

## Inquiry Questions

- **What's more precious than gold and has this changed from the 1850s to today?**
- **Does technology change lives for the better?**
- **Why did people place so much value on gold? Do we still place the same value on it today?**

### Alluvial mining (Diggings)

At the start of the Ballarat gold rush, gold was found and extracted from the sand and gravel located in and around river and creek beds, or just below the surface in shallow mines. This is called alluvial gold and was the first stage of gold mining in Ballarat. The diggings at Sovereign Hill show what life would have been like during the early years of the gold rush, when alluvial mining was at its peak, between 1851 and 1854. Miners used pans, shovels, and cradles to search for gold. The environment was impacted by mining because the rivers and creeks were diverted, dammed and dredged for gold. Trees were cut down to make way for miner's tents and access to the best mining areas and wood was needed as fuel for fires. Shallow mines began to dot the landscape, with dirt and clay from underground covering healthy topsoil.

**Q. How did alluvial mining impact the environment? (Ask students to look around and see what most things are made out of).** A.

Trees were cut down to be used for structures and to make room for mining. Waterways became polluted, and the healthy topsoil was covered in dirt and clay from underground.

**Q. Do you think this type of mining would have been easy or difficult?** A. Alluvial mining was accessible to most people. It was easier to find gold in the earlier days of the gold rush. As the alluvial gold started to run out gold fields life became more difficult for people.

### Deep Lead mining (Map 6 Red Hill Mine)

When the alluvial gold began to run out, miners realised that underground there were buried rivers. These buried rivers, or deep leads, were rich with gold but incredibly dangerous. The Red Hill Mine shows what a deep lead mine would have looked like on the surface and is based on an actual Red Hill mine which was responsible for finding the largest gold nugget in June 1858 which weighing almost 69kgs. It still remains the second largest nugget today. New technology was needed to enable these mines to operate. There were a number of coal miners that had come from Cornwall in England to the Ballarat goldfields. They brought with them previous mining knowledge that could be applied to mining in Ballarat, including the use of a Cornish rocking beam pump. This was powered by steam and would allow for the water to be pumped out from underground so that the area could be mined.

**Q. What dangers do you think miners faced when deep lead mining?** A. Flooding and mines collapsing were a big risk, as they were mining in buried, underground rivers.

**Q. How does a deep lead mine look different from alluvial mining on the surface?** A. There are more buildings for only one mine, including the poppet head and more machinery, rather than pans, shovels, and cradles.

### Quartz mining (Near Map 36 Poppet Head)

When the gold that was close to the surface began to run out, miners in Ballarat discovered that quartz rock had gold in it. This quartz rock was found in reefs deep underground, meaning that these new mines had to go deeper underground than any mines previously. Steam engines assisted in digging deeper mines – up to 700 metres deep! This type of gold mining is often called quartz mining because gold is found in the quartz. Miners find reefs of quartz underground and crush it using machines (a hammer is not efficient and is dangerous). In 1861 there were 19 quartz mines in Ballarat. It was a demanding job, as more quartz ore needed to be removed from the mine so that the amount of gold extracted equalled a positive economic return – you would get about 1 teaspoon of gold per tonne of quartz.

**Q. How does quartz mining look different from alluvial and deep lead mining on the surface?** A. There are many different buildings that house the machinery that is needed to operate a quartz mine. The poppet head is much larger than at the Red Hill mine. There is a large mullock heap, which is an example of the rock and dirt from the mine that wasn't quartz.

**Q. Do think quartz mining seems like an easy or difficult form of mining?** A. Quartz mining was incredibly demanding and hard work. Quartz rock is hard, which makes it difficult to remove from the earth. Miners would have to push full carts of rock to the platform where they would be hoisted to the surface – these would weigh at least half a tonne.

### Boiler House (Map 36)

The Boiler House was perhaps the most important part of any quartz mine, as the boilers powered all the essential machinery. Wood was burned in the middle cylinder of the boiler, with water sitting above the fire in the outer part. The fire would heat the water, which generated steam. The steam built up pressure and was released by pistons into pipes that were connected to the machinery. Steam power was essential for powering the Cornish rocking beam pump, which was responsible for pumping water out of the mine when the depth was below the water table. Without this essential piece of machinery, mines could not be sunk below around 30m. If the beam pump was to stop working, mines would flood causing a disaster. The battery house is where the quartz is crushed by the stamper heads and then passes through a number of different processes, including being mixed with mercury to form a mixture for smelting. The machinery was reliant on steam power for its operation.

**Q. What impact did using steam power have on the environment?** A. The steam was generated by heating water, which was achieved using fire. These fires used huge amounts of wood each day – up to 4 tonnes. 1 quartz mine would have around 6-8 boilers working around the clock, meaning more and more trees continued to be cut down to be used as fuel.

**Q. How did the use of steam power change the way of mining?** A. Mines could be much deeper, as the rocking beam pump could pump out the water below the water table, so more people could work underground and extract more gold-bearing quartz.

**Research: Back at school investigate the impact mining continues to have on the environment nationally and globally.**

# SOVEREIGN HILL LEARNING

- 1 ENTRANCE BUILDING  
(Day visit schools arrival)
- 2 BRIGHT VISIONS THEATRETTE
- 29 EDUCATION CENTRE
- 42 SOVEREIGN CAMP ACCOMMODATION & CHECK-IN (Sovereign Hill Hotel)
- 46 GIFT SHOP
- 51 COSTUMED SCHOOLS ARRIVAL

## THE DIGGINGS

- 3 GOVERNMENT CAMP
- 4 CHINESE CAMP
- 5 CHINESE TEMPLE
- 6 RED HILL MINE
- 7 GOLDFIELDS - WATERLOO STORE
- 8 GOLD PANNING
- 30 ST ALIPIUS DIGGINGS SCHOOL

## MAIN STREET

- 9 BLACKSMITH
- 10 CARVER & DALTON AUCTION ROOMS
- 12 PHOTOGRAPHIC ROOMS
- 13 BALLARAT TIMES - PRINTER
- 14 SWEET SHOP - CONFECTIONER
- 15 GROCER
- 16 POST OFFICE
- 17 JEWELLER
- 21 APOTHECARIES HALL
- 22 SADDLERY
- 23 UNIVERSAL TRANSIT OFFICE
- 24 CHARLIE NAPIER HOTEL
- 25 JOHN ALLOO'S
- 26 VICTORIA THEATRE / UNITED STATES HOTEL
- 27 CONFECTIONERY FACTORY
- 31 CRITERION DRAPERY STORE
- 32 HORSE BAZAAR - COACH RIDES
- 34 PARADE SHOWGROUND
- 65 ALEX KELLY STABLES

## SPEEDWELL STREET

- 43 RED HILL NATIONAL SCHOOL
- 44 PROCTOR'S WHEELWRIGHT & COACHBUILDER
- 45 ST PETER'S DENOMINATIONAL SCHOOL
- 52 DAVIDSON'S COTTAGE

## STEAM & MINING

- 28 GOLD POUR
- 29 EDUCATION CENTRE
- 35 QUARTZ MINE - MINE TOURS
- 36 ENGINE HOUSE
- 37 CANDLE WORKS
- 39 RAGGED SCHOOL
- 40 BOWLING SALOON & FIRE STATION
- 48 R GIBBINGS, LIVERY & BAIT STABLES
- 50 WESLEYAN DAY SCHOOL

## CATERING

- 4 UNIVERSAL TRANSIT OFFICE
- 11 HOPE BAKERY
- 20 NEW YORK BAKERY
- 18 CAFE

## DIGITAL TOURS

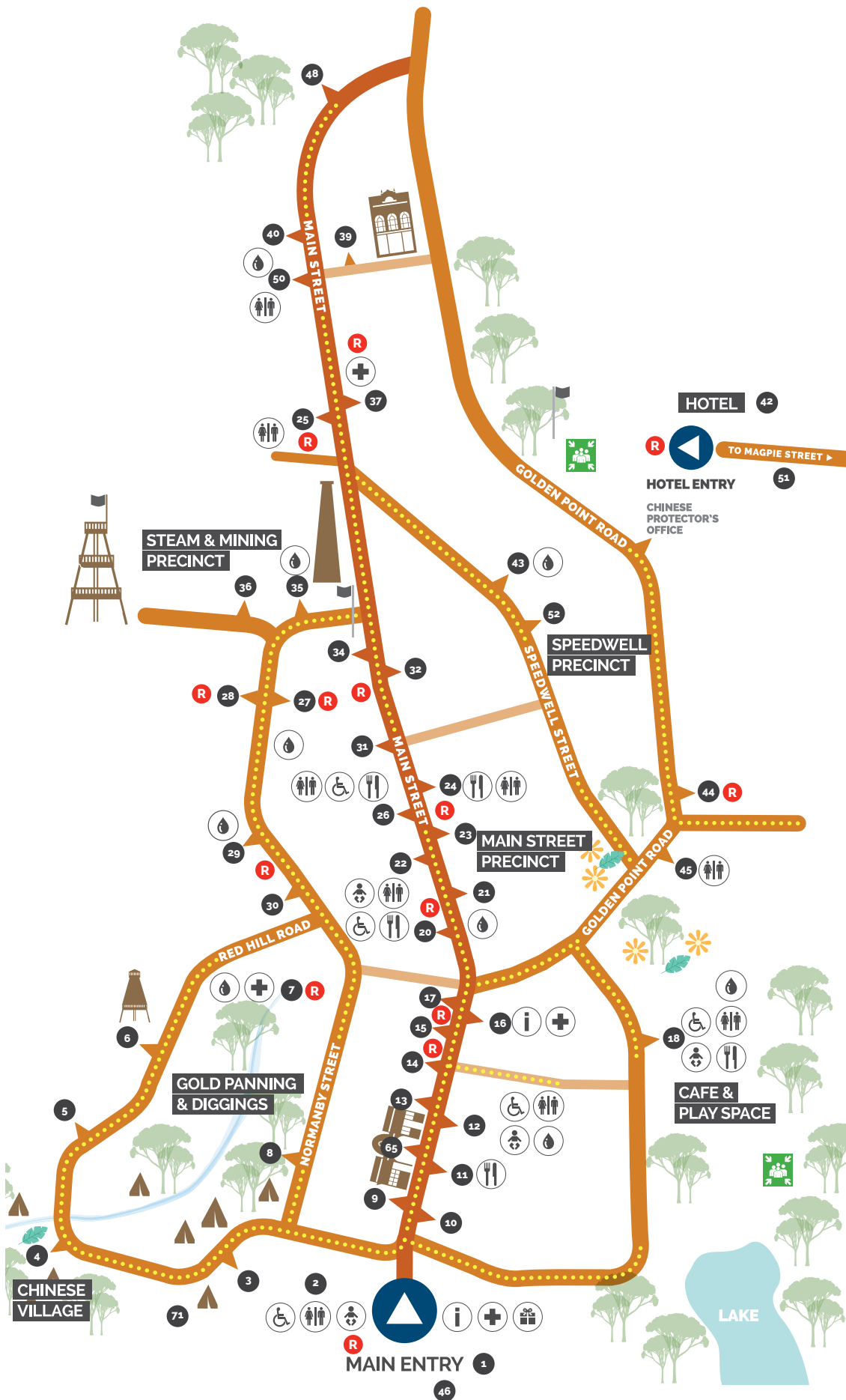
Hidden Histories - The Wadawurrung people 

A digital tour that brings to life the perspectives and participation of Aboriginal people on the Ballarat goldfields from 1851-1871.












[sovereignhillhiddenhistories.com.au](http://sovereignhillhiddenhistories.com.au)

We acknowledge the traditional Aboriginal custodians of the land upon which Sovereign Hill and Narmbool sit, the Wadawurrung, and their ongoing connection to this land and pay respect to their culture and their Elders past, present and future.

FOLLOW US    



## VISITOR SERVICES

-  Information
-  Toilets
-  Parenting Room
-  First Aid Kit
-  Water Tap
-  Gift Shop
-  Food & Drink
-  Disability Toilet
-  Ramps
-  Emergency Evacuation Point
-  Suggested Stroller & Wheelchair Route