*

Up to 1934, Level 3 of McBride Tunnel produced 1,388,000 tons from a seam 1.8 m in thickness and Level 4 produced another 778,000 tons.

### *East Area*

Unlike the McBride Tunnel, when the development of the East Area in the Kirrak Basin commenced in 1915-16, two incline tunnels were driven to provide a dedicated Main Haulage incline and a second 'back heading', used for access of miners and materials. Being situated almost 2km from the existing Central or Pioneer mining area, development of the East Area required the construction of a completely new set of surface installations, including haulage winders, air compressors and ventilation fans, coal handling plant, railway sidings, an elevated heapstead or brace, change rooms, offices, workshops and stables. By 1916, the first bench had been reached at 242 m from the surface. It was found to be



considerably faulted so its development was delayed until the second bench could also be opened. Due to a down throw fault the second bench was not

*Thin coal seams of only 0.75 m thickness were just one of the difficulties that limited miners' productivity in the East Area pits.  
(Parks Victoria)*

reached until 731 m had been driven.



By 1919, the third bench was reached 1200 m from the tunnel portal and by the following year production was at 350 tons per day. A downcast airshaft No.15 was completed in 1922 and a ventilation fan installed. By 1922 production had reached 600 tons a day. After encountering another down throw fault, the tunnels were extended another 370 m to open the No.4 bench by 1924, but production from the lower levels did not start until 1930. No.18 shaft was sunk as a downcast ventilation shaft for the No.4 bench workings and because of the distance of the lower workings from the tunnel mouth, miners were travelled to and from work at the lower levels by the No.18 Shaft, while the coal extracted was hauled up the main incline tunnel.

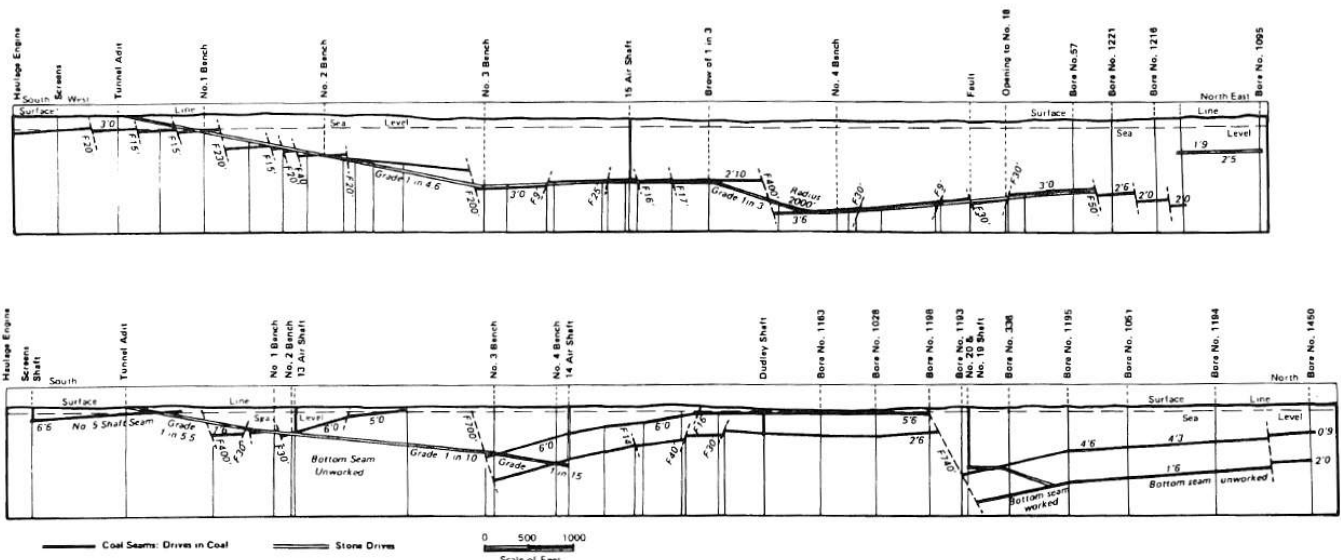


*The haulage line of the Main Heading Tunnel is today one of the features of the heritage mining precinct at the East Area.  
(Parks Victoria)*

### ***Station and Dudley Areas***

During the years following the World War I, the Station and Dudley mining areas were opened to the north and north-west of the township in an effort to maintain production levels at around 500,000 tons a year. The Station Area was opened by means of another incline tunnel started in 1919, from which 300,000 tons of coal were won over the following decade.

In 1924, work began on opening the Dudley Area began with the sinking of Shafts Nos.16 & 17 to a depth of 315 ft (96 m). The electric winding gear formerly used



at No.9 Shaft was transferred to the Dudley shafts and a new heapstead with tipples and screening plant was installed. By the end of 1924 change rooms – including a bath and drying rooms – had been built and new sidings had been laid by the railways. By 1927, output from the Dudley Area was over 1,000 tons per day. Production from the new Station and Dudley areas, together with the Eastern Area helped the SCM reach its peak output of 662,159 tons in 1929-30, when the workforce also reached its highest level of 1,776 people. In achieving these ‘winnings’ Broome and his engineering team had utilised some of the most modern above ground coal handling plant available, coupled with highly efficient shaft and incline installations, however, productivity below ground was being increasingly hampered by Wonthaggi’s inherently thin and faulted coal seams. Such conditions limited the use of mechanisation underground and would leave the tasks of coal hewing and extraction as one of the State’s most difficult and physically demanding jobs.

### *Western Area*

The Western Area of the Dudley Basin was opened up in 1934-35, with the sinking of Shafts Nos. 21 & 22. Many of the buildings from the former McBride Tunnel area were dismantled and re-erected at the Western Area, while the No.5 Brace was redesigned to receive coal brought from the Western Area shafts via another endless rope haulage way.

Here again the coal seams proved to be too thin to arrest the steady decline in SCM output, with the top seam averaging only 1½-4 ft (0.5 to 1.2 m) in thickness and the lower seam 1⅓-3 ft (0.4 to 0.9 m).

Although the Western Area mines produced almost 1.9 million tons up to their closure in 1968, the coal was soft and generally of inferior quality. Labouring under these difficulties the Western Area output was unable to arrest the slide in SCM production, which following the closure of the McBride and Eastern Area Tunnels. After the tragic explosion at No.20 Shaft, SCM production declined to only 247,451 tons in 1937, less than half the desired output.



*Miners riding a ‘kibble’ bucket during sinking on No.20 Shaft.(Sleeman,2008)*

### *The 1937 Disaster at No.20 Shaft*

The worst accident in the history of the State Coal Mines occurred in early 1937, on a day when ironically most of the workforce had gone on strike to attend a stop work meeting in the township at the Union Theatre. As mining entered deeper ground with poorer quality seams, conditions underground had become more challenging. In 1930, Shafts Nos. 19 & 20 had been sunk to open up seams at the northern extremity of the Dudley Basin at depths of 704 and 725 ft (215



m & 221 m). Good coal 8 ft (2.4 m) thick was found near the shaft, but it thinned significantly to just 2-3½ ft (0.6 to 1.0 m) in thickness to the north and east and became splinty with bands of rock intrusions. Despite the installation of a large ventilation fan on the surface at No.19 Shaft, miners soon began to notice problems with off-gasing of methane in the deepest workings. More than one miner reporting hearing strange 'whoosing' sounds and seeing the air in isolated pockets of the workings burning near the roof with a dull blue flame. In February 1931, an explosion occurred underground at No.20 shaft that killed four miners, although fortunately the mine did not catch fire. Gas testing measures were stepped up and the area was declared a 'safety mine' in which only enclosed Davy type safety lamps were allowed to be used underground. By the mid-1930s, Union concerns over mine safety had become increasingly vocal, with almost one in two miners having suffered some form of accident in the workplace.

The morning of 15th February 1937 began with an oppressive atmosphere as a hot northerly wind blew across the flat coastal plains surrounding the township. At the No.20 Shaft north-west of the township only a small crew of 14 overmen, deputies and maintenance workers attended for the start of the shift and proceeded underground to attend to some maintenance tasks, while most of the miners drifted towards the Union Theatre for the scheduled start of the meeting at 10:30 am. Shortly before the meeting commenced, those on the surface at No.20 Shaft heard a dull thud from underground and felt the ground shudder. A



*Aerial view of the Nos. 19 & 20 Shaft Poppet Heads during the 1937 disaster. (State Library of Victoria)*

sudden rush of air shot up both shafts hurling the 3 ton safety cages 150 ft (46 m) upwards crashing into the poppet heads, followed immediately by an ominous

plume of dust and smoke that rose 100 ft (30 m) into the air. A journalist for the *Wonthaggi Sentinel*, would later write that *“like wild fire, the news spread and miners rushed to motor cars, trucks, bicycles and any other mode of conveyance to get to the scene of the explosion, where a number of fellow miners were in danger. All the troubles of the previous week were forgotten”*.

Rescue parties were hurriedly organised with breathing apparatus but debris had to be cleared from the shaft before they could get below. At the No.20 Shaft General Manager John McLeish took charge. Accompanied by three volunteers and armed with safety lamps and a canary they descended the shaft only to find that the cage jammed 300 ft (91 m) from the bottom. McLeish ordered the cage back to the surface and weighed it down with rocks, then had it repeatedly ‘dropped’ down the shaft until a path was battered through the debris. Once the rescue parties



*Rescuers inspecting the devastation underground after the 1937 explosion.*

reached the workings it was soon apparent from the scene of destruction that none of the 13 men below at the time of the explosion had survived, but it would take a week to locate and recover all the bodies. A subsequent inquest was unable to pinpoint the precise cause of the explosion, although it was suggested that a naked flame was probably involved. In April a Royal Commission was appointed to investigate the circumstances surrounding the disaster and although no direct negligence on the part of management was found, it did recommend a number of amendments to the regulations governing working conditions in the mines.



The strike that had preceded the explosion dragged on until late May before a resolution was finally reached and the workers agreed on a return to work. Public unrest about the way McLeish had handled the dispute came to a head on May Day when his effigy was publicly burnt in the town. Amongst the changes to working conditions that occurred after the explosion was the introduction of electric safety lamps in place of carbide lamps throughout the SCM, with the exception of the Western Area. In addition shift rates replaced contract rates, although McLeish would lament that they had the effect

*Davy type safety lamp from the State Coal Mine, Wonthaggi. (Museum Victoria Collections)*

of reducing output by 40%. A year later contract rates were re-introduced.

### ***Kirrak Area***

As output continued to fall short of the half million ton production target throughout the late 1930s, permission was given to develop the Kirrak Area at the north-eastern area of the field, where additional reserves of 3 million tons of coal had been proved by drilling.



***Heapstead and Poppet Head of Nos. 23 & 24 Shafts, Kirrak Area, circa 1950s. Surface facilities included a bicycle shed for the miners. (Sleeman,***

In Feb 1938 work commenced on sinking two of the deepest and best equipped shafts on the field. Worked slowed, however, after the outbreak of World War 2 as deliveries of materials and equipment were delayed. In 1945 the Kirrak area was temporarily closed and the men transferred to Nos. 18 & 20 shafts. The Kirrak area reopened in 1955 and continued to work until the final SCM closure, with only 463,680 tons produced in total.

Geological conditions proved challenging through the life of Kirrak

and much of the coal produced was unsuitable for locomotive use. Given its isolation at the north-eastern end of the mining area, Kirrak required a complete separate set of surface installations including its own heapstead and a branch railway with sidings, which meant that the capital outlay required never really justified the disappointingly small output.

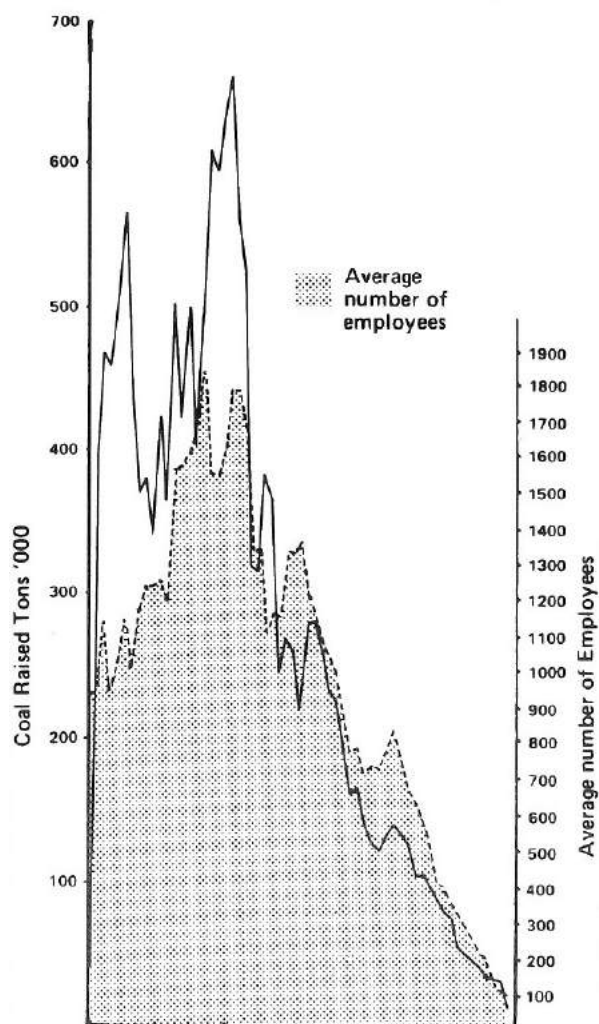
### ***Demise & Closure***

Following World War II, the Victorian Railways moved quickly to replace its aging coal-fired steam locomotives with diesel locomotives, while newer steam locomotives ordered just after the War were equipped with oil burning apparatus. Demand for coal by the railways continued to decline and losses at the SCM steadily mounted to the point where they exceeded £1 for every ton of coal produced. In 1958, a bombshell hit the town, when the Minister for Railways ordered that 100 men at the SCM be dismissed to reduce the losses. After a large public protest meeting in the town the order was withdrawn and replaced by a scheme offering voluntary early retirement.

Although reopened in 1955, the Kirrak Area failed to live up to its original expectations. The seams were broken up by a tremendous amount of faulting and the working conditions were hot and dusty with temperatures underground often reaching 85 °F (29.4 °C) with very high humidity. In October 1964, a fire broke out in the Kirrak Area compressor house that destroyed the change rooms and

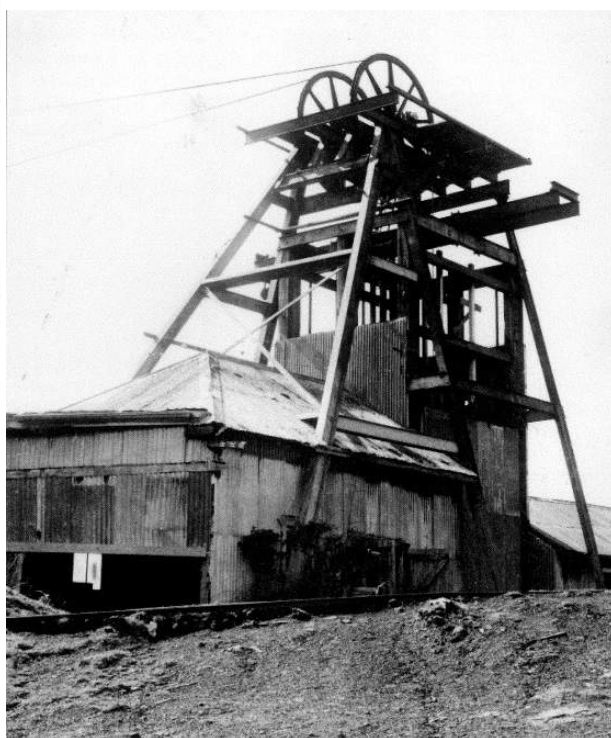
winder house with its ancient direct-current machinery, forcing the mine to temporarily close while repairs were undertaken, with the miners being transferred to the Western Area.

By 1964, employment at the SCM had dropped to 230, and by June 1968, had declined further to just 112 men, of whom only 51 were miners, as many older employees reached retirement age. Mining operations in the Western Area pits finally ended on 30th August 1968, and the last mining crews were withdrawn from the Kirrak Area pits just prior to Christmas 1968, with the whole of the State Coal Mines officially closing on 31st December 1968.



*Production and employment at the State Coal Mines over its 59-year lifespan.*

*Nos. 21 & 22 Shafts Poppet Head in the Western Area at the time of closure of*





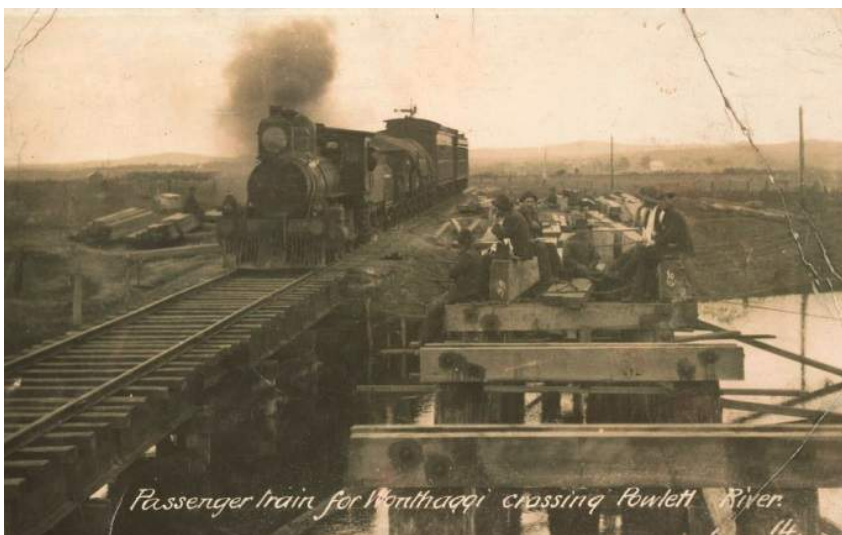
## Kilcunda Railway Viaduct



(Bass Coast Shire)

The Kilcunda Viaduct was constructed in 1911 for the Victorian Railways as part of the Woolamai-Wonthaggi Railway. It was the second bridge on this site, because initially a temporary bridge was built alongside the site chosen for the permanent bridge when the railway was hurriedly built constructed over a 10 week period from December 1909 to February 1910, in order to provide access to the new State Coal Mines at Wonthaggi. The 'permanent' structure that survives today was completed later and brought into service in 1911.

The structure is a single-track fifteen span all-timber railway bridge, with a total deck length of 300 ft (91.4 m) and a maximum pier height of 40 ft (12.1 m). It was the largest of several similar bridges built for the Woolamai-Wonthaggi Railway, and is a superb example of a once ubiquitous form of timber bridge used by the Victorian Railways. Although commonly referred to as a 'timber trestle bridge', the piers of this structure were actually built with driven piles.



***A passenger train crosses the temporary bridge (at left) during construction of the permanent Powlett River crossing on the Woolamai-Wonthaggi Railway. Note the use of recycled wrought-iron girders on the temporary bridge similar to those used on the Walhalla***

This style of bridge was first developed by the Victorian Railways in the 1880s in order to reduce the cost of railway construction and would be widely used on new railways until after World War I. The design utilised locally-sourced eucalypt hardwood timbers and was able to be erected without any heavy lifting cranes. Once completed these bridges could be main-tained by the selective insitu replacement of worn or rotten timbers without the need to dismantle the structure, because each member was duplicated allowing any individual piece to be removed



and replaced while the other members continued to hold the structure up.

Kilcunda Bridge was originally built with angled two-pile timber piers - an innovation on the earlier standard pattern of two vertical piles per pier. Because of the unusually heavy traffic to which this railway was subjected with frequent heavy coal trains, two additional vertical timber piles have been added to the centre of each pier at a later date, and the spans which originally were carried by four timber beams, have been strengthened



by the addition of two extra beams, giving a total of six beams per span, which is a very unusual feature. Later bridges of this type were often modified by the replacement of the timber beams with steel I-beams or rolled steel joists, as can be seen on the lower level bridge over the Powlett River on the same line, which is also still standing.

The Nyora-Wonthaggi Railway closed in 1978, a decade after the last coal trains left the State Coal Mine, and the bridge was left abandoned until being refurbished as part of the Bass Coast Shire Rail Trail that opened in 2006. The Kilcunda Railway Viaduct was classified by the National Trust during the Victorian Timber Bridges Study conducted in 1994-1998, and is also listed on the Victorian Heritage Register.

### ***Further Reading:***

*Annual Report of the General Manager of State Coal Mines, 1910-1968*, Victorian Parliamentary Papers, Government Printer, Melbourne.

Joe & Lyn Chambers, *"Come here! Gee off!" Wonthaggi's State Coal Mine Pit Ponies*, J. & L. Chambers, Wonthaggi, Victoria, 1991.

John M. Coghlan, *The State Coal Mine and Wonthaggi 1909-1968*, Wonthaggi, 1979.

Charles Fahey, *Wonthaggi State Coal Mine – A short history of the State Coal Mine and its miners*, Conservation Forests & Lands/Wonthaggi Coal Mine Committee, Wonthaggi, Victoria, 1987, preprinted 1996.

Philip Harper, *The Wonthaggi Coalfields – A Story of the Men and the Mines*, Electrical Industry Advertising, Oak Park, Victoria, 1987.

J.L. Knight, "The Closing of the State Coal Mines, Wonthaggi", *Mines & Geological Journal*, Victoria, Vol.6, No.6, 1970.

Simon Longstaff, *"20 Shadt's Blown Up!" An account of the 1937 disaster, State Coal Mine, Wonthaggi*, Newhaven College, Victoria, 1995.

Jon Sleeman, *The State Coal Mine at Wonthaggi 1909-1968*, Wonthaggi & District Historical Society, Wonthaggi, Victoria, 2008.

**State Coal Mine Production Summary**(source: J.M. Coghlan, *The State Coal Mine and Wonthaggi 1909-1968*, Wonthaggi, 1979)

Mine Name	Mine Area	Basin	Operating Years	Seam	Thickness (metres)	Area (acres)	Production (tons)
<b><u>Central Area Mines</u></b>							
No.3 Shaft	Central Area	Dudley Basin	1909-1914	Top	1.5 - 2.3 m	200	782,000
No.5 Shaft	Central Area	Dudley Basin	1910-1917	Top	1.5 - 2.3 m	200	973,600
No.9 Shaft	Central Area	Dudley Basin	1914-1920	Top	1.9 - 2.0 m	240	975,900
No.10 Shaft	Central Area	Dudley Basin	1911-1927	Bottom	0.7 - 1.2 m	220	1,394,750
McBride Tunnel - Nos.1 & 2 Benches	Central Area	Dudley Basin	1915-1921	Top	1.5 - 2.1 m	140	917,000
McBride Tunnel - No.3 Bench	Central Area	Dudley Basin	1917-1934	Top	1.1 - 2.1 m	230	1,368,000
McBride Tunnel - No.4 Bench	Central Area	Dudley Basin	1919-1936	Bottom	0.8 - 1.0 m	230	778,000
<b>Sub-total</b>		<b>Dudley Basin</b>	<b>1909-1936</b>				<b>7,189,250</b>
<b><u>Station, Dudley, North &amp; West Area Mines</u></b>							
Station Area Tunnel	Station Area	Dudley Basin	1919-1928	Top	0.86 - 1.37 m	71	301,600
No.16 Shaft	Dudley Area	Dudley Basin	1925-1938	Top	1.5 - 2.9 m	210	1,993,650
No.16 Shaft	Dudley Area	Dudley Basin	1925-1938	Bottom	0.6 - 1.0 m	210	
No.20 Shaft	Northern Area	Dudley Basin	1931-1962	Top	0.9 - 2.4 m	220	1,718,400
No.20 Shaft	Northern Area	Dudley Basin	1931-1962	Bottom	0.6 - 1.0 m	100	
No.21 Shaft	Western Area	Dudley Basin	1936-1968	Top	0.5 - 1.2 m	536	1,868,750
No.21 Shaft	Western Area	Dudley Basin	1936-1968	Bottom	0.4 - 0.9 m	536	
Little Tunnel	Western Area	Dudley Basin	1956-1959	Top	0.4 - 0.7 m	10	19,150
<b>Total Dudley Basin</b>		<b>Dudley Basin</b>	<b>1919-1968</b>				<b>13,090,800</b>
<b><u>Eastern &amp; Kirrak Area Mines</u></b>							
Eastern Area - Nos.1 & 2 Benches	Eastern Area	Kirrak Basin	1919-1931		0.76 - 0.84 m	50	107,000
Eastern Area - No.3 Bench	Eastern Area	Kirrak Basin	1919-1931		0.76 - 0.99 m	300	1,133,000
No.18 Shaft	Eastern Area	Kirrak Basin	1930-1946		0.86 - 1.37 m	475	1,941,550
No.23 Shaft	Kirrak Area	Kirrak Basin	1939-1968		1.07 - 2.29 m	145	463,700
<b>Total Kirrak Basin</b>		<b>Kirrak Basin</b>	<b>1919-1968</b>				<b>3,645,250</b>
<b>GRAND TOTAL</b>			<b>1909-1968</b>				<b>16,736,050</b>

## Supplementary Tour Notes

### WALHALLA

#### Gold Discovery

Gold was first discovered at the site of Walhalla in late 1862. Following the spectacular gold discoveries of the early 1850s and the dramatic ‘rushes’ to places such as Clunes, Mount Alexander, Ballarat, Bendigo and Beechworth, prospectors fanned out across Victoria in search of new discoveries. Coming from the north east, via Jamieson, the miners worked their way progressively up the Goulburn River valley, discovering Woods Point goldfield in May 1861. From there they continued on over the Great Dividing Range, reaching the Jordan River by December 1861 and the rich alluvial deposits on the Donnelly’s Creek and Fulton’s Creek in the headwaters of the Aberfeldy River, the following year. Each new discovery bought with it a rush of hopeful miners and the beginnings of a rough shanty town.

It was from Fulton’s Creek that Edward Stringer and a small party of three other prospectors set out in November 1862. After progressively working their way down the Thomson River with only limited success, one of the party William Thompson left the group and the others headed back northwards, stopping to try their luck on a small tributary of the river where they met with success on Boxing Day 1862. The new goldfield soon became known as Stringer’s Creek, after Ned Stringer, who volunteered to walk 25 miles (40 km) back to Fulton’s Creek to register the discovery and the party’s right to a large prospecting claim.

Almost immediately the rush to Stinger’s Creek commenced, but it was never spectacularly rich or particularly notable as an alluvial field. There were dozens of similar small alluvial discoveries made throughout Gippsland during the early 1860s.

Often it was only the few lucky miners who reached a new discovery first and ‘claimed’ the best ground, who made anything like profitable returns. For all their efforts Edward Stringer and his mates were rewarded with a

prospector’s claim measuring 400 yards length along the creek (although they had actually been entitled to 1,400 yards), and a

government reward of £100 each, which was not paid until 1866, three years after Ned Stringer had died of a coughing fit at Toongabbie.



*Gippsland Alluvial Miners of the 1880s, still using the traditional mining tools of the 1850s – the cradle, puddling tub & panning dish.  
(N.J. Caire, State Library of Victoria)*

The first inkling of the true wealth hidden under the hills enclosing Stringers Creek was discovered in February 1863, when John Hinchclife and James Myers found a quartz reef showing visible gold outcropping on the hillside on the western side of the creek. The discovery was named Cohens Reef, after a Bald Hills storekeeper, and over the next 50 years, it was to become the single richest line of auriferous or gold bearing quartz reef in Victoria. In contrast to other major Victorian goldfields such as Ballarat and Bendigo, which had numerous parallel lines of reef and dozens of rich and famous mines, almost all the gold produced from the Walhalla goldfield came from a single reef

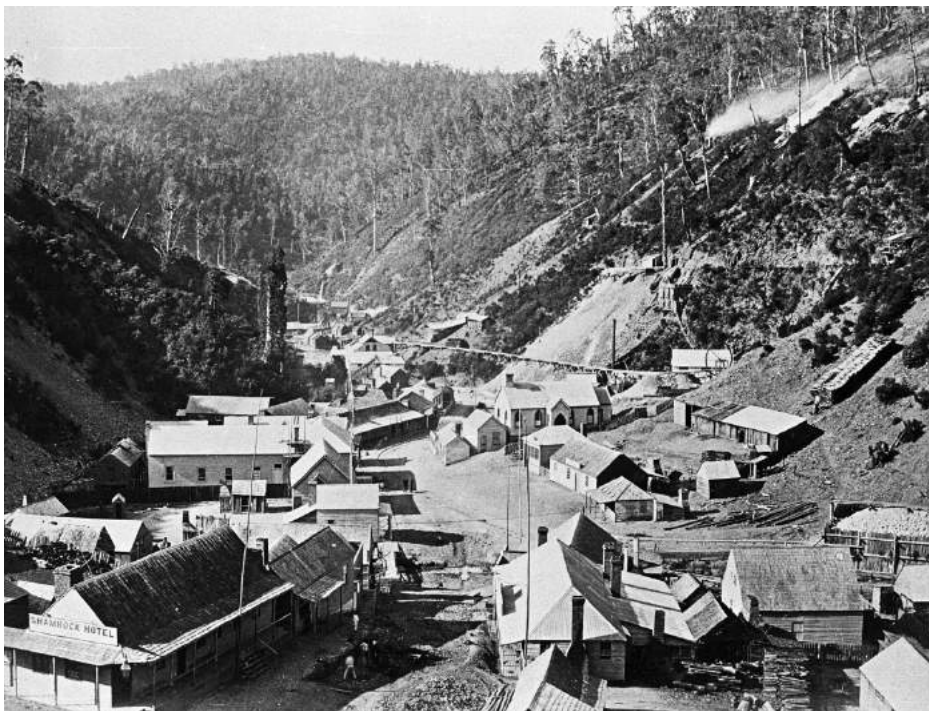
yielding some 1.5 million troy ounces or 45 tonnes of gold from 1.42 million tonnes of quartz ore. Much of this production was dominated by just three companies.

## Early Quartz Mining

Following the practise on most other Victorian goldfields, Cohens Reef was quickly marked out in small claims by parties of miners, each four men being allowed a claim of about 80 yards (73.2 m) in length along the line of the reef. By August 1863, it was reported that the claims on Cohens Reef stretched from No.3 South of the prospecting claim through to No.23 North. Because the quartz reef did not outcrop on the surface over its whole length, miners had to rely on the knowledge that most Victorian quartz reefs tended to run in a north-south direction (known as the ‘strike’ of the reef). Cohens Reef, however, was soon found to be dipping away to the west at depth, which meant that as the claims progressed up the Stringers Creek valley, they had to tunnel further and further into the hillside to intersect the reef.

Once the reef was located, the first task was usually to put in ‘drives’ north and southwards, to test the reef along its entire course throughout the claim. If sampled stone produced sufficiently promising assays, work would begin on the task of breaking out the quartz reef above the tunnel level using a technique known as ‘stoping’. All this work required a good deal of time, but could be achieved with a lot of hard labour, relatively little money and a good deal of credit from local storekeepers. Once the gold bearing quartz had been extracted, it was then crushed to release its gold, and this required heavy machinery. For those miners who could not afford the thousands of pounds needed to purchase and transport a stamp battery to the diggings, there was no choice but to sell up or seek outside investors.

By late 1863, disillusioned miners were advertising in the Gippsland Times with statements like “For Sale – A Bargain and a Fortune when the Machinery arrives. A Share in No.2 North Quartz Claim, Stringer’s Creek”. This was the opportunity that outside investors had been waiting for. During the late 1860s, well known Gippsland pastoralists such as William Pearson, Robert Firebrace, and William Montgomery, purchased significant shareholdings in many of the most promising quartz claims at Stringers Creek, providing strategic investments that would reap huge dividends in later years.



*One of the earliest known photographic views of Walhalla, taken looking south from the elevated Wesleyan Chapel in 1868. In the right foreground is the Royal Mail Hotel that would be demolished the following year to make way for the Long Tunnel Co.'s crushing & treatment plant. In the middle ground is the Roman Catholic Chapel opened in 1867 and behind it the adit of the Walhalla Co. (Museum Victoria)*



The Alpine Quartz Crushing Co. Ltd (claim No.1 South) was the first to erect a stamp battery at Stringers Creek, with their machinery arriving by bullock wagon in February 1864. By August, there were three crushing plants with a total of 30 stamp heads at work on the field. In March 1865, the Walhalla Gold Mining Co. (claim No.7 North) paid its first dividend of £1/18/4 per £10 share, beginning a 15-year run of fabulous returns that would ignite the excitement in mining communities throughout Australia. Soon afterwards Henry Rosales arrived from Clunes to take up the position of manager with the Walhalla Co. Born in Cadiz, Spain, and trained at the famous Royal Academy of Mines in Freyberg, Saxony, he was responsible for introducing the first systematic mining practices on Cohen's Reef and built the first efficient crushing plant and treatment works. By the end of the decade the Walhalla Co. had produced 50,000 oz of gold, representing almost half the combined output of all Walhalla's quartz mines.

Inspired by the success of the Walhalla Co., the Empress Gold Mining Co. was registered in April 1869, to take over leases previously held by the Alpine and South Gippsland Cos. (originally claims No.2 South to No.2 North). They sank a main shaft with steam-powered winding plant in a little gully on the west side of Stringers Creek opposite the cemetery, and in 1870 built a fine 20-head stamp battery. Despite spending £10,000 on plant, the mine reached only 300 ft in depth and little work was done after 1872. The ground was later acquired by the Walhalla Co. in 1877, then the Long Tunnel Co. in 1881.

By far the most successful of the early mines was the Walhalla Gold Mining Co., which produced 144,000 oz (4.5 tonnes) of gold from just 125,867 tonnes of quartz by the time it closed in 1881. It was somewhat extraordinary in being reputed to have commenced operations without any subscribed capital and for years never made a call on shareholders. Other successful early mines included the North Gippsland Co. and Wellesley Co., on either side of the Walhalla, which both of which produced good dividends between 1864 and 1869.

### **The Long Tunnel Gold Mining Co.**

Undoubtedly the most famous of all the Walhalla mines was the Long Tunnel Gold Mining Company, formed in June 1865 with a nominal capital of just £21,000 in 2,400 £5 shares. It was once described by the Australian Mining Standard as "The Greatest Quartz Mine in Australia".

The Long Tunnel Co. began by driving a tunnel or adit 625 feet (190 m) into the hillside and then excavating a machinery chamber from which a 'blind shaft' was sunk 900 feet (275 m) to open out the reef at nine different levels. During the 1870s, the company competed with the Walhalla Co. for the title of Gippsland's leading mine in dividends and gold yields each year.

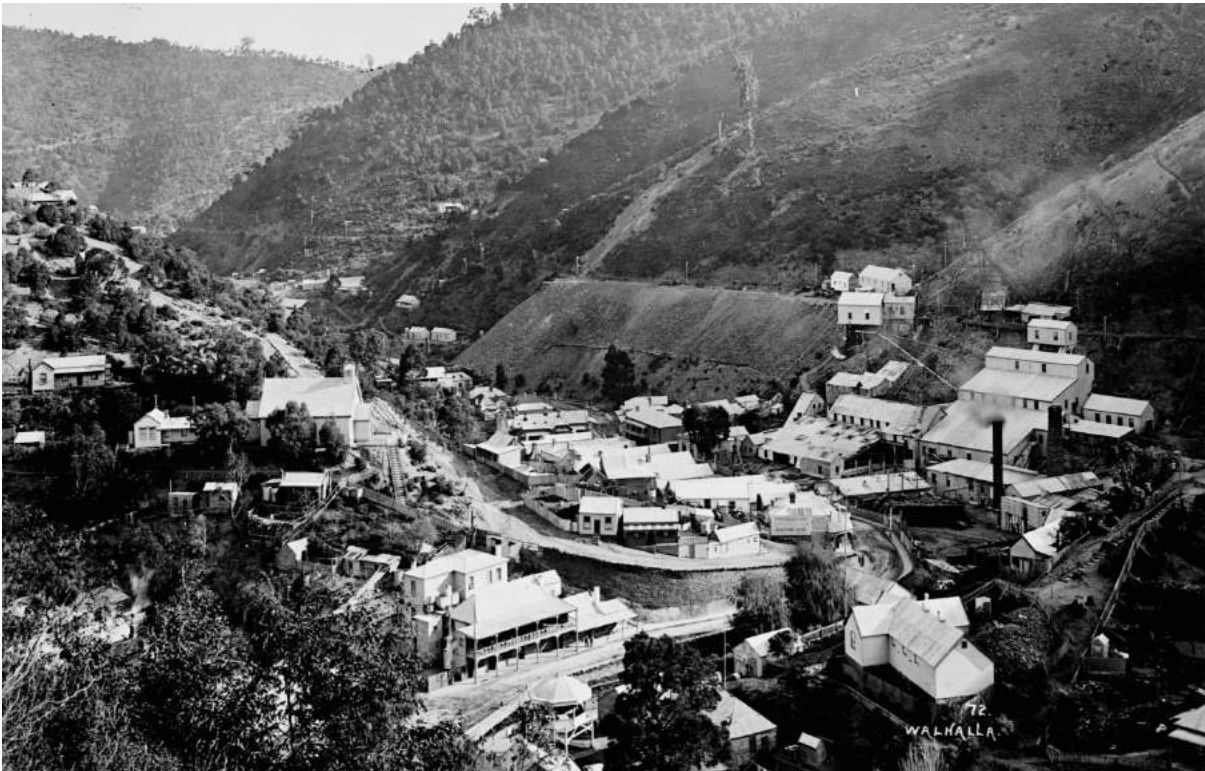
During the 1880s, the Long Tunnel Co. retained a clear lead in dividend payments, but eventually the gold ran out, with the best shoots of quartz dipping away beneath their northern lease boundary. During its good years, however, the company had been quietly acquiring other defunct leases. In 1889, they reached an agreement with the adjoining Long Tunnel Extended Co., to drive a tunnel through a corner of the latter company's lease to open up another rich body of ore at greater depth to the north-west. A second 'blind shaft', was sunk from the No.9 level and carried down another



*Crushing plant of the Walhalla Co. with smoke emitting from the ventilation shaft on the hillside over the company's underground machinery chamber and the chimney of the Long Tunnel plant in the distance.  
(N.J. Caire, State Library of Victoria)*



1,100 feet (335 m) over the next ten years, but the additional expenses that this involved placed a strain on the company's profits.



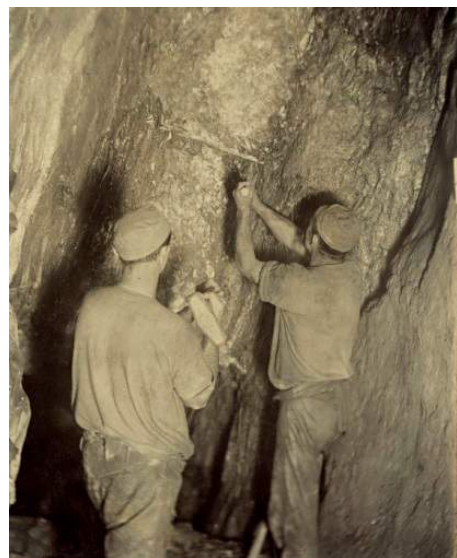
*View overlooking 'the junction' at Walhalla with surface plant of the Long Tunnel GM Co. in the background, taken shortly after completion of the incline shaft and new stamp battery, circa 1910. (Museum Victoria)*

In 1902, work was begun on sinking a remarkable incline shaft, which eventually reached a depth of 3,675 feet (1,120 m) and gave the company a new lease of life during the early 1900s. By the time the Long Tunnel mine finally closed in 1914, it had produced 815,596 troy ounces (25.3 tonnes) of gold from 773,115 tonnes of quartz, with each original £5 share earning a total of £512 in dividends. At times during the company's heyday, shares had traded for as much as £212 apiece on the Melbourne and local stock exchanges.

### **The Long Tunnel Extended Gold Mining Co.**

The ground to the north of the Long Tunnel mine was initially worked as small separate claims, Nos. 14, 15, 15½ & 16 North, which amalgamated to form the Hercules United Gold Mining Co. in May 1869. The Hercules Co. and its predecessors drove two tunnels into the hillside to intersect Cohen's Reef and then opened out with drives along the line of reef at two levels, but found only low grade ore. In 1870, with their funds exhausted, the Hercules United G.M. Co. went into liquidation.

In May 1871, the Hercules United G.M. Co., was reformed as the Long Tunnel Extended Gold Mining Co., with a capital of £28,800 in 9,600 shares of £3 each issued to shareholders in the previous company, paid up to £1 15s per share. After two years of additional prospecting work, the new company began the task of extending the main adit back into the hillside to a distance of 970 feet (296 m) where a large machinery



*Miners at the face in the 1800 ft Level stopes of the Long Tunnel Extd Co. mine. (State Library of Victoria)*

chamber was excavated. The company followed several other early Walhalla mines by installing their boilers underground, a practise that was almost unique to the district, being rarely used elsewhere in Australian mining practise. From the machinery chamber, a vertical flue was driven 152 m to the surface to form a natural draft chimney for the boilers.

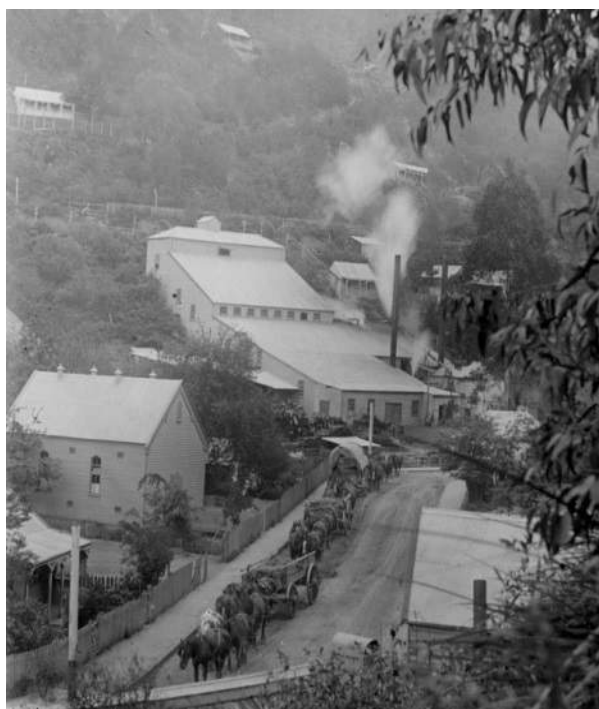
By 1878, winding and pumping machinery had been erected in the underground chamber, and the task of sinking the main shaft began. It was not until 1881, after ten years of 'dead work', that the reef was final intersected 600 ft (183 m) below the adit level. The following year the company paid its first dividend.

Management at the Long Tunnel Extended mine was always looking to innovate, introducing National air compressors and pneumatic rock drills in 1880, and a Westinghouse electric lighting plant in 1903. By this time, the whole of the underground workings were connected to surface by electric telephone. Peak employment in the Long Tunnel Extended around 150 men in 1907.

By the late 1880s, the Long Tunnel Extended ranked alongside the Long Tunnel Co., as one of the richest mines Australia. On six occasions between 1896 and 1908 it topped the annual dividend and gold production list for Victorian mines, with 1896 and 1897 being the best years, when £58,560 and £57,080 was paid out to shareholders, more than the company's whole paid up capital.



Share scrip for the Long Tunnel Extended Gold Mining Co. in NL (Museum Victoria)



The new Long Tunnel Extd Co. battery house of 1903 (State Library of Victoria)

A curious absence in the plant of such a large mine was the lack of a stamp battery to crush their own ore. Until 1903, all quartz was crushed for the company at the old Walhalla Company's battery, which was owned by the Long Tunnel Co. The quartz was conveyed along a surface tramway from the adit to the battery in small rakes of horse-drawn trucks. In 1903, they finally installed their own 20-head stamp battery, manufactured by A. Roberts & Sons, of Bendigo, at a cost of £8,000. It was one of the most up-to-date batteries in Victoria, capable of crushing 1,600 tons a month and featured rotary primary crushers, auto-feeders, Homestake pattern boxes and heavy 1,150 lb. (522 kg) stamps, with 12-feet (3.67 m) of amalgamating tables, followed by Halley percussion tables, Wilfley concentrators and blanket strakes to save the pyrites, which were treated in Denny & Watson grinding and amalgamating pans. The remains of the battery footings can still be seen below the adit.

By the time the payable stone had finally run out in 1911, the Long Tunnel Extended Company had produced 440,312 troy ounces (13,695 kg) of gold from 359,541 tonnes of quartz ore. With a total paid up capital of £57,600, the company had paid out £778,640 in dividends, worth about \$102 million in 2017 values.

In the 1970s the original adit of the Long Tunnel Extended Mine was cleaned out and refurbished as a tourist mine.

## **The North & Great South Long Tunnel Mines**

As in many mining fields, the success of Walhalla's leading three mines stimulated a spate of speculative ventures hoping to capitalise on their success. In the rush to lure prospective investors for any new mining venture, nothing drew capital like the 'gilt-edged' cachet of a famous mining name. Thus between 1880 and 1930, over 40 mining companies were floated on the Walhalla goldfields with the words 'Long Tunnel' in their title, and over a dozen more included the word 'Cohen'. Many of these ventures would never turn shovel in productive labour and precious few returned a single dividend to their eager and every hopeful shareholders. Amongst the pretenders, four ventures at least deserved to be rewarded by the sheer magnitude of their efforts.

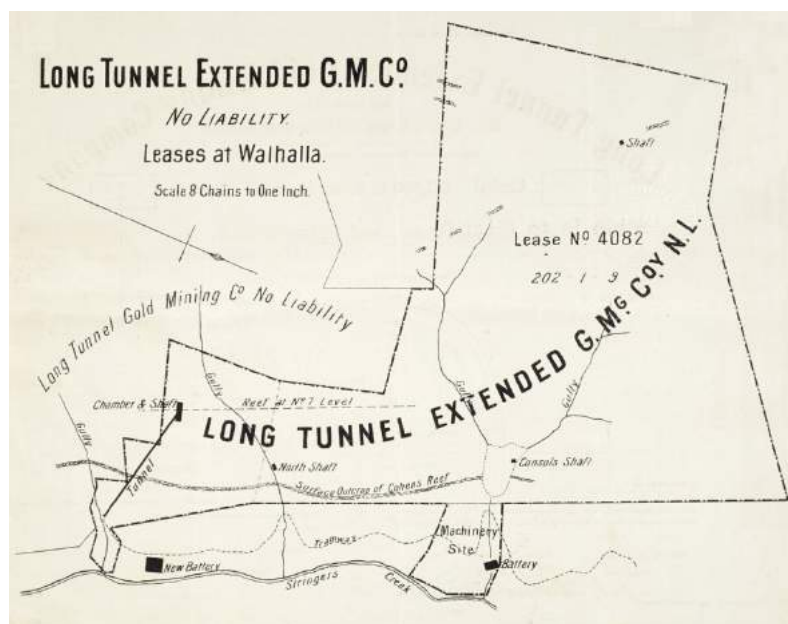
The Great Extended Walhalla Gold Mining Co. was registered in March 1870, with a nominal capital of £24,000 held by 20 Melbourne and 11 local investors. The company took up a 141 acre lease on the western side of the main companies then working Cohen's Reef. Their objective was to excavate a tunnel over 6,424 ft (1,958 m) in length under the Mormontown ridge from the Thomson River, to intercept Cohen's Reef at depths of over 1,000 ft (305 m) on its western underlay. It was hoped that in this way working costs could be reduced, with branch tunnels excavated into the lower workings of the Walhalla, Long Tunnel and Long Tunnel Extended mines, which these companies would pay a fee to access. The company planned to build a dam on the Thomson River and use a water turbine to drive a stamp battery, enabling crushing costs to be reduced to 2s a ton.

Their substantial tunnel was 10 ft wide x 9 ft high (3 m x 2.7 m) in cross-section. The company was notable in being one of the first mines at Walhalla to adopt Dynamite as an explosive to accelerate their tunnelling rate. Despite this, less than a fifth of the projected final length had been completed by 1876 when the money ran out. The company made an unsuccessful attempt to float the mine in London, employing the consulting engineer Jacob Braché to produce an impressive prospectus that provides a detailed record of the state of mining at Walhalla in 1876. More significantly, the Long Tunnel Co. acquired the former Great Extended Walhalla Co.'s lease in 1882, providing it with the north-west ground beyond the Long Tunnel Extended mine, that would be profitably worked over the last 20 years of the Long Tunnel's life and led to the sinking of their famous incline shaft.

The Great South Long Tunnel Gold Mining Co. NL was floated in 1889, to redevelop 134 acres of ground at the southern end of Cohen's Reef previously occupied by the Little Joe and South Cohens Companies. An arrangement was reached with the Long Tunnel Co. to work the lease from the former Empress Co. shaft under tribute. Over the next 15 years they sunk the Empress shaft from 300 ft (91 m) down to 1,400 ft (427 m) and undertook extensive development by driving and crosscutting with some success. Their best results were obtained in 1895-97, when 13,683 oz of gold were won from 27,865 tons of quartz extracted from stopes between the 800 and 900 ft levels, and £6,250 was paid in dividends. In 1898, the ground of the former Alpine, South Gippsland and Empress companies was absorbed into the lease. In 1904, the company invested in an impressive new first-motion winding engine built by Roberts Foundry in Bendigo, less than 12 months before the mine finally closed, in what would be an all too familiar story on the Cohen's line of reef.



Situated immediately to the north of the Long Tunnel Extended mine, the North Long Tunnel Gold Mining Co. Ltd was registered in October 1875, with a nominal capital of £56,000. After six years of preparatory work, the discovery of rich stone at depth in the Long Tunnel Extended mine, prompted the North Long Tunnel to begin sinking a well-equipped main shaft in the next gully to the north. By 1890, the shaft had reached 1027 ft (313 m), striking a promising looking, though ultimately unprofitable lode. With the lode expected to pitch downwards to the north, a blind shaft was commenced 1,120 ft (341 m) north-west of the main shaft but heavy ground water soon led to work being suspended.



***Lease Map showing the location of the North Long Tunnel and Long Tunnel Consols shafts acquired in 1904 (Museum Victoria)***

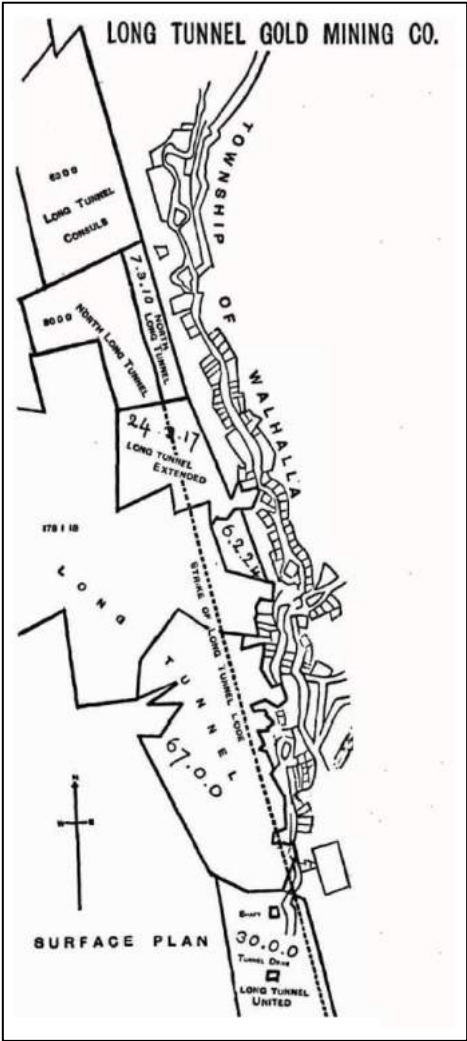
Situated further north again, the Long Tunnel Consols Gold Mining Co. NL was formed in June 1883, with a nominal capital of £32,000. By 1886, they had constructed a powerful winding and pumping plant with equipment supplied by Bendigo foundries and began sinking a main shaft. The mine was situated in a gully near the later Chinese market gardens and current camping grounds at the northern end of the town. By 1889, the Consols shaft had reached 1,000 ft (305 m), but the company was running out of capital. In 1893, the North Long Tunnel Co. absorbed the Long Tunnel Consols Co. and capital

was increased to £84,000. Development work was transferred to the Consols shaft where a powerful new winding plant was erected and sinking resumed, reaching 1,900 ft (579 m) by 1900. The old North shaft was used for pumping. During the

late 1890s, the North Long Tunnel established Victorian records for tunnelling and sinking rates with the aid of pneumatic rock drills made by Taylor Horsfield of Eaglehawk – completing 100 ft (30.5 m) of crosscutting in a fortnight, and sinking 32 ft (10 m) in a week. In 1902, a good run of stone encouraged the directors decided to install their own 15-head stamp battery, but it was barely used, crushing only 3,600 tons of stone to return less than 1,800 oz.

One of the North Long Tunnel Co.'s directors was a Francis Boardman Clapp (1833-1920) an American-born goldrush immigrant who had been involved in the Cobb & Co coaching enterprise and the Melbourne Omnibus Co., before later becoming manager Melbourne's cable tram network.

In 1901, Hyman Herman the government geologist remarked that "The North Long Tunnel particularly, is a striking example of energetic, plucky, and, withal, thoroughly legitimate prospecting that is, unfortunately, too seldom emulated in our State." Over the previous six years, the company had sunk 1,500 ft (457 m) of shafts, driven 2,000 ft (610 m) of cross-cuts and 2,700 ft (823 m) of levels, and cut 400 ft (122 m) of rises and winzes, all for no return. By 1904 when it closed, the North Long Tunnel Co. had spent £120,000 on Walhalla's most expensive mining failure. Subsequently the North Long Tunnel leases were taken over by the Long Tunnel Extended Co. As ore bodies in the main Long Tunnel Extended mine became depleted, the Consols shaft was again reopened in 1908. The winding plant was upgraded for a third time and a large steel poppet head installed, before extending the workings down to 2,500 ft (762 m), with no more success than the previous ventures.





## The Township

Initially the small mining settlement that developed in the valley of Stringer's Creek was simply named after the watercourse itself, which was in turn had been named after Edward (Ned) Stringer, who discovered the first alluvial gold. When the first government land sales took place in May 1866, the township was officially named Walhalla, taking its title from the mine that had already brought widespread fame with fabulous yields of 7,500 oz in gold from just 2,500 tons of quartz crushed over the 18 months since it was registered in December 1864. To the miners it was known as simply as 'Wolholler'.

From a population of 40 quartz miners, 70 alluvial miners and 20 storekeepers and 'hangers on' in July 1863, the town grew rapidly to boast 872 inhabitants by 1866. Walhalla was proclaimed a Borough in 1873, when 2,782 people were living within an area of eight square miles, including the outlying 'satellite' hamlets of Poverty Point, Mormon Town, Maiden Town and Happy-Go-Lucky.



*View of Walhalla township looking north from the Junction of Stringers Creek, circa 1920s.  
(State Library of Victoria)*

The popular English author Anthony Trollope created a wonderful picture of the town following a visit in 1872, when he wrote of Walhalla where "all the necessities and most of the luxuries of life – except sleep can be found." Unfortunately his hotel room was right next door to the Long Tunnel Company's battery house "where noisy clamour continued without a moment's pause throughout the night, dispelling the weary traveller's hope of slumber". To the residents, he observed, "the effect was simply somniferous". The roar of stampers pounding quartz subsided only from midnight on Saturday night to midnight on Sunday, when Trollope found that the "the silence so burdened the air that the residents could neither talk by day nor sleep by night".

By 1886, when the Shire of Walhalla was proclaimed, the town boasted a population of 1,800, with 385 dwellings, a post and telegraph office, police station, state school (with 350 pupils), two banks, three churches, ten hotels, a brewery and cordial factory, Mechanics Institute, Masonic, Foresters' and Oddfellows' Halls, and over a dozen shops and bakeries. At its peak during the late 1890s, Walhalla's population reached almost 3,000, with another 1,500 scattered throughout the remainder of the shire.

Despite the substantial nature of some of its more important shops and hotels, there were only two brick buildings in the town – the Oddfellows' Hall and Gloz's Guesthouse on the right hand branch

of Stringer's Creek. Most buildings were built of timber with shingle or corrugated galvanised iron roofs and many residences were little more than small two roomed cottages. Whilst there were few class divisions in the small close-knit community, it was said that Walhalla was the only town in Victoria, where everyone looked down on their neighbours!

Aside from the fortunes of the mines, other major events that shaped the history of the town included a serious fire in 1888 that burnt out virtually a whole block of commercial buildings in the



*The Band Rotunda, built in 1896, became a distinctive landmark of the town.  
(Photo: Matthew Churchward)*

centre of the main street, and several major floods, the worst of which in 1891 washed away two bridges and destroyed a stamp battery and much of the retaining wall along the creek.

With little alternative employment once the main mines closed, the population rapidly declined, with only 250 people left by 1920. For a number of years during the 1950s and 1960s, a small sawmill operated on the former site of the Long Tunnel mine's firewood yard, and a few other businesses struggled on.

Fire continued to take its toll, destroying the Mechanics Institute and Free Library, Roman Catholic Church and former Bank of Australasia near the centre of town in 1945, and the famous Star Hotel and Oddfellows Hall near the junction in 1951. Today Walhalla is a quiet and sleepy

shadow of its former self, except when the tourists descend.

## Transport

Transport has always played a major role in shaping the development of Walhalla. The earliest miners travelled by foot from Fulton's and Donnelly's Creeks, and other established mining settlements to the north, struggling over rugged largely trackless mountainous country carrying equipment and supplies on their backs, or with the aid of only packhorses.

Gippsland storekeepers were quick to realise the potential profits to be made supplying the diggings and offered a reward to anyone who could find a suitable track through the mountains from the south. Tom McEvoy and 'Portugee' Joe found the first route used. Crossing the Thomson River at Bald Hills (now Seaton), they followed the ridge country northwards over Mount Useful and up onto the Great Divide, before doubling back to the south to reach the Aberfeldy and Walhalla goldfields in a wide U-shaped trail. Archibald Campbell found a shorter route via Sale and Toongabbie during the early part of 1863, and this was the route that was eventually cleared at government expense to form the first coach road to Walhalla.



*Pack horses would remain a vital part of transport routes to outlying settlements well into the 20th century.  
(State Library of Victoria)*

Because there was no railway through Gippsland during the early years, all heavy machinery for the mines was sent by sea to Port Albert and was then hauled overland by bullock or horse teams, via Sale and up over Campbell's track. When the first timber bridge over the Thomson River at Toongabbie was completed in January 1864, a stamp battery for the Alpine Quartz Crushing Company was the first load carried over.

During these early years roads tended to follow the ridge tops because it was the easiest way to find a route that was reasonably level and could be easily cleared then formed into a road without major earthworks. Once Campbell's track reached the ridge above Stringer's Creek, there was a problem because the settlement was so far below the hilltops. The first solution was to descend straight down the closest spur, causing a major headache for some of the early contractors with heavy loads of machinery. The spur track quickly became deeply rutted and badly eroded, leaving two wide scars down the eastern hillside that remained visible for decades afterwards.

In 1869, a new approach to the township was surveyed by the Government Road Engineer, Charles Rowand, creating a 'sideling' road that descended the eastern hillside from the ridge-top near Maidentown, negotiating ten switchbacks to reach the main street just below the junction. The stone retaining wall opposite the fire station was built for this road at the point where it joins the main street. Following the completion of the 'sideling' road the first regular mail coach services to Walhalla from Sale were commenced by Cobb & Co., but the road was still so steep that many nervous passengers preferred to alight at Maidentown and walk down the hill.



*A horse team making the steep climb up Little Joe Hill from Walhalla (State Library of Victoria)*

In 1877, the Walhalla Borough Council borrowed £3,000 to construct a new road with an improved gradient that descended Little Joe Hill from Happy Go Lucky to meet the main street at the southern end of the township. It created a more direct connection to Toongabbie and Coopers Creek, becoming the preferred route for coaches and teamsters with heavy loads until the completion of the railway.

Following the completion of the Gippsland Railway, Cobb & Co introduced a more direct mail coach service to Walhalla, beginning at Moe and travelling via Tyers and Coppers Creek settlements, where the coach crossed the Thomson River on a low level timber bridge. The new route from Moe was considerably shorter and soon became favoured by businessmen and mining directors rushing two and from Melbourne, despite the fact that it was an uncomfortable journey, with the road remaining little more than an unimproved track in parts. By this route it was possible for a traveller to depart Walhalla at 10:30 am and arrive at Moe in time for evening Gippsland Express train, reaching Melbourne by 10:15pm. In 1882, William Murie was contracted to construct a high level timber truss bridge over the Thomson River near the junction of Stringers Creek and Thomson River, where the modern road crosses the river. The 170 feet long structure had only a narrow 7 feet wide deck, but was 30 feet above the river bed (five feet higher than the biggest flood on record). Completing the last leg of the road into Walhalla from the river crossing would take almost another decade.



By June 1886 a 'road' had been cut along the side of Stingers Creek Gorge connecting with the new bridge, but it was little more than a narrow bridle track, almost unpassable to vehicles. A report in the *Walhalla Chronicle* warned "Pedestrians cannot be too careful to keep as near to the centre of the as possible ...

Already more than a dozen pack-horses have been thrown over the embankment ... and several of the animals have been killed."

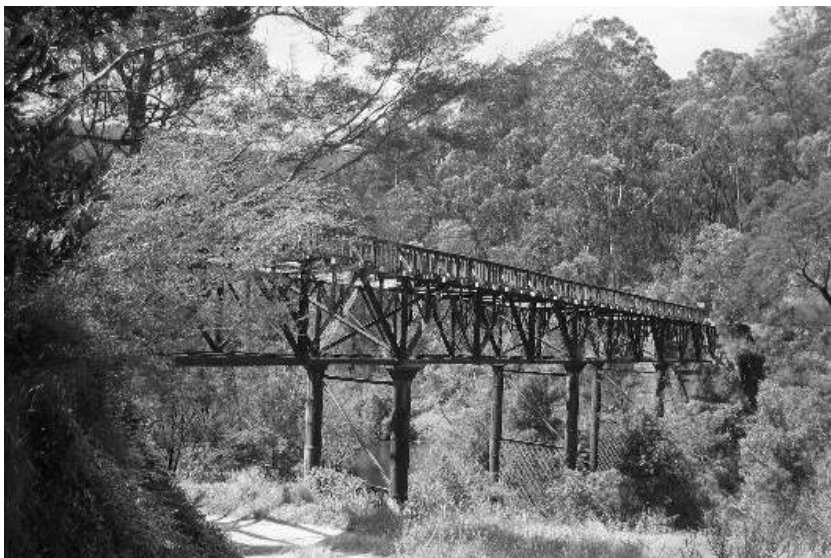
Finally, in November 1889, Messrs Hawkins & party were awarded a contract to widen the track from 7 feet to 12 or 14 feet

(2.1 m to 3.7-4.3 m), giving ample space for wagons or drays to safely pass, and allowing passenger coaches to adopt a new route to Moe via the farming settlements at Moondarra.



*The 1882 Thomson River road bridge provided a new route from Moe.  
(State Library of Victoria)*

The alternate route to Walhalla, via Toongabbie, was also upgraded in the late 1880s with the construction of a new high-level iron bridge over the Thomson River. The elegant lightweight structure of riveted wrought-iron trusses supported by slender iron columns has proved the most enduring of Walhalla's early bridges and has an interesting history. Built by the Public Works Department the design chosen was originally identical to that of the Victoria Street Bridge over the Yarra River in Melbourne. The design was the outcome of a public competition, won by two young engineers Messrs J.H. Fraser & L.H. Chase, of the Railways Department, and drew heavily on the scientific approach to bridge design promoted by Professor William Charles Kernot (1845-1909), of the University of Melbourne.



*The remains of Brunton's Bridge on the old Toongabbie-Walhalla Road  
(Victorian Heritage Register)*

The resulting structure, completed in 1884, caused considerable controversy because of its lightweight design, which some of the more conservative critics felt lacked adequate strength. Despite these concerns the design was reused for the Thomson River Bridge, constructed in 1887-1888, with the contract for manufacture of the ironwork awarded to Mephan Ferguson's Carlton Foundry. Over subsequent decades the bridge would become known locally as "Brunton's Bridge" named after Brunton's Hotel, a popular

stopover point for travellers near the crossing. During the early 20th century the bridge gradually fell into disrepair as traffic favoured the road via Moondarra, and the timber deck was eventually burnt in a bushfire. Today a pedestrian walkway has been rebuilt over the surviving iron bridge structure, which is listed on the Victoria Heritage Register, providing witness to the old coach routes to Walhalla.

## The Walhalla Railway

By 1899, hundreds of tons of goods and machinery were passing along Toongabbie and Moondarra roads bound for Walhalla each year, as well as some 10,220 coach passengers, whilst in the other direction came gold escorts bearing up to 6,000 oz a month. Eventually, after almost 30 years of agitation, and two exhaustive Parliamentary inquiries, the Government agreed to build a narrow gauge railway from Moe to Walhalla - one of four 2 ft 6 in (762 mm) gauge branch lines built by the Victoria Railways in the early 1900s. Construction of the Walhalla line commenced in June 1904, but it was to be another nine years before the first steam trains reached Walhalla, in March 1910, and by then the mines were all but finished.

Some £115,800 was allocated for construction of the 26¼-mile (42 km) railway in the Act authorising its construction. Despite its spectacular setting, the line would be a most economical design shaped by the tough economic hardships of the 1890s. When railway revenues had plummeted following the land boom crash, Victorian Railways engineers had to develop new methods of building railways at lower cost. What emerged in the early 1900s was a new approach to construction and the Walhalla line is a notable example of the new methods. Narrow gauge lines enabled cheaper construction, particularly in mountainous terrain. Curves could be sharper and earthworks for embankments and cuttings were minimised, while lighter rollingstock and locomotives enabled lighter rails and bridge structures to be employed. A distinctive aspect of the new economical designs was the use of composite materials— combining timber, concrete and iron or steel elements – and in particular the use of recycled materials, which give the Walhalla Railway its distinctive character. Many of its unique bridges, such as the Thomson River Viaduct, were designed to incorporate older riveted wrought-iron girders salvaged from bridges on the North-East Railway, being upgraded to allow for heavier mainline traffic. One of the most challenging aspects



*Local photographer William H. Lee was fortunately on hand to record the arrival of the first unofficial train at Walhalla in March 1910. (State Library of Vic)*

of the railway construction was completing the final 2½-mile (4 km) stretch up through the narrow Stringers Creek Gorge, with seven timber trestle bridges required to criss-cross the creek from one side to the other as the line negotiated 54 curves, seemingly clinging to narrow cliff ledges. Beginning at an elevation of 230 feet (70 m) above sea level at Moe, the line ascended to 1,321 ft (403 m) at Upper Moondarra (now known as Erica), before descending through steep grades of 1 in 40 to the Thomson River crossing, then ascending again to the terminus at Walhalla at an elevation of 1021 ft (311 m). At the station yard Stringers Creek had to be channelled through an arched concrete and iron girder culvert in order to provide sufficient flat ground for the platform and goods sidings.



Virtually the whole town's population flocked to the station yard on Tuesday 3rd May 1910, to greet the Premier John Murray and other dignitaries arriving by train for the official opening of the railway, beneath a huge banner bearing the words "SUCCESS TO OUR RAILWAY. ALL WELCOME". It would be almost another six months before the engine shed and simple timber station building were completed.

The new vigour and prosperity that the railway was expected to bring never eventuated. Following the closure of the Long Tunnel Extended Mine in 1911 and the Long Tunnel Company in 1914, most people left the town to seek work elsewhere, and the railway ended up being used to transport the belongings and whole houses of residents to other more prosperous parts of Victoria. Many former gold miners left Walhalla for jobs in the new coal mines of Wonthaggi. A growth in tourism provided a minor boost for the railway during the 1920s, with initiatives such as the Baw Baw Walking Track, developed as a hiking and packhorse trail across the Baw Baw Plateau, between Walhalla and McVeigh's in the Upper Yarra Valley above Warburton. Excursion trains were introduced allowing passengers to appreciate the spectacular views enroute, but despite such initiatives traffic continued to decline from 13,000 to just 2,500 passengers per annum by the late 1930s. Most of the freight traffic on the line was generated by sawmills in the Tyers Valley, north of Erica, and farmers in the Gould and Moondarra districts. The Walhalla end of the line was always expensive to maintain with landslips and rock falls frequently blocking the tracks, while the



*Walhalla Railway Station and good yard on a quiet weekday afternoon in the 1920s. (State Library of Vic)*

timber bridges required regular renewal and repair.

After gracing the southern end of the township for 28 years, the small weatherboard station building was dismantled and shifted to the Melbourne suburb of Hartwell for a new lease of life on the Camberwell-Alamein Line. With operating losses continuing and traffic declining, the Platina to Walhalla section for the railway closed on 1st April 1944. Passenger services on the remainder of the line were officially withdrawn in January 1951, though occasional travellers were still accommodated in the guard's van. Freight services beyond Erica ended in October 1952, when a lime quarry near Coppers Creek closed, and 18 months later the remainder of the line also ceased operating.

Following closure of the Walhalla Railway, the narrow gauge locomotives and rollingstock that had operated the line were stored at Moe, before being transferred to Newport Railway Workshops. After the Puffing Billy Railway Society was formed in 1955, to preserve passenger operations on the narrow Ferntree Gully to Gembrook Railway (first opened by the Victorian Railways in 1899), much of the rollingstock and locomotives were transferred there. It was claimed by locals that for years after the Walhalla Railway closed ghostly echoes of its former operations could be heard

reverberating through the hills from the calls of lyrebirds that had learnt to mimic the sounds of the steam engine whistles and exhaust. Following closure of the railway, the rails and sleepers were largely removed between 1958 and 1963.

The first attempts to restore the Walhalla end of the railway were begun by Clem Meadmore and a small band of volunteers in March 1951, but after several months' impressive progress clearing the line; they were devastated by the loss of several trestle bridges washed away by a major flood of Stringers Creek in June 1952. Disheartened, the group disbanded shortly afterwards and the railway fell into decay with further losses to floods and bushfires in the 1960s and 1970s.

In 1968, Ron Kain, a former Victorian Railways engine driver, moved to Walhalla and launched a new group with ambitions to restore the railway under the title of the Walhalla & Thomson River Steam Tramway. He purchased a small steam locomotive formerly used at the West Melbourne Gasworks, and between 1974 and 1981 limited passenger services for school groups and tourists were operated in the former Walhalla Station yard. Despite some enthusiastic volunteers and ambitious dreams to extend operations down the gorge, the track never progressed beyond the first collapsed bridge at the end of the station yard. The eccentric and enigmatic Kain obstinately ignored the suggestions of others and continually changed his plans, eventually disenchanting most of his supporters and the project folded in 1982.

A small group of enthusiasts who had been involved in the earlier efforts never gave up their dream and in October 1992 a new organisation was incorporated under the name Walhalla Goldfields Railway. This time work commenced from the Thomson River end where a new station was built, and by October 1994, the Thomson River Viaduct was again carrying trains. A temporary terminus was established at Happy Creek, part way up the gorge, as work on rebuilding the remaining trestle bridges progressed aided by some sizeable government grants. On 13th March 2002, the line was reopened through to Walhalla. WGR locomotives and rollingstock have been collected from a variety of sources including the former SEC railway in between Yallourn and Morwell in the Latrobe Valley, Queensland Railways, the Emu Bay Railway in northern Tasmania and Board of Works Thomson Dam Project. By 2000, nearly 19,000 passengers a year were being carried on the railway and a decade later the number had increased to 34,000, far outstripping passenger figures during the railway's original operating life. Regular passenger services operate on weekends and school holidays hauled by diesel locomotives, although a long term ambition remains to return the railway to regular steam operations.



## Firewood Tramways

Firewood was one of the major working expenses of every Walhalla mine, being required for the steam boilers that powered the mining machinery and for firing pyrites furnaces. Timber cutting, undertaken mainly by contractors, was the town's second most important industry after mining. The surrounding hills were stripped bare in the search for every useful stick of timber. By the late 1890s, Walhalla's major mines were consuming a staggering 34,000 tons of timber a year. A network of over 45 miles (72 km) of narrow gauge tramways was constructed to collect the firewood and transport it from the upper reaches of Stringers Creek and the Thomson River valley.

In 1901, the Long Tunnel Co. built a 158 feet (48.2 m) long steel bridge over the Thomson River at Poverty Point, in order to access timber on the eastern slopes of the Baw Baw Plateau. Northern Italian woodcutters from the settlement at Poverty Point carried out most of the laborious task of felling and splitting this timber, which was then hauled 11 km to the mine using horses. By 1900, the annual firewood consumption of the Long Tunnel Extended mine had reached 6,500 tonnes, and this grew to 12,000 tonnes in 1904, following the installation of their own battery and an electric lighting plant.

One of the most extravagant investments by the North Long Tunnel directors was the small fortune spent constructing a 10 km steam tramway to extract firewood from the northern headwaters of Stringers Creek valley during the last year of the company's life. In June 1904, the directors of the Long Tunnel Extended Co. voted to acquire the unproven and ultimately barren North Long Tunnel Co. for the bargain price of £7,500, largely to gain possession of its tramway and timber concessions. Over subsequent years a ride on the steam tramway would become a highlight for visiting dignitaries, with guests carried on firewood trucks up to the Aurum Gully terminus for a picnic in the fern gully.



*An excursion train on the steam firewood tramway trestle bridge enroute to Aurum Gully during a visit by the Victorian Governor Sir Reginald Talbot, in Feb 1907. The locomotive was one of two small saddle-tank engines built by W.G. Bagnall Ltd, Staffordshire, England, that worked the tramway for the North Long Tunnel and Long Tunnel Extended Companies. (State Library of Victoria)*

## The Cemetery

Although the earliest recorded deaths in the Walhalla Cemetery date back to 1869, it was not until 1872 that the steep hillside site was officially gazetted as a cemetery. Since then some 1,100 burials have been recorded, although many are in unmarked graves. Because the track up to the cemetery was so steep, relays of pall bearers were needed to carry each coffin up to its graveside.

Just by the entrance gate is the grave of Miss Doreen Hannan, Walhalla's last post mistress, who died in 1988, aged 83. In the far bottom corner, are the graves of her parents Patrick and Mary Hannan. She was possibly the last child born and raised in Walhalla to spend the whole of her life living in the town.

Separated from the nearest doctor and hospital by many miles of rough mountain track, the earliest residents of Walhalla lived under the constant threat of premature death from accident or illness. Childbirth posed one of the greatest dangers for women. In November 1863, Mrs Carbery became one of the first pioneering miner's wives to die, six days after giving birth to a baby daughter, who survived her by only a week. Even in the 1880s, with a resident physician in the town, a complicated labour possessed the greatest of apprehension.

Looking amongst the headstones, you will see a large number recording the early deaths of women and infants, each telling its own tragic story. In the fifth row back the hand chiselled letters on a headstone recall the death of "Jane Buchanan wife of Henry Buchanan and dearly loved daughter of

D. and H. Butt”, who died together with her newly born son, Henry Samuel, on 14th July 1879, at just 24 years of age. Nearby the gravestones of three adjoining plots record the deaths of two generations of the Trembath family, whilst another inscription commemorates the death of 18 year old Sarah Mill, the young bride of Doctor Stewart, buried “at sea of Cape Horn, Lat. 56 deg. 12 min. South; Long. 70 deg. 2 min. West, on 16th April 1893”.

For the men, it was working in the mines that possessed the greatest risk to life and limb. Between 1874 and 1884, an average of one in every 1,500 miners was killed as the result of an accident and dozens more were injured. By far the greatest cause of injury was underground rock falls, which accounted for almost half of all deaths. Following this came accidents involving machinery or winding cages, then accidents caused by falling timbers, accidents with explosives, flooding and foul air. More insidious and not recorded in the official statistics were the premature deaths from “miner’s complaint”, caused by fine quartz dust from the pneumatic rock drills lodging in the miners’ lungs.

Amongst the miners buried at Walhalla, is William Fyfe, just 35 years of age, who was employed as a trucker underground at the Long Tunnel mine. During the early hours of the morning on 4th August 1899, he was working with a mate, George Bland, on the night shift at the No.10 level, 1,922 feet (586 m) below ground. At about 6 am one of the winding cages got “hung up” or caught on the timber guide rails that ran down each side of the shaft. After waiting for a considerable time, the two men decided to climb up the ladderway in the pumping compartment to investigate and see whether they could free the cage. Bland took the lead climbing the first 100 feet to level No.9, where Fyfe took the front position. They had climbed less than 30 feet further when the supports on one of the ladders gave way and Fyfe plummeted to his death 130 feet below. Being about 15 feet behind in near darkness, Bland could see little of the accident, but at the inquest following the accident, he described how at first he thought it was a large stone that fell “If I recollect it right he bumped near my shoulder and I heard bumping noises all the way down.”



*Walhalla headstone (Photo: Matthew Churchward)*

One of the worst tragedies to befall the district occurred in November 1900, when six Italian timber cutters were killed after their flat bottomed punt overturned on the Thomson River. As a mark of respect, the entire town took a day off work and a huge procession of mourners formed, stretching almost the entire length of the main street, to follow the coffin bearers to the cemetery.

Amongst the better known pioneers buried at Walhalla is Henry Dendy, founder of the Melbourne suburb of Brighton and an original shareholder in the Copper Mining Co. formed in 1866 to work a copper deposit discovered at Coppers Creek, 6 miles (10 km) south of Walhalla. Arthur Brien, born in Kilcaskin Parish, County Cork, in 1797, is also buried here, as well as James Anderson Yarra, renowned as an early overland teamster. Yarra had supervised the erection of the first stamp batteries at Walhalla. On the day of his funeral, the Union Jack flew at half-mast at the battery house of the Long Tunnel mine as a mark of respect.



The name Julia Clark claims a special place amongst the stories and legends surrounding Walhalla. On the night of her birth, a chimney fire engulfed the family home, whilst almost 21 years later on the night of her death, another chimney fire destroyed the house erected over the charred ruins of the first. The premises were by then occupied by Ramsay Thomson, manager of the Long Tunnel mine, who fortunately was away on business in Melbourne at the time.

Writing for the Australasian Sketcher in April 1866 under his well-known pseudonym 'The Vagabond', Dr Julian Thomas reflected on Walhalla with the comments:

"Everything here is up hill, there being such as meagre strip of level land by the sides of the creek. You mount the hillside to enter the tunnels of the mines, you scale it to church, [and] last stage of all, you are carried to the cemetery on top of the eastern hill. God's acre sloping downwards for all the world, as in Japan.

It is a weird thought at night when the clouds encompass the valley, and one is confined to the pit of Acheron, the stampers keeping up a demoniac chorus, to think that above you in the mists and winds, the dead watch over Walhalla"

Walhalla, "the hall of gods", is truly an appropriate name for this place, where the spirits of pioneers and local legends look down from the mists upon a now quiet and peaceful valley. Perhaps only they can still recall the shriek of shrill steam whistles and children playing, that once rang out above the dull roar of 120 heavy stamps pounding gold from rock hewn hundreds of feet underground, creating the wealth of a busy mining town. Now it is Walhalla's quaint tranquillity, as much as the echoes of its past splendour that brings the visitors.

## **Dreams of a Mining Revival**

The closure of the last of the great Walhalla mines in 1914 and the outbreak of the First World War saw the township enter a period of slow decline. By the end of the war almost all the once extensive mining plant on Cohen's Reef had been removed, with much of it going for scrap. In October 1918, the depopulated Shire of Walhalla was merged with the neighbouring Shire of Narracan to the south.

In 1920, a Government battery was opened at the northern end of the town to encourage smaller prospectors. In 1921, the long standing local mining manager Henry Hartrick led an effort to reopen the Long Tunnel Extended and North Long Tunnel ground. Late in 1922, Fredrick Tricks, another veteran of the local mining scene, took over the operations that were refinanced as the New Long Tunnel Gold Mines NL. An air compressor and rock drills were acquired to drive a new adit in the North Long Tunnel gully and in 1929 a 10-head battery was installed at the former Long Tunnel Extended battery site, before the Depression brought work to a standstill.

By 1934 the company had again reformed and resumed work, refusing a takeover offer from an English syndicate. In total the New Long Tunnel produced 443 oz of gold from 2,036 tons crushed between 1927 and 1938. Meanwhile the Long Tunnel Consolidated Co. had been formed to rework upper portions of the Wellesley and Walhalla ground, but after only limited success it too was wound up in 1941. Further south Joseph Reilly and Harry Peters took up ground around the former Great South Long Tunnel Co. and erected a 5-head battery opposite the Post Office. Two small underlay shafts were sunk on the former Molesworth ground, but production totalled only 258 oz from several hundred tons of quartz between 1932 and 1940. By the end of the Second World War all mining on Cohens Reef had been abandoned and the town turned to tourism for its survival, promoted by the Walhalla Heritage & Development League that formed in 1945.

Rising world gold prices in the late 1970s were to stimulate a further flurry of exploration activities over the subsequent 30 years. In 1981, Walhalla Resources Ltd was formed by Melbourne investors

**New Long Tunnel Gold Mines**  
 NO LIABILITY.  
 WALHALLA, VICTORIA.  
 Office of the Company: 84 WILLIAM STREET, MELBOURNE.  
 REGISTERED UNDER THE COMPANIES ACT 1901

100 100

CALLS PAYABLE THE SECOND WEDNESDAY IN THE MONTH

CAPITAL - £67,500 IN 54,000 SHARES OF £1/5/- EACH

**This is to Certify** that Charles Roper  
 of Gomer Rd. Beacons is a Member of the above-named  
 Company and the Proprietor of ONE HUNDRED (100) Shares upon which the sum of  
one pound one shilling and 10/- per share has been paid up, subject to the Rules and  
 Regulations of the Company.

Dated this 1st day of October 1985  
George Manager W. Roper Director

N.B.—This Certificate must be given up to the Manager on Transfer of any of the above Shares.

**TRANSFER**  
 I, the undersigned Transferor, being the holder of the above-mentioned Shares, do hereby sell, assign and transfer to  
 the undersigned Transferee all my right, title and interest in and to  
 of the said Shares; and I, the undersigned Transferee, do hereby accept such transfer and assignment.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 19\_\_\_\_  
 Transferee \_\_\_\_\_ Transferee \_\_\_\_\_  
 Witness \_\_\_\_\_ Witness \_\_\_\_\_

Serial No.	PROGRESSIVE No. OF SHARES	FROM	TO
100	411	411	
100			

*Share scrip for New Long Tunnel Gold Mines (Museum of Victoria)*

and in partnership with Pan O'Or Mining NL began a concerted effort to re-examine the Walhalla oldfield. After extensive historical research drilling was undertaken in 1981-82, and indications were sufficiently promising for the company to begin reopening underground workings in late 1983. The original objective was to prove a low grade resource of 270,000 tonnes that could be extracted at a rate of 75,000 tonnes a year. This was later extended to a target of a million tonnes that could be mined down to 300 m, at a rate of 150,000 tonnes a year.

By early 1984, underground development had been taken over by Peter McCarthy, a Ballarat trained mining engineer, who introduced some innovative techniques to boost productivity such as the use of air-leg drills, Bobcat loaders for underground excavation and box trucks hauled by electric battery locomotives. By March 1985, the Walhalla adit was reopened to the former machinery chamber and the main shaft refurbished down to the No.3 Level. In the latter part of 1985, a small steel headframe and winch shed were built over the collar of the former Long Tunnel incline shaft, which was then successfully reopened down to the No.9 Level. Because of ground movement it was too dangerous to access the old stopes and drives directly, so new headings were driven through the hanging wall adjacent to the orebody using 2 m high x 1.4 m wide tunnels. In 1987, the old Empress shaft was also refurbished down to the water level. Work was also undertaken to reopen the Long Tunnel Extended shaft as part of an air ventilation circuit.

Despite some optimistic reports, the venture never really recovered from the tragic death of Paul Steinbacher, the mine manger, who was crushed by a rock fall on 18th September 1986, when the collar of the Long Tunnel Extended shaft collapsed during attempts to remove a blockage. By 1990, over \$6 million had been spent on exploration and development, proving a resource of some 373,000 tonnes at grades of around 5g/tonne, but it was considered insufficient to make a viable mining operation. Over 8 years work 1,500 m of old adits had been refurbished, 1,717 m of new drives and 1,005 m of cross-cuts were excavated. Limited surface explorations and drilling were continued through until 2010.

### Chronology of Some Significant Events in the History of Walhalla

1862 Ned Stringer and party discovered alluvial gold on a tributary of the Thomson River. The township was soon established and named Stringers Creek in his honour.

1863 Mrs Buntine, one of Australia's first female bullock teamsters, brought in the first load of provisions and equipment for the miners. John Hinchcliffe and James Myers found an outcrop of the gold bearing quartz known as Cohens Reef. Gold was discovered at Happy-Go-Lucky and Coopers Creek, to the south of Stringers Creek.

1864 The Walhalla Gold Mining Company was formed. The Reefers Arms, Golden Age, Cosmopolitan and Exchange Hotels were all built to meet the needs of an expanding population. The first quartz crushing battery was erected at Stringers Creek for the Alpine Quartz Crushing

Company, after being transported by ship to Port Albert, and then hauled over mountain tracks in a long circuitous route, via Mt Useful.

1865 The Long Tunnel Gold Mining Company was formed. Elliot's "Live and Let Live" bakery was established. The building still stands as Walhalla's oldest surviving building.

1866 The township of Stringer's Creek was renamed Walhalla after its most famous and highly profitable mine. The first Wesleyan Church was constructed.

1867 The Mechanics Institute and first Roman Catholic Church were built.

1868 Walhalla Common School No.957 was established. Classes were held in the Mechanics Institute building until a dedicated school house was built at the north end of the town.

1869 The 'sideling' road and retaining wall near the junction were completed, providing a more gradual descent from Campbell's Track to the main street at creek level.

1870 The Long Tunnel Extended Gold Mining Company was formed, taking over the workings of the defunct Hercules Mine. Cobb & Co. commenced a stage coach service between Toongabbie and Walhalla. The Walhalla Chronicle newspaper first appeared in print and continued to be published through until 1915.



(State Library of



(State Library of

1871 The Long Tunnel Co. produced its best result ever with a yield of 39,145 oz from the year's crushings.

1872 The Bank of Australasia opened its first premises at Walhalla. The Walhalla Cemetery was surveyed.

1873 Walhalla was declared a Borough and Mr Henry Rosales, manager of the Walhalla Gold Mine, was elected the first Mayor. The Oddfellows' Hall was erected near the junction. St John's Church was constructed for the Church of England congregation.

1875 A new State School building was constructed on the present day site. It had a peak enrolment of 565 pupils.

1876 A new access road was constructed down Little Joe Hill, providing easier access to Walhalla from Toongabbie and Coopers Creek.

1877 The second Wesleyan Church was built alongside the right hand branch of Stringers Creek, the original church being purchase for use as a Freemason's Lodge.

1882 The first waterwheel powered stamp battery was erected near the southern end of the main street to retreat mine tailings in Stringers Creek. A Sports Ground was formed by clearing and levelling the top of a steep hill close to the town centre and some 600 feet above street level. The Excelsior Cricket Club was the first local team to be formed.

1883 The last escorted gold consignment left Walhalla.

1884 The Long Tunnel Mine introduced electric lighting throughout surface installations and main adit.

1885 The first local Australian Rules Football Club was formed and played their first game against the Gippsland town of Morwell.

1886 The Walhalla Shire was proclaimed with a population of 3,648 people. The existing timber Post & Telegraph Office building was constructed.



its

(Museum Victoria)

1887 The high level iron bridge known as Brunton's Bridge was built over the Thomson River replacing an old wooden structure on the main road from Toongabbie to Walhalla.

1888 A fire destroyed most of the commercial heart of Walhalla. Volunteers were unable to control the flames as they engulfed numerous tightly-packed timber buildings.

1890 Windsor House, a two storey boarding house was built by the Glotz family, becoming the only brick residence in the town, and still stands.

1891 Stringers Creek flooded, causing devastation along its course through the township, with four lives lost. The Walhalla Community Hospital was opened.

1892 A new and larger school house was built after the earlier one was destroyed by fire.

1896 Walhalla's famous band rotunda was built near the creek junction for the Mountaineer Brass Band.

1897 Asphalt footpaths were laid throughout the length of the main street. An outbreak of scarlet fever swept through the town with many children dying before the disease could be checked.


1900 Six Italian timber cutters were killed in a tragic boating accident on Thomson River. Their funeral was the largest ever since in Walhalla.

1901 The Walhalla Volunteer Fire Brigade obtained their own Fire Station constructed on a bridge-like structure straddling Stringers Creek.



1902 The Long Tunnel Gold Mine begun sinking an incline shaft to reach their deeper ground. It would eventually reach a vertical depth of 3,675 feet (1,120 m).

1903 The Long Tunnel Extended Co. installed their own stamp battery after a delay of 34 years. Previously crushing been done at the old Walhalla Co.'s battery owned by the Long Tunnel Co. North Long Tunnel Co. constructed Walhalla's only steam loco powered timber tramway, extending northwards from the cricket ground for 10 km, incorporating several large timber trestle bridges.



1904 The incline shaft was completed making the Long Tunnel Mine the third deepest in Victoria. The Long Tunnel Extended Co. purchased the North Long Tunnel mine and steam firewood tramway.

1907 Sir Reginald Talbot, Governor of Victoria visited Walhalla inspecting underground workings of the Long Tunnel and Long Tunnel Extended mines before taking a trip on the steam tramway out to Aurum Gully for a picnic. Warwick Armstrong, Australian Test Cricket Captain led the Melbourne Cricket Club in a match against a team of locals at the Walhalla Cricket Ground.

1908 The first motor cars visited Walhalla, travelling over rough bush roads from Sale. Victorian Premier Thomas Bent opened the new battery house of the Long Tunnel Gold Mine, using a gold key made from the product of the mine. St Andrews Presbyterian Church opened.

**1909** The William Person Hospital was completed, replacing the original hospital. This building still stands on the hillside overlooking the town.

1910 The 2'6" (762 mm) narrow gauge railway from Moe finally reached its terminus at Walhalla and was opened by the Victorian Premier, Hon J. Murray.

1911 The Long Tunnel Extended Gold Mine closed after 41 years of operation, during which it produced 440,312 oz of gold and paid £788,640 in dividends, the main shaft having reached 3,073 ft (937m).

1914 The Long Tunnel Mine closed after 49 years' operation, having produced 820,251 oz of gold and paid out £1,283,400 in dividends. The vertical section below the incline shaft reached 3675 ft (1,120 m).

1915 The Walhalla Chronicle Newspaper closed.

1918 Walhalla Shire was annexed by the Shire of Narracan.

1944 The Walhalla railway closed beyond Erica.



(State Library of

had

The



(Museum Victoria)

1945 Fire destroyed the Mechanics Institute and Free Library, Roman Catholic Church and former Bank of Australasia.

1951 The Star Hotel, the last of Walhalla's original pubs, and the adjoining Oddfellows' Hall near the junction were destroyed by fire.

1952 A serious flood swept through the town with many of the historic buildings being damaged or wrecked, including the old Police Station.

1965 Walhalla State School closed, followed by the sawmill five years later.

1974 Work commenced on the rehabilitation of the old Long Tunnel Extended adit for use as a tourist mine, with the first section opened to the public in 1976. It has continued to operate since with daily tours.

1983 Following a surface exploration and drilling program Walhalla Resources Ltd began several years' underground exploration opening up former old workings of the Walhalla, Long Tunnel and Long Tunnel Extended mines to a depth of 300 m, but all work ceased by 1990.

1998 Walhalla became the last 'town' in Victoria to be connected to the State-wide electricity grid, despite being only 50 km from the heart of the State's brown coal-fired power industry in the Latrobe Valley.

1999 The Star Hotel at the junction was rebuilt providing stylish accommodation for a growing tourist trade. Soon 120,000 people a year were visiting the former 'ghost town'.

2002 Walhalla Goldfields Railway reopened the section of track from Thomson River to Walhalla after extensive restoration works that involved the refurbishment and rebuilding of ten bridges, including the spectacular Thomson River viaduct. By the time of the railway's centenary in 2010, it was carrying 34,000 passengers a year.

**The total value of gold won from Cohens Reef  
would be worth about \$1.8 billion Australian  
dollars at 2017 prices.**

#### Further Reading:

John Adams, *Mountain Gold: A History of the Baw Baw Shire and Walhalla Country of the Naracan Shire*, Victoria, Naracan Shire Council, Trafalgar, Victoria, 1980.

John Aldersea & Barbara Hood, *Walhalla, Valley of Gold – A story of its People, Places and its Gold Mines*, Walhalla Publishing, Trafalgar, 2003.

Nick Anchen, *Rails to Old Walhalla*, Sierra Publishing, Ferntree Gully, Victoria, 2011.

H. Herman, *The Walhalla Goldfield*, Special Report, Department of Mines, Victoria, 1901.

G.F. James & C.G. Lee, *Walhalla Heyday*, Graham Publications, Ringwood, 1970 (reprinted 1977).

Brian Lloyd & Howard Combes, *Gold in the Walhalla Region, West Gippsland*, Victoria, Histec Publications, Hampton East, Victoria, 2010.

Paull Raymond, *Old Walhalla – Portrait of a Gold Town*, Melbourne University Press, Carlton, 1963 (reprinted 1967).

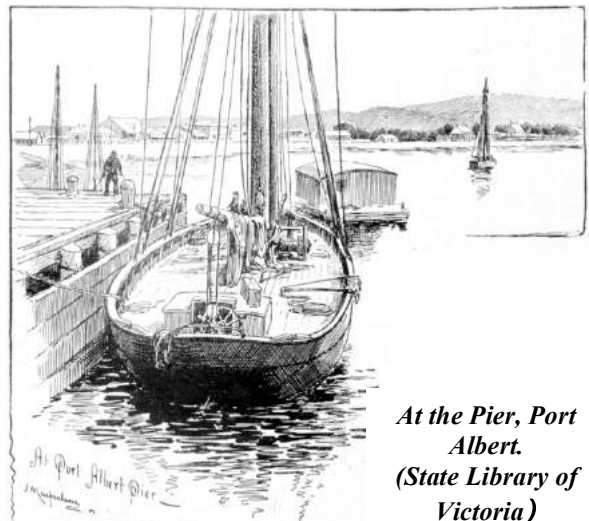
## Additional information on the port of Sale.

The southern region of Gippsland was opened up to European settlement largely through the efforts of two key explorers. In January 1840, Angus McMillan (1810-1865) set out from Omeo heading down the Tambo River, reaching and naming Lake Victoria, before continuing westwards crossing the Nicholson and Mitchell Rivers and discovering Lake Wellington. He reached the McAlister River, but found it too difficult to cross, and returned to Ensay on the Tambo River, 50 miles south of Omeo. Later he returned and eventually reached the south coast in the vicinity of Corner Inlet, establishing the key north-south transport corridor that would become so important in the early development of Gippsland, linking Port Albert to Sale and Omeo. Around the same period as McMillan, the Polish-born geologist Paul Edmund Strzelecki (1797-1873) crossed into Victoria after exploring the Snowy Mountains and passed down the Tambo River to also reach the Gippsland Lakes. In April 1840, he crossed a large waterway that he named the Maconochie River (today known as the Thomson River), and then crossed the Latrobe River. Continuing west he passed the present site of Traralgon and crossed the heavily forested range to the south that was subsequently named in his honour. His objective had been to reach Corner Inlet near Wilsons Promontory, but instead after almost dying of starvation his party eventually reached Westernport Bay and completed their journey in Melbourne.

Over the next few years the fine well-watered grazing country of South Gippsland and the Latrobe Valley were opened up to pastoral leases displacing the indigenous people whose traditional way of life and society was shattered, in some cases through violent conflict. In July 1846, Charles James Tyers (1806-1870), Victoria's first Commissioner for Crown Lands, advised Governor Latrobe of the urgent need for a road between Melbourne and Sale. Permission was granted to undertake a preliminary survey in March 1847, but progress was be delayed by extensive Koo Wee Rup and Bunyip swamps to the north and east of Westernport Bay. Gippsland's immediate transport needs would instead be served by water craft.

The wreck of the fine paddle steamer *Clonmel* on reefs near the entrance to Corner Inlet, enroute from Sydney to Melbourne, early on New Year's Day 1841, had a lasting impact on the early intercolonial shipping trade and led directly to the establishment of Port Albert. The settlement quickly became the early administrative centre of Gippsland and a transport hub for cargo being shipped to and from Melbourne or northern Van Diemen's Land (now Tasmanian) ports. The discovery of goldfields at Dargo, Nicholson River and Omeo in northern Gippsland during the following decade would begin to shift favoured transport routes.

In 1854 Charles Marshall and Thomas Chapman brought a whaleboat across from Tasmania and explored the Gippsland Lakes with a view to opening the waterways for commercial shipping. It was not until 1858, however, that Malcolm Campbell successfully brought his 69-ton schooner *Georgina Smith* across the sand bar at the natural entrance, becoming the first sizeable vessel to enter the Gippsland Lakes. Venturing up the Tambo River to Bruthen, he off-loaded supplies and



*At the Pier, Port  
Albert.  
(State Library of  
Victoria)*

building materials for the Omeo diggings. Residents of Omeo, Bairnsdale and surrounding districts hailed with delight the arrival of the schooner, and other vessels soon followed opening up the Lakes shipping trade. In 1860 a wharf was established below the confluence of the Thompson and Latrobe Rivers, 4 miles (6.4 km) south of the town of Sale, creating a new supply route to farming and mining settlements in central and northern Gippsland. When gold was discovered at Stringers Creek (Walhalla) in 1863, there were three established supply routes:

- By road from Melbourne over poorly formed and badly maintained rough tracks across the boggy West Gippsland swamps;
- By coastal steamer or schooner to Port Albert, then by a long road journey up through Sale; or
- By coaster schooner through the entrance into the Gippsland Lakes, then westwards across Lakes Victoria and Wellington to the Latrobe Wharf, with a shorter road journey through Sale.



*The Lakes Navigation Co.'s PS Tanjil (1878-1885) at Latrobe Wharf, which served as the first Port of Sale throughout the 1860s-1880s. (Source: State Library of Victoria)*

On all routes the road journey was often the most time consuming and expensive leg, so despite its extra mileage the shipping route through the Lakes often became the preferred option. Over subsequent decades residents and community leaders in the Sale district agitated for both a direct rail connection to Melbourne and improved navigation on the Gippsland Lakes.

The completion of the final section of the Gippsland Railway from Oakleigh to Sale in March 1878, finally gave Sale its long sought railway connection. An example of the benefits that the railway brought can be seen in the reduction of delays to mining operations where urgent machinery repairs were required. In 1868, the Walhalla Co broke the crankshaft of their battery engine. A replacement part was urgently ordered from a Melbourne foundry and rushed by steamer to Port Albert, before being carted up by road through Toongabbie, but the crushing plant had been idle for 14 days before work resumed. A decade later in August 1878, the Long Tunnel Gold Mining Co. suffered a failure of the crankshaft on their large pneumatic pumping engine and the manager Ramsay Thomson raced to Melbourne to procure a replacement. The part was dispatched via the newly completed Gippsland Railway, being off-loaded at Moe, and had been received and installed at the mine within a week, allowing pumping to resume the following day.

The same month as the railway opened the prominent British harbour engineer, Sir John Coode (1816-1892), arrived in Victoria to advise the Melbourne Harbour Trust on works to improve the Port of Melbourne. During his stay he was persuaded to visit Gippsland to also report on the failed attempts to construct an improved entrance channel into the Gippsland Lakes and to examine the merits of a proposal to build an artificial canal from the Thomson River to bring shipping into the



heart of Sale. In October 1880, after a two and a half year wait; the Public Works Department finally received Coode's report. Coode had been asked to examine two options for the Sale Canal:

- No.1 Scheme – a  $2\frac{3}{4}$  mile (4.4 km) channel from Latrobe Wharf across the Flooding Creek swamp lands to the Eastern Lagoon (now Lake Guthridge);
- No.2 Scheme – a one and a quarter mile (2 km) channel from the Thomson River at McArdell's Gap to a Swinging Basin at the Western Lagoon.

Coode recommended the second scheme, at an estimated cost of £36,700. After a further protracted public debate about how the works would be funded, Alfred Deakin (1856-1919), Victoria's Commissioner of Public Works announced in 1884 that the construction of the Sale Canal was "a national work of great importance to the eastern portion of the colony". In October 1885 approval was given for the project to proceed as a fully funded government scheme, although final Parliamentary approval took another year. Construction work was undertaken in three contracts from 1886-1890:

- Stage 1 – From McArdell's Gap for 2,500 ft. (762 m) southwards, the natural course of the Thomson River was straightened by the removal of two bends, then dredged and de-snagged – the contract being let to T.G. Mattinson in January 1886, at a cost of £4387;
- Stage 2 – From McArdell's Gap northwards to Flooding Creek (Sale), a new straight cut channel was excavated for 4,600 ft. (1,400 m) – the contract being let to T.G. Mattinson; and
- Stage 3 – Excavation of the Swinging Basin and associated works at the Sale end – the contract being let to T.G. Mattinson & Monie.

By March 1886, Mattinson had a small army of 60 to 80 'navies' employed on the excavation, working with the aid of eight to ten Chesney's patent earth scoops, each pulled by a team of two or three draught horses. The innovative wheeled scoops scrapped earth into an iron box that could be tipped upwards by a lever when full, allowing the load to be readily transported to a spoil dump without the need for horse drays. Later in the project a narrow gauge tramway was laid down so that mining trucks could be used for shifting the spoil, with rakes of trucks being hauled up an incline out of the cutting by horses, then by using a small donkey engine, and when it failed, by using the winch on one of the district's first steam traction engines, supplied by William Forbes, a Briagolong sawmiller. In February 1890, as the works approached completion, a description was published in a local newspaper:



*"The swinging basin, the chief source of attraction, is near completed, and is indeed a very large cutting, being some 300 feet wide, 500 feet long and 17 feet deep ... Owing in great measure to the enormous number of small artesian springs, the contractors are compelled to continue pumping operations without intermission."*

*n ... Messrs Mattinson and Monie having secured the contract for the wharf have already several thousand feet of sawn timber on the ground, and in the course of a few days expect the piles to arrive when a start is to be immediately made with the driving. The wharfage accommodation is exceedingly small being only 100 feet long and 20 feet wide."*

Councillor J.J. Drew, Mayor of Sale, drove the first pile for the wharf and Mr Timms won the tender for construction of 4,620 ft. (1.4 km) of railway track from the Sale railway terminus to the wharf. The first vessel of any size to enter the Swinging Basin was the Bairnsdale-based steamer *JCD* bringing a day excursion party up to Sale. In early April 1890, the locally owned trading steamer *P.S. Omeo* came into to the port to discharge the first cargo and passengers at the new wharf. By May a dredge was completing finishing touches to the Swinging Basin and Canal and on 1 September 1890, the 'wharf line' or 'fish line', was officially opened for business. In June 1891 the wharf was doubled in length and by August 1891, a 80 ft. (24 m) long goods shed with railway verandah was completed.

The completion of the Sale Railway in 1878 had altered the fundamental dynamics of shipping on the Gippsland Lakes. The pioneering Gippsland Steam Navigation Co. that had operated regular steamer services between Melbourne and the Latrobe Wharf went out of business in 1882. Instead new firms emerged like the Lakes Navigation Co., formed in 1877, concentrating on trade within the Lakes, particularly the tourist and excursion passenger trade and the movement of local produce (such as fish, hops and tanning bark), that were collected from small settlements throughout the Lakes and associated rivers, and brought to Sale for transfer onto the train to Melbourne. In 1878, the *P.S. Tanjil*, a 120 ft. (36.6 m) long wooden-hulled steamer, purpose-built in Melbourne, was introduced as an excursion boat by the Lakes Navigation Co. It would be destroyed by fire in 1885, but was rebuilt and was joined by the *P.S. Dargo*, *P.S. Omeo*, *S.S. Bogong* and the *Sarah*, all of which operated from the Latrobe Wharf. The Lakes Navigation Co. went into liquidation in May 1890, just as the new canal and port was about to open, but was succeeded by the Sale Steamboat Co., formed in September the same year, which took over the *P.S. Dargo* and *P.S. Omeo*. For the residents of Sale, the completion of the shipping canal and port came too late to be a major influence on the shipping trade. The extension of the railway from Sale to Bairnsdale in 1888 was to capture much of the through trade with East Gippsland, and the year the works were completed; Victoria was plunged into a prolonged economic recession, which prompted the Railways Department to drastically reduce their freight rates undercutting shipping costs. Another factor was the emergence of J.C. Dahlsen & Co, of



**Map of the Gippsland Lakes published by the Lakes Navigation Co. showing the ports and routes used by the company's steamboats. (Source: Peter Synan)**

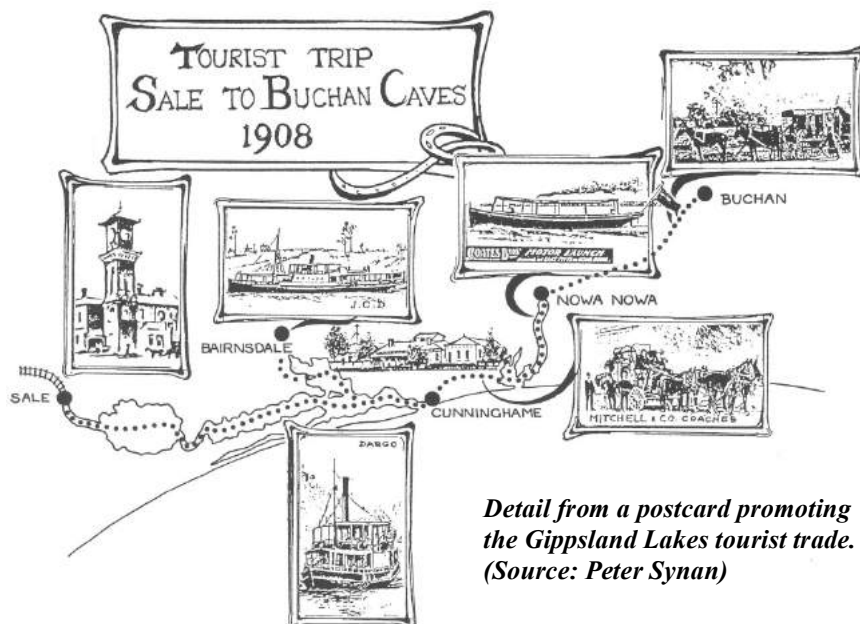


*"Packing fish for Melbourne" to be collected by steamer from the landing and transferred to the railway at Sale, circa 1886. (N.J. Caire, State Library of Victoria.)*

Bairnsdale, that became an aggressive competitor on many of the same routes. By 1900, the Sale Steam-boat Co. was offering tours to new destinations such as Ocean Grange, Cunninghame and the Buchan Caves.

In 1900, there were two regular coastal steamers operating between Bairnsdale and Melbourne, while a third, the *Queenscliff*, operated to and from Sale. More occasional traffic included loads of coal shipped from Sydney for the Sale gas works and outwards cargoes of timber and paving wood blocks from Gippsland sawmills for Melbourne. The combined inward and outward trade from Gippsland ports was estimated at 40,000 tons, of which the largest share passed through Bairnsdale.

The opening of the Bairnsdale to Orbost Railway in 1916 and the decline in tourism due to WWI marked the beginning of a slow decline for the Port of Sale. After WWI the rapid growth of motor transport would further strangle the Lakes shipping trade, capturing a large share of both the goods traffic and tourists.



*Detail from a postcard promoting the Gippsland Lakes tourist trade. (Source: Peter Synan)*

By 1927, direct shipment from Melbourne to Bairnsdale was maintained only by the *S.S. Hall Caine*, a vessel of light burthen, and a draught of only 8 ft. 6 in (2.6 m), carrying around 9,000 tons of cargo a year. The direct trade to Sale from outside the Entrance had ceased in 1916, with goods subsequently having to be transshipped at Cunninghame or Bairnsdale to the smaller *P.S. Burrabogie*, that was shallow enough in draft to navigate across Lake Wellington and up the Thomson River. The Sale-based trade was by then largely restricted to two boats running tourist trips and collecting parcels of

fish *enroute* to be transferred to refrigerated rail vans at Sale wharf, for quick conveyance to Melbourne.

Over the period 1870 to 1925, some £219,000 had been spent building and maintaining the entrance channel into the Lakes; while a further £220,000 had been spent dredging and de-snagging channels in the lakes and rivers and £35,000 building the Sale Canal and port facilities. The grand vision of a thriving shipping trade centred on the Gippsland Lakes had not materialised. The rhetoric of Gippsland's primary industries thriving through a direct export trade to Sydney had not been realised. These were, however, the very arguments that had persuaded the Government to build the channel at Lakes Entrance, excavate the Sale Canal and operated a fleet of four dredges to maintain draft through the waterways.

Today after many decades neglect, the Port of Sale has been redeveloped as a modern maritime facility for use by recreational craft and tourist vessels, with \$2.5 million spent on refurbishment works in 2003-2004. Heritage walking trails have been developed from the Port of Sale to the Swing Bridge and nearby wetlands surrounding the former Powder Magazine. In 2009, the Port of Sale and the Sale Navigation Canal were awarded an Engineering Heritage Marker by Engineers Australia, in recognition of their contribution to the development of shipping on the Gippsland Lakes.

**Sale Powder Magazine** With the transition of Victorian gold mining in the late 1850s into working quartz reefs, alluvial cements and deep leads, explosives became an essential mining consumable. Initially gunpowder, known also as black powder or blasting powder, was the only explosive available to Victorian miners.



*The restored Sale Powder Magazine (Source: Peter Synan, Story of the Sale Powder Magazine)*

Gunpowder was introduced into Europe from China in the 13<sup>th</sup> century, being originally used in warfare and firearms; however, by the 17<sup>th</sup> century it was also adopted as an explosive in mining, although this latter application remained extremely hazardous until the invention of the safety fuse by William Bickford in 1831. In Australia, gun powder was used by police and colonial defence forces, hunters, sporting shooters, for blasting in quarrying and civil engineering works, and for a variety of farming tasks such as land clearing, dam sinking or channel building, although by far the largest consumer was the mining industry. By 1861, Victoria's annual imports of gun powder and blasting powder amounted to over 1.2 million lbs. (536 tons), valued at almost £50,000, with over 90% originating from English and Scottish manufacturers.



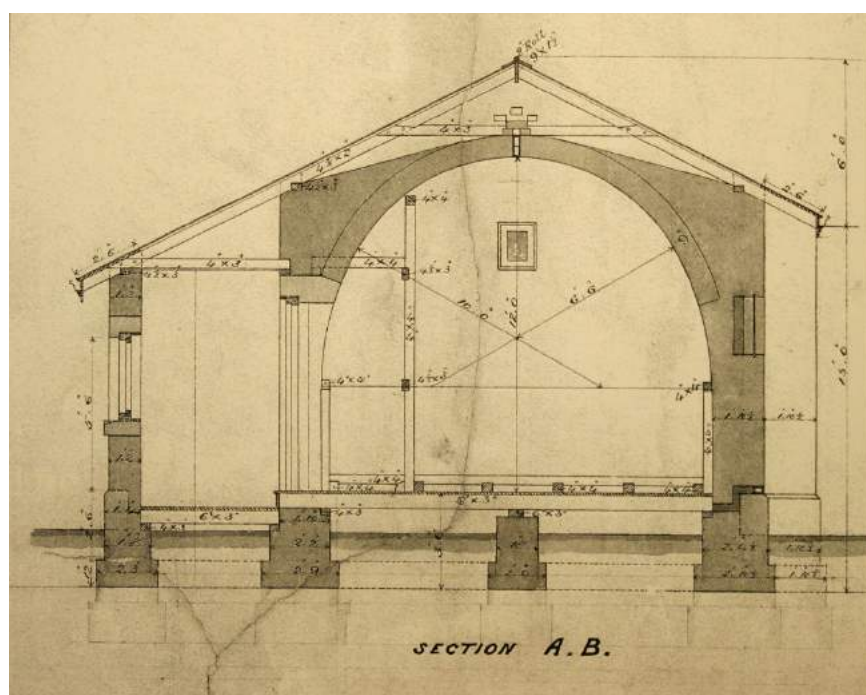
Gunpowder was traditionally manufactured by grinding together a mixture of saltpetre (sodium nitrate), charcoal and sulphur and generally had a fine granular or grain-like texture rather than being a fine powder. For safety and convenience gunpowder was usually transported and stored in small wooden kegs or barrels, weighing typically around 25 to 28 lbs. (11–13 kg) each, although it was also sold in cardboard cartridges packed in wooden boxes. Strict safety regulations were imposed on the handling, transport and storage of gun powder because of the risk of explosions which could be readily initiated by fire, sparks (from static electricity, machinery or striking steel tools), lighting strikes, excessive heat, abrupt shaking and impacts, or even from friction. In addition gun powder needed to be kept dry as it would readily absorb moisture, causing its effectiveness to be diminished or destroyed. The storage of large quantities of gun powder within towns or closely settled areas was prohibited and so to ensure public safety, the colonial government constructed a number of fortress-like powder magazines at Victoria's main shipping ports and outside other major centres, particularly near the goldfields, each sited a safe distance from the nearest inhabitants.

With the discovery of the Gippsland goldfields in the early 1860s, both Port Albert and Sale became major shipping ports on the main supply routes to the goldfields. Sale was chosen as the location of the first government powder magazine in Gippsland in 1864, chiefly because of its proximity to the major quartz mining fields at Donnelly's Creek, Stringer's Creek, Crooked River, Boggy Creek and Omeo. A powder magazine was subsequently also built at Port Albert in 1866. The site chosen for the Sale Powder Magazine was situated on a peninsula formed by a long hairpin bend on Flooding Creek, being close to the shipping wharf at Latrobe Bridge (later the site of the Swing Bridge) and well outside the main residential and business area of Sale. The site was relatively private and a natural protection from the risk of grass fires being surrounded by the creek and an area of low-lying swamp.

Joseph Irving, a local contractor, was awarded a government contract to construct the Sale Powder Magazine in November 1864, at a cost of £839. The magazine was built with strongly buttressed solid red brick walls 22½ inches (570 mm) thick, on sandstone foundations, in a fortress-like simple classical style, and has a gabled slate roof. Stepping through the enclosed entrance lobby on the west side, one enters a large single room measuring 30 ft. x 14 ft. (9.1 m x 4.3 m) with a timber floor and a barrel-vaulted brick ceiling designed to contain any accidental blasts. Originally the space was filled with four wooden racks on which the powder kegs and cases were stored. The maximum capacity that the magazine was designed to hold was twenty-six tons of powder. Special features incorporated into the structure to protect the powder from the risk of explosion, included wooden pegs instead of nails securing the floorboards, brass door hinges with copper and brass latches and lock mechanisms, while ventilators in the exterior walls were offset to prevent land windblown bushfire cinders from entering the building.



*Map of key supply routes from Sale to Gippsland goldfields (Peter Synan, *Story of the Sale Powder Magazine*)*



*Cross-section for the original plans for the Sale Powder Magazine showing details of the building's construction and vaulted brick ceiling. (Source: Public Record Office of Victoria, VPRS 3686/1, Unit 427, Plan No, PMS1)*

On completion, Sergeant Edward Scanlon, a Sale policeman, was appointed as the magazine keeper. He kept records of all transactions and powder stored, collected storage fees on behalf of the government and was the only person authorised to enter the building. Amongst the safety regulations that he was required to comply with were:

- No entry unless barefooted or wearing magazine slippers;

- No smoking on duty or fires to be lit in the vicinity of the magazine;
- No iron, lights, Lucifer matches, or greased rags to be taken into the magazine.

Kegs of gunpowder were typically delivered to the Sale Powder Magazine by sailing schooner. Carriage by steam ship was prohibited because of the inherent risk of sparks or heat from the boilers setting off an accidental fire or explosion. The schooner *Albert*, owned by Nehemiah Guthridge, a Sale Mayor and pioneer of Gippsland Lakes shipping, was the main carrier of powder into North Gippsland during the 1860s. The little thirty-seven ton vessel regularly made the hazardous coastal journey from Melbourne braving the wild waters of Bass Strait and the treacherous passage over the sand bars across the natural entrance channel at Lakes Entrance. In September 1869, she sprung a leak after striking sand bars just inside the entrance and sank in four feet of water, but was able to subsequently be re-floated and repaired. Five years later she was less fortunate in April 1874, again succumbing to the dangerous combination of strong tidal currents, heavy breakers and sand shoals at the entrance. The vessel was soon swamped and began breaking up within hours, although not before three-quarters of the cargo could be salvaged and landed on the beach “more or less damaged”.

Although cargoes destined for Sale were usually landed at the Latrobe Wharf below the bridge during 1860s and 1870s, at times a sand bar formed at the mouth of the Latrobe River preventing even small vessels like the *Albert* from passing upstream. A wharf at Clydebank on the Avon River south of Stratford was then used as an alternative landing, while at other times when the entrance to the Gippsland Lakes itself became blocked, cargoes had to be unloaded at Port Albert, and the powder carefully carted overland by road to the Sale magazine.

### ***Patent Safety Blasting Powder***

Aside from its safety hazards, one of the main disadvantages of tradition black powder was the thick smoke and suffocating fumes generated when it was exploded in the confined spaces of a poorly ventilated underground mine. This often caused a significant delay before miners could safely return to the working face after a blast. In June 1871, the Victorian mining engineer Alan Cameron Lyster De Lacey patented a “Safety Smokeless Blasting Powder”. After successful trials in several Bendigo and Castlemaine mines, it was claimed to be not only more powerful than standard black powder, but also safer to use, with virtually no smoke or odor emitted and little risk of explosion when exposed to fire, making handling and storage easier. The Victorian Patent Safety Blasting Powder Co. was established to commence local manufacture under De Lacey’s patent; however, there was a considerable delay in finding a local council that was prepared to approve such a hazardous industry. A suitable site isolated from other industry and buildings was finally located on the banks of Stony Creek near Yarraville, beneath what are now the western approach spans of the West Gate Bridge. There, in two small non-descript corrugated iron sheds, the manufacture patent blasting powder commenced. The machinery was driven by horsepower to avoid the risk of fire or explosion. Once prepared and milled, the powder was pressed into small cartridges of several sizes convenient to the use of miners. The local product was cheaper than English powder selling at a penny per lb. less than the imported article and production was soon running at 2½ tons a week. By 1874, output of Victorian Patent Safety Powder had reached almost 200 tons a year, capturing half the local market and arrangements were being made to commence manufacture in other colonies. The business would have only a brief ‘golden age’, however, before a new competitor arrived.

### ***Demise of the Powder Trade***

In 1867, the Swedish chemist and industrialist Alfred Nobel invented a nitroglycerine-based explosive that he called *Dynamite*. In 1871 Nobel formed the British Dynamite Co. with Scottish investors and shortly afterwards opened the



first British dynamite factory at Ardeer in an isolated location on the Scottish coastline south of Glasgow. The first imports of dynamite arrived in Victoria in 1872, and by 1874 the new explosive was in use in the Long Tunnel mine at Walhalla. Over subsequent years a number of alternate nitroglycerine based explosives were also introduced, such as Lithofracteur and later Gelignite that were safer to store and handle and produced less noxious fumes than either Dynamite or black powder. In 1875, the Australian import agents Jones Scot & Co established a Lithofracteur manufacturing works beside Koroit Creek on the western outskirts of Melbourne, and the following year the Australian Lithofracteur Co was formed to take over the works, where both Lithofracteur and Dynamite were produced. The new classes of nitroglycerine-based compounds were commonly known as “high explosives”, because they had a vastly superior explosive force than blasting powder. They were unsuitable for storage in traditional magazines like the building at Sale and regulations allowed storage of only small quantities. In addition some of the early products such as Dynamite had a tendency to sweat when stored for prolonged periods, so the time they were permitted to be stored before use was limited to no more than 3 months. As local manufacture displaced imports, the price of Dynamite and Lithofracteur declined significantly, so that by the late 1870s they had become the preferred explosive in most Gippsland mines. The technological change would spell the demise of the Sale powder magazine.

**The Australian Lithofracteur Company,**  
**KREB'S PATENT, LIMITED.**


Support Colonial Industry by insisting on getting the above Company's Brand of Lithofracteur  
and Dynamite Freer from Fumes and Stronger than any other.



Lithofracteur



Krebs Bros & Co.  
Patent.



Dynamite.



Best Quality.  
"SUN BRAND."



DIRECTIONS FOR THE USE OF  
**LITHOFRACTEUR AND DYNAMITE.**

**PREPARING THE CHARGE.**

(1.) It is *absolutely necessary* that this should be soft and pasty when used. If hardened, as is frequently the case, by cold weather the cartridges may be softened (a) by being kept in the Workmen's pockets, or (b) by placing them, dry, in a tin, immersed after the fashion of a glue-pot in a larger vessel of hot water, or (c) by the application of any *gentle* heat. They should on no account be placed near a fire, steam-boiler, or other metallic surface liable to be heated above boiling point as they are then liable to explosion. Too dry an atmosphere should also be avoided.

*An early advertisement for Australian-made Lithofracteur and Dynamite. Note the instructions for softening cartridges in cold weather by placing them in workmen's pockets.  
(Historical Society)*

In 1881, the Victorian Mines Department announced that the Sale magazine would be closed due to declining demand. When the local community protested, it was pointed out that only small quantities had been stored there for some time and Sergeant Scanlon was instructed to inform all owners that they had until the end of September to remove their powder. New magazines for nitroglycerine explosives were established at Walhalla by 1888, and later at Bairnsdale in 1891 and Omeo in 1892. Their design was much simpler, being typically timber structures enclosed by protective earth embankments. After its official closure local hardware firms used the magazine as a powder depot for a short period, and during the Russian invasion scare of 1885, it was used as an ammunition store for the local mounted rifles volunteer corps who trained nearby.





*Small storage sheds for dynamite and other nitro-glycerine based explosives were built in an isolated gully at the southern end of the Wallhala township in the 1980s. Access was provided by a timber footbridge with tramway and trolley for the carriage of the explosives. (State Library of*

After a subsequent period of disuse the building was sold in the 1920s to the Garret family, who would own it for the next 60 years. The main room was partitioned and several outbuildings were constructed but gradually the once fine structure fell into disrepair. For a period in the 1950s it was used as flats for migrant families.



*Aerial view of the Sale Powder Magazine nestled in a former bend of Flooding Creek (Source: Skyworks Photography)*

At the urging of the Sale Historical Society, the derelict former powder magazine was purchased by the Sale City Council in 1996. A local committee set about organising the restoration, guided by heritage architect Gabrielle Moylan and reference to the original plans and specifications. The Mayor of the Shire of Wellington officially opened the resorted powder magazine on Australia Day, 26th January 2000.

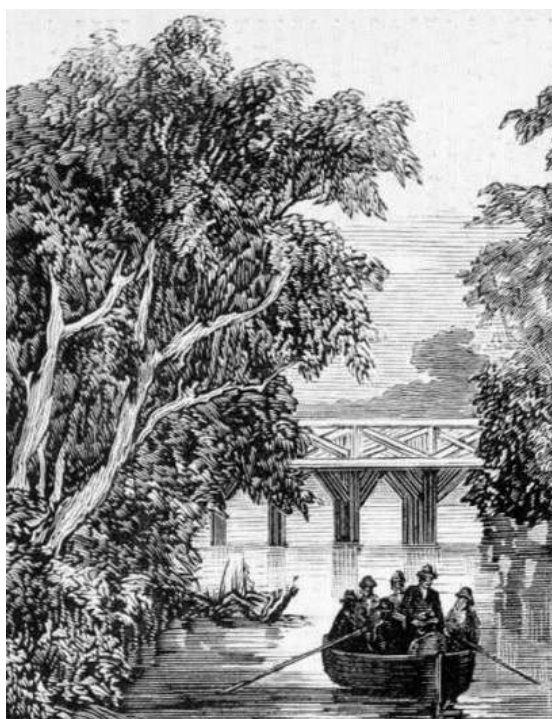
## The Sale Swing Bridge



*The Latrobe River Swing Bridge at Longford, near Sale, following restoration in 2004.*

The swing bridge at Longford, near Sale is the oldest surviving structure of its type in Australia, and forms a key part of Gippsland's transport heritage with connections to both early road and water transport of the region. It was originally officially known as the La Trobe Bridge. Situated five kilometres south of Sale, the bridge provided the third crossing near this site on the oldest road in Gippsland. Linking the coastal settlement of Port Albert with inland town of Sale, the route was established in 1841 by Angus Macmillan to supply pastoral properties in central Gippsland. In 1843, James Aitken established a punt crossing on the route about a kilometre downstream of the junction between the Thomson and Latrobe Rivers.

In July 1857, Edward Watson was awarded a contract to construct a fixed low-level timber bridge over the Latrobe River on "Gippsland Road", upstream of the punt, at a cost of £1,430. The advertisement for tenders to construct the bridge was welcome news to most Gippslanders,



the  
cost



## La Trobe Bridge.

**THE undersigned begs most respectfully to inform the public that on and after the first day of May, 1858, the La Trobe Bridge will be open for crossing bullock and horse teams, &c.**  
**351 EDWARD WATSON.**

informed the syndicate *"that it is not considered desirable to delay the erection or alter the design of the bridge at present, but in the event of the establishment of steam communication, as contemplated, the Board will be prepared to open the central bay of the Bridge, so as to admit of the free navigation of the River."*

Before the new bridge could be brought into service, it was necessary to construct a long causeway across several hundred yards of low lying bogging ground known as the "morass" on river the western side of the river.

In keeping with many major Victorian river crossings built in the post gold rush era, the timber Latrobe River Bridge operated as a toll bridge. A toll was charged on all vehicles, pedestrians and livestock crossing the bridge with contributions going to a road fund to be spent on maintaining the bridge and Punt Lane that provided access to the crossing. The toll keeper lived in a small cottage on the causeway close to the bridge. The tolls were never popular with local residents or travellers passing through the district, not least because they were insufficient to maintain the approach road still known as "Punt Lane". It was frequently rendered impassable after prolonged rain, becoming flooded and degenerating into a boggy "gluepot". In 1874, when boundaries of the Borough of Sale were redrawn to include Punt Lane, local councilors moved to abolish the toll for more direct shipping access to the town of Sale continued over the subsequent decades, with the Government briefly considering the construction of a branch railway to the Latrobe River wharf in the early 1870s. The completion of the Gippsland Railway as far as Sale in 1878 eased the difficulties of delivering supplies to the town's merchants, but the trade of shipping within the Gippsland Lakes was not addressed. A canal from Marvell's Gap on the Thomson River into the town center was proposed, together with de-snagging of the river, but both would be ineffective while the fixed bridge remained as an 'impassable barricade' to shipping.

In April 1879, the Commissioner of Public Works invited competitive tender designs for a "swing or draw bridge" over the Latrobe River at Sale.

First prize of £50 for the winning design was awarded the South Australian engineer and architect, John Grainger, in partnership with John Jenkins, the town surveyor of Richmond, for a bridge with a cantilevered central rotating section rather than a lifting span. The elegant design was succinctly described in a Melbourne newspaper as follows:

*"The swing portion of the adopted design turns round on a pivot in the center, thus making the two openings. It will be of wrought iron lattice girders, which will travel upon a cast iron track*

however, it created consternation for one local businessman Phillip McArdell and his partners, who had shortly beforehand commissioned the construction of the first steamer for the Gippsland Lakes on the banks of the Thomson River, upstream of the new bridge site. dispatched to the Governor of Victoria and President of the Board of Land & Works, requesting that the design of the bridge be modified to include a draw span, but after a months' delay when a reply was finally received, the Secretary of the Central Road Board

Department of Public Works,  
 Melbourne, 22nd April, 1879.  
**DESIGNS FOR SWING OR DRAW  
 BRIDGE OVER THE RIVER LA-  
 TROBE AT SALE.**  
**NOTICE TO INTENDING COMPETI-  
 TORS.**  
**A** PLAN of Site and Conditions of Com-  
 petition may be had on application at  
 this office, and at District Survey Office,  
 Sale, on or after 29th April. Price, 2s 6d.  
 The time for receiving designs is extended  
 to 17th June.  
**J. B. PATTERSON,**  
 Commissioner of Public Works.

*with rollers. This will rest upon a cluster of hollow piles made of cast iron, and sunk in the river, afterwards to be filled with concrete. The mechanical arrangements will be of a description to allow the bridge to be opened and closed by one man, and relieving gear will be provided for letting down the ends, so that by its own weight the swing part will settle firmly into its socket, and become thoroughly secure. The approaches are to be of lattice work, with walls at the termination of the wings."*

Much relief was expressed locally in the superior design solution, not least because a timber lift bridge completed four years previously over the Mitchell River at Barnsdall, at the enormous cost of £13,000, had failed to function as intended.

After the competition prize was announced, Grainger was commissioned to produce full working drawings and visited Sale in early 1880, in order to inspect the works site. Later when construction began Grainger made his base at Sarah Thomas' Victoria Hotel at the Latrobe Wharf, just downstream from the bridge site.

***A depiction of the Swing Bridge shortly after completion. Australian Town &***



The contract to manufacture all ironwork for the bridge was let to J.C. Johnson & Co, of the Tyne Foundry, South Melbourne. In February 1881, Johnson & Co advertised tenders for the "Carriage of 180 tons Material (more or less) from Melbourne to Latrobe River Bridge, Gippsland Lakes". Delivery of the cast iron cylinders to the bridge site occurred by schooner through the Gippsland Lakes and by July sinking of the cylinders was progressing with the aid of two divers working shifts. Despite promising early progress, difficulties were subsequently encountered in securing solid foundations, testing the experience of Platt the contractor. It appears that Grainger had miscalculated the depth of loose sand over the underlying bedrock, but resorting to driving timber piles beneath the riverbed eventually solved the problems. This procedure was not at all uncommon in the period under either masonry or iron piers and abutments.

The new bridge was finally ready for traffic by early September 1883, with the swing span being successfully tested by turning it end for end on Thursday 6th September, with "everything working very smoothly". The old timber bridge alongside was demolished shortly afterwards. In mid- September the Mayor convened a public meeting *"to discuss some mode of celebrating the [opening] event in a manner befitting the importance of the occasion"* but *"an hour after the appointed time of the meeting, the only persons present were, the Mayor, three civilians, and two reports"*. Consequently the matter was allowed to lapse and the *Gippsland Times* reported ruefully that *"Such extreme lethargy in reference to such an important work is to be deprecated, and is not at all in keeping with the clamour that was raised to get the bridge."*



A fortnight earlier, there had been an unofficial opening of sorts, when the funeral procession carrying the remains of the pioneering pastoralist John Campbell, owner of nearby Glencoe Station, had crossed the new bridge. Preceded by a walking bagpipe player in Highland costume, the cortege described as *“the largest that has ever seen in Sale”* left Glencoe Station at 1 o’clock and on reaching the Latrobe River passed over the new swing bridge. Mr Gordon, the foreman of the works, was acknowledged to have kindly made the necessary arrangements to fulfill a wish previously expressed by John Campbell *“to be the first person to drive over it on its completion.”*

While Grainger’s later Princes Bridge used riveted steel girders (for the first time in Victoria), the Sale Swing Bridge had a riveted superstructure fabricated from wrought iron, with the bridge pier columns, turntable, rollers, mechanical components and ornament brackets of cast-iron.

The bridge is 213 ft. (65 m) in overall length between abutments, by 22 ft. (6.7 m) wide between the kerbs. The central rotating section of 152 ft. (46.3 m) in length weighs 100 tons and rotates to provide to openings of 60 ft. (18.2) clear with a central pier of 27 ft. 6 in (8.4 m) diameter supported on nine cast iron columns. The bridge is of an unusual design, acting as a conventional riveted wrought-iron girder bridge when closed with jacks lifting the outer ends of the swing span to ensure that half the load of the structure and any crossing traffic is borne equally by the two approach span piers. When open the elegant curved half-through lattice wrought-iron trusses on either side of the deck support the deadweight of the outer ends of the swing span, forming a giant cantilevered span. 26 tapered self-centering cast-iron rollers the entire swing span to rotate on a circular cast-iron turntable.



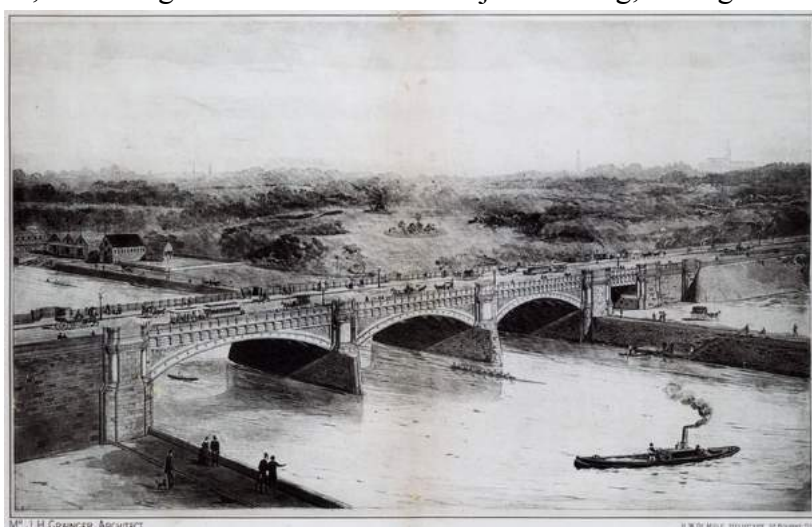
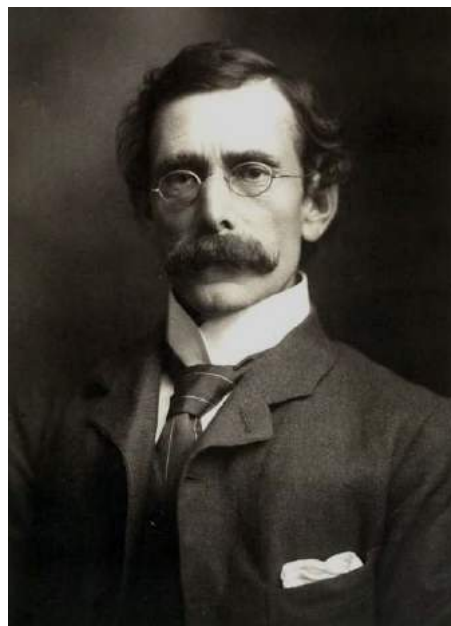
The bridge was topped with a double-planked timber deck laid longitudinally and crosswise. The whole project was completed at a final cost of £11,500.

### ***The Bridge Builders***

John Harry Grainger (1854-1917) was just 24 years of age when he won the design competition for the Latrobe River Swing Bridge. Remarkably, at the same time

Grainger and Jenkins had also entered a design competition for a new Princes Bridge over the Yarra River, in Melbourne, and were successful in the second competition also, with their designs titled “Premier” winning the £200 first prize. The Princes Bridge would become Grainger’s best known and most widely appreciated design, but would take nine years to reach fruition.

Grainger was born in Westminster, central London, into a Northumbrian family of builders, architects and engineers, although his father John Grainger was employed as a master tailor. He was heavily influenced by an uncle, a builder, with whom he lived for a number of years in Durham, north eastern England. At 15, he began his engineering training under William E. Wilson, of Westminster, a well-connected engineering consultant to railway and bridge contractors. He would later in life recall that he had learnt the art of iron bridge design “with Mr Wilson, the well-known engineer of the Metro District Railways and with him, iron bridge making has been a special study”. Grainger also studied architecture with I.J. Eden & W.K. Green, of Westminster, following the tradition of on the job training, through drawing office practice and supervision rather than formal university education.



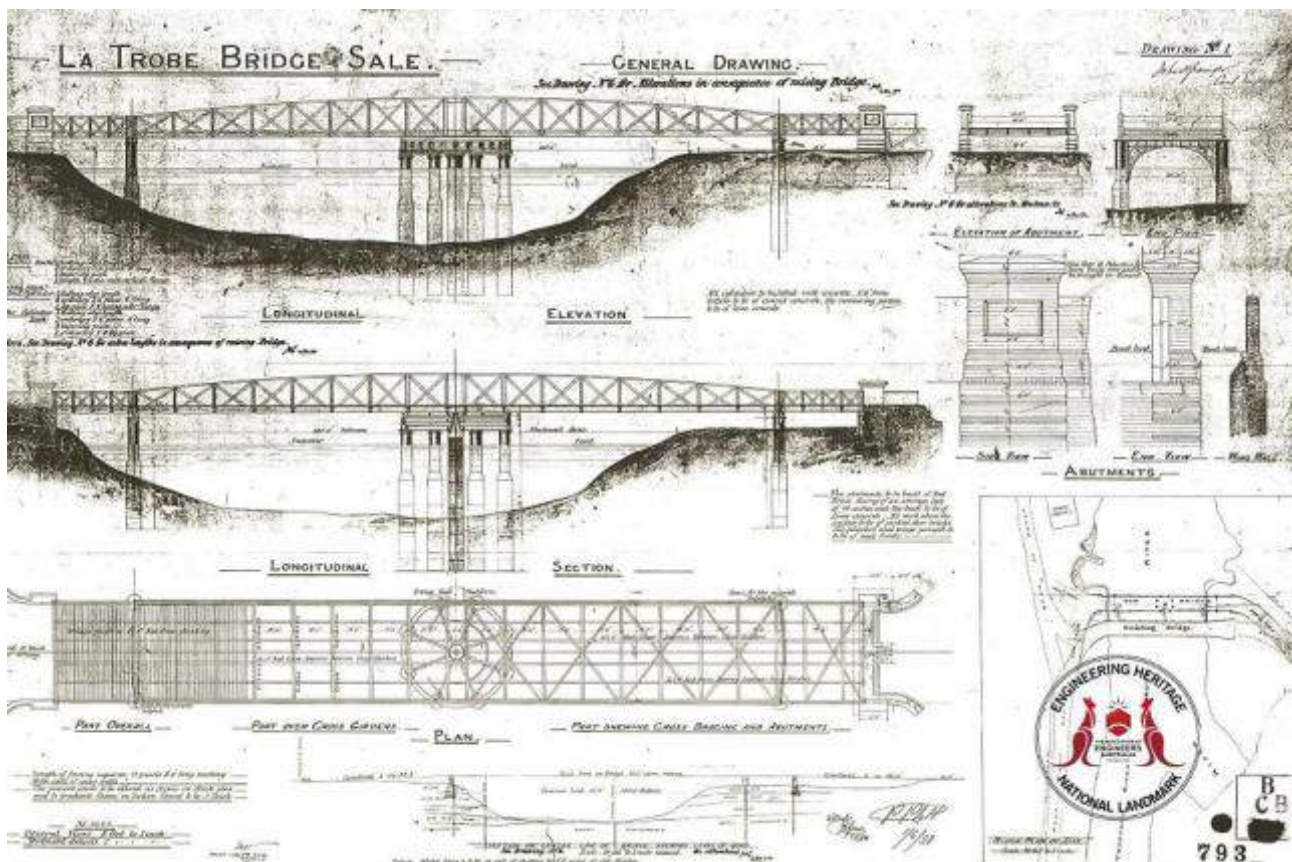
*Grainger original design sketch for Princes Bridge  
Grainger Museum Collection, University of Melbourne*

In the 1870s, Grainger travelled throughout Europe, visiting Spain, Italy and France. Then in 1877, he arrived in Australia, gaining a position as an assistant engineer in Adelaide under Henry Coathupe Mais (1827-1916), Engineer-in-Chief of the South Australian Public Works Department. After winning a competition the following year with his elegant designs for the Albert Bridge over



the Torrens River, he resigned his government position and commenced in private practice, receiving further commissions from a number of wealthy clients.

When Grainger entered the two Victorian bridge competitions, he had not visited Victoria and appears to have not even met Jenkins, who seems to have been engaged as a local agent or 'man on the ground' to survey the sites and provide details of the required dimensions and foundation conditions. Grainger appears to have been solely responsible for drawing up the final competition entries and the two did not continue their partnership once Grainger relocated to Melbourne with his young wife Rose Annie Aldridge in 1882. The couple settled in the Melbourne suburb of North Brighton, and around this time Grainger formed a partnership with an old friend, the architect Charles D'Ebro, with whom he had sailed from England and had worked together in the South Australian Public Works Department. Although Grainger appears to have worked alone in completing the final designs for Princes Bridge, the partnership of Grainger & D'Ebro designed many notable buildings together in cities all over Australia during a four year period at the height of the land boom. Their best known works included the Queensland Treasury Building and Fremantle Town Hall. Later the friendship faltered, probably because of Grainger's heavy drinking and womanising and his erratic temper. The formal partnership with D'Ebro was dissolved in April 1885, after which Grainger continued to practice alone in Melbourne. During this period he was involved in the design and construction of water supply works for several Victorian regional towns including Sale (where his elegant brick water tower still stands in a park), Bairnsdale, Shepparton, and Benalla. to Kalgoorlie, Western Australia. In 1890, following a separation from his wife, Grainger suffered a complete breakdown.



*Design drawings for the La Trobe Swing Bridge at Sale and site plan showing the location of the new and old bridges. Grainger Museum Collection, University of Melbourne*

To friends he blamed his state of mind on overwork and heavy financial losses sustained in speculative mining investments, although it is likely he was actually suffering from several severe attacks of delirium, brought on by bouts of heavy drinking and the effects of syphilis that he had contracted some years earlier. He returned to England for a visit then settled again in Adelaide where he remarried. In 1896, Grainger and his second wife moved where he worked in private practice until being appointed as principal architect with the W.A. Department of Public Works in March 1897. He remained in the position until taking extended leave due to ill health in 1903, and eventually retired on 31 July 1905. During this period he completed many fine building designs for the W.A. Government, including the Government House ballroom (1899), Perth Supreme Court, the Perth Museum & Art Gallery, Parliament House (1899-1904), Central Perth Police Courts, the Old Northam Railway Station, Albany Quarantine Station and a number of substantial goldfields buildings, including the Warden's Court, Coolgardie and public buildings in Kalgoorlie.

Today John H. Grainger is best remembered for his son George Grainger (1882-1961), the brilliant and eccentric Australian pianist and composer Percy.

*Percy Grainger in 'rambling gear' on  
a hiking expedition in 1923.  
Grainger Museum Collection,  
University of Melbourne*



Percy Grainger visited Gippsland on two occasions during his professional career as part of Australasian concert tours with the South Gippsland born contralto Ada Crossley (1871–1929). On the occasion of his first visit in 1903, Walter Lyon, the Mayor of Sale, arranged for a ceremonial opening of the bridge for the benefit of the visiting celebrities. Percy Grainger was a passionate nature lover and enjoyed the solitude of taking long walks in the Australian bush en-route between concert engagements. On his second tour of Gippsland in October 1908, he walked the 46 miles (74 km) from Yarram to Sale over loose gravel roads in eleven and a half hours of a single day. Afterwards he wrote to his mother Rose commenting that  
[Today] 'I passed over father's swing bridge'.

John Currie Johnson (c.1825-1903) was born in Newcastle-on-Tyne, England, in 1825 or 1826, and was trained as a practical engineer by Messrs Abbot & Co., Gateshead-on-Tyne, before working for famous railway engineer George Stephenson. The lure of the goldfields brought him to Victoria, arriving in Melbourne on the *James L. Bogert* in March 1853. After three months at the Bendigo diggings with limited success, he returned to Melbourne and joined the staff of Langlands Foundry, Victoria's oldest engineering firm. There his management skills were soon recognised and he was girders for the North Eastern Railway from Melbourne to Wodonga. The works were equipped with a sophisticated array of equipment including an imported Cock's patent steam-riveting machine - the first of its type in Australia - and Johnson was appointed as works manager. When the contracts an extended period with the firm of the were completed Langlands found difficulty in securing additional work to keep the plant occupied and it was sold to Johnson in 1874 for £4,000 to reduce the firm's debts. J.C. Johnson established a new business under the name of the Tyne





*Details of the ironwork built by  
J.C. Johnson & Co.  
on the Sale Swing Bridge*

foundry to operate the site, focusing initially on boiler making, shipbuilding and maritime repairs. By the time the firm won the contract for ironwork on the Sale Swing Bridge, the business had a workforce of 300 and had diversified into the construction of mining and general manufacturing machinery, railway rolling stock and structural ironwork. The firm had become one of Victoria's leading bridge builders having already undertaken the fabrication of twelve large iron bridges, including the Swan Street Bridge over the Yarra River between Richmond and Hawthorn (for which John Jenkins was also involved in drafting the plans), the Bell Street Bridge over Merri Creek in Coburg and the elevated railway bridge over Point Nepean Road (now Nepean Highway), together with other bridges on the Brighton Railway.



*Peter Platt,  
builder of the Sale Swing Bridge  
Peter Synan, Sale Hist Society*

At the time the Swing Bridge construction, Peter Platt was a councilor and three times former Mayor of the Borough of

Sale. Born in Birmingham, he arrived in Victoria in 1852 and immediately settled in Gippsland, where he was soon working as a contractor. Over the following decades he would undertake numerous projects across Gippsland and in Melbourne, with his work including bridge building, road works, drainage works, and many government and private buildings. Amongst his better known works were the construction of the first steamer, *SS Enterprise*, for McArdell & Co in 1857-1858, construction of the Sale to Walhalla Road in 1869, the Mitchell drawbridge at Bairnsdale (the failure of which he blamed on the government plans), and the Victoria Street Bridge over the Yarra in Melbourne (another project in which John Jenkins was involved). Platt's role on the council would at times lead to criticisms in the local press of favouritism in awarding council tenders and his frequent absences from council meetings while on business in Melbourne, earned him the nickname of the 'Agent General'. He finally retired from council in 1888, having served for 24 of the council's first 25 years. He died on 13th October 1902, at his private residence in Hotham Street, East St Kilda.

### ***The Bridge Keepers***

Between 1884 and 1938, the Swing Bridge was maintained and operated by a series of

bridge keepers. The first was George Bailey (1838-1886), a former able seaman in the Royal Navy, who was also manager of the nearby Latrobe River wharf. He had worked as a labourer for Peter Platt during the bridge construction. Although initially there was no shipping seeking passage through the bridge, because the canal and upstream swinging basin were yet to be constructed, but Bailey was still required to open and oil the bridge each week. The first occasion on which he opened the bridge for a trading vessel was on 5<sup>th</sup> August 1885, two years after completion, when the steamer *Tambo* passed through towards Sale with a load of red gum paving blocks for the Melbourne cable tramways that were unloaded at McArdell's Gap for transfer to the railway.

When Bailey died in 1886, the council for a time let short term contracts for the upkeep of the bridge, then James Flint, owner of the nearby Swan Hotel at Latrobe Landing was appointed as bridge keeper, establishing a pattern that would continue over later years. Flint died later the same year and was not replaced until 1888 when John Towner was appointed as bridge keeper. He held the position until 1891, and again from 1893-1912. Eliza Ball, the widow of James Flint and licensee of the Swan Hotel, held the position in the intervening years 1891-1893.

During Eliza Ball's tenure the Sale Canal and wharf facilities were finally completed, leading to a considerable increase in shipping on the river. Aside from the daily arrival and departure of schooners sailing to and from Melbourne, there was the weekly freighter *Queenscliff* and the local Gippsland Lakes steamboats *Burrabogie*, the Sale based vessels *Omeo* and *Dargo* and their rival the Bairnsdale based *JCD*. Eliza Ball's weekly income for bridge keeping was £2 2s.



*Tom Kivlighon cranking the bridge opening mechanism*  
*Peter Synan, Sale Historical Society*

The fourth and final bridge keeper was Tom Kivlighon, who served in the position from 1912-1938, living in a small cottage near the bridge with his wife and five children. He was an expert tanner and leatherworker, making products such as harnesses, belts and stock whips to supplement his bridge keeping income.

Bridge keepers were alerted to an approaching vessel by a long whistle blast, followed by several further short blasts as the boat reached the bridge. On hearing the signal the bridge keeper would hurry to close the double gates at either end of the bridge, unscrewing the locking-down jacks at either end, and then with a large crank handle engaged the slewing mechanism to turn the swing span until it pointed up and downstream. At times when a large mob of livestock was crossing, it could take some time to clear the bridge much to the annoyance of the shipmasters. Although the bridge keepers were only required to attend during daylight hours, at times the steamers failed to stick to their schedules,

A contemporary account claimed that the bridge slewing mechanism was so well designed that, when well maintained, it could be "swung completely round by a lad, with a treble purchase winch only, in less than five minutes". The mechanism featured two gear ratios for fast and slow motion, engaging with the girth gear around the perimeter of the turntable. Friction-reducing rollers on the end piers assisted the initial release of the moving span, returning through the bridge after dark.



*The Lakes Navigation Co.'s S.S. Omeo passing through the opening of the Swing Bridge, circa 1910  
Biggest Family Album Collection, Museum Victoria*

The extension of the Gippsland Railway to Bairnsdale in 1888, and Orbost in 1916, provided increasing competition for shipping on the Gippsland Lakes, although it was more directly the rise of motorised road transport after the First World War, they would sound the death knell for shipping on the Thomson River. In 1929, the Sale Steamboat Co went into voluntary liquidation, with the *Omeo* being scrapped shortly afterwards and the *Dargo* sold to the Dahlsens at Bairnsdale for the tourist trade to Lakes Entrance. By the 1930s Tom Kivlighon was only required to open the Swing Bridge half a dozen times a year, although he still maintained the mechanism in good working order. He was also employed by the Country Roads Board to maintain Punt Lane. When the position of bridge keeper was abolished in 1938, he moved into Sale.

The bridge was not opened at all during the Second World War, and after 1947 was only rarely opened for shipping. In 1972, it was opened for the last time at the request of the Sale Historical Society, before the ravages of time and poor maintenance caused the mechanism to seize. In 1999, plans were begun to realign the road and bypass the bridge, with two new river crossings being completed by VicRoads in 2002. Following its closure to vehicular traffic the old Swing Bridge was restored under the supervision of VicRoads engineers, with damaged brickwork on the abutments being rebuilt, the ironwork sandblasted and painted and the deck re-laid. New corner jacks and thrust bearings were installed and a hydraulic motor has added to actuate the slewing mechanism. The restored bridge has been listed on the Victorian Heritage Register (H1438 of 1977) and with an Engineering Heritage Marker by Engineers Australia.

The Swing Bridge has recently returned to regular operation following further repairs to the turntable during the first half of 2017. It is opened by the Shire of Wellington staff every Saturday and Sunday afternoon, and on the second Wednesday of each month.

### ***Further Reading:***

Brian Allison (ed), John Harry Grainger, Architect and Civil Engineer, University of Melbourne, 2007.

Peter Synan, *Highways of Water – How Shipping on the Lakes Shaped Gippsland*, Landmark Press, Drouin, Victoria, 1989.

Peter Synan, *Story of the Sale Powder Magazine*, Lookups Research, Sale, Victoria, 2001.

Peter Synan, *Swing Bridge - Story of The Swing Bridge*, VicRoads, Kew, Victoria, 2006.

George R. Tibbits & David Beauchamp, *John Harry Grainger, Engineer and Architect*, 3rd Australasian Engineering Heritage Conference, Dunedin, New Zealand, 2009.

Gary Vines & Ken McInnes, *Metal Road Bridges in Victoria*, National Trust of Australia (Vic.), 2003.

Victorian Heritage Register (H1438), *Swing Bridge*, Swing Bridge Drive Sale and Longford, Wellington Shire, <http://vhd.heritagecouncil.vic.gov.au/places/1012>.

Engineers Australia, Engineering Heritage Victoria, *Nomination for an Engineering Heritage Marker ... for the Port of Sale and the Sale Navigation Canal*, October 2009, [https://www.engineersaustralia.org.au/portal/system/files/engineering-heritage-australia/nomination-title/Port\\_of\\_Sale\\_2.pdf](https://www.engineersaustralia.org.au/portal/system/files/engineering-heritage-australia/nomination-title/Port_of_Sale_2.pdf)

Engineers Australia, Engineering Heritage Victoria, *Nomination Document for the Sale Swing Bridge*, October 2009, [https://www.engineersaustralia.org.au/portal/system/files/engineering-heritage-australia/nomination-title/Sale\\_Swing\\_Bridge\\_nom.pdf](https://www.engineersaustralia.org.au/portal/system/files/engineering-heritage-australia/nomination-title/Sale_Swing_Bridge_nom.pdf)



## **Matthews Notes for Wonthaggi**