WRECKS AND RUINS IN THE BUSH
DCE'S LEGACY OF INDUSTRIAL HISTORY
JANE LENNON

The Department of Conservation and Environment is responsible for the management of 38% of Victoria, that is public land reserved as national parks, state forests, a multitude of reserves along the coastline, in towns and cities and around specific features, natural or man-made. The general public (and most of our staff) expect us to be managing natural resources for long term conservation - the "green and furries" of the countryside. Implicit in this duty is the expectation that we will enhance, improve, "tidy up" the bush and keep it looking well managed, cared for and accessible.

This general perception is the first major threat to the physical relics of industrial activities which occurred in the bush, that is that they are wrecks and ruins and should be tidied up. Why waste money and human resources preserving such items?

The answer lies in understanding the administrative history of licensing such uses in the past, in the inherent significance of the relics surviving in-situ and in the potential of such relics in their original setting to illustrate aspects of the past which have a lesson for today.

During the first decade of European settlement of what is now Victoria, the colony was really a distant sheep farm supplying raw materials to the mills of the English midlands, halfway around the world. Public land (then called Crown land) was leased to the squatters, the contemporary name given to the stockowners who occupied vast tracts of rural Victoria. Meanwhile surveyors were marking out townships at the ports and transport crossing points and land was subdivided and sold.

The need to protect physical resources required for future developments was seen by chief surveyor Robert Hoddle, who in 1839 marked off a 23 acre reserve on the south bank of the Yarra River (opposite the present railway yards) for quarrying and brickmaking, a 5000 acre reserve at Point Nepean in 1843 to protect limestone deposits and a 640 acre granite reserve at Yuroke. In 1842 an embargo was placed on timber felling within a 2 mile radius of the township of Melbourne and by 1849 this had been extended to 5 miles. All timber felling elsewhere was regulated by payment of an annual licence fee but relentless felling steadily reduced the tree cover in the settled districts. By 1853 there were 9 timber reserves and 185 water reserves out of a total of 250 reserves including those for townships.

With the discovery of gold, Victoria's population rose from 97,000 in 1851 to 463,000 in 1857 and this caused enormous upheaval and administrative chaos. But between 1853 and 1858, just over 2,000,000 acres were auctioned off to private landholders while a mere 2,959 acres were approved as public purposes reserves - 42 for recreation including 8 gardens, 14 for resource protection and 5 miscellaneous. Mining occurred over most of central Victoria and generated a huge timber industry, initially wood for fuel for cooking and warmth, then for building, fencing, boiler fuel and later pit props. Tramways and bullock tracks snaked through the forests taking timber from sawmills to the mines and villages.

The use of natural resources on public land accelerated from this period and the attitude developed that these resources were there for the public to take. Most activities were licensed and it is from studying these licenses and associated records that a picture can be reconstructed showing the range, type, intensity and location of such industrial activities.

About 130 years after the start of this accelerated industrial activity, the Historic Places Section was established within the Department of Conservation, Forests and Lands, as it was titled in 1984, to provide a focus and centre of expertise for the management of historic places on public land. Our major goal is to identify, assemble and develop a representative sample of historic places on public land which:

a) illustrates the sequence and themes of human impact on and use of public land, and

b) demonstrates restoration and preservation techniques.
These themes encompass a range of industrial processes: alluvial goldmining, quartz reef mining, deep lead mining, tin mining, coal mining, sawmilling, charcoal burning, quarrying, limeburning, salt harvesting, sealing and whaling, fishing and flourmilling. Most manufacturing, engineering and agricultural processing took place on freehold land - on farms or in towns and so sites with relics of these activities are not usually located on public land.

However, since the 1970s with the passing of the Historic Buildings Council Act and the Land Conservation Council Act specific sites have been identified and reserved for "conservation of features of historic interest". These include the 79 Land Conservation Council designated historic reserves ranging in size from 9,000 ha to 0.5 ha and concentrated in the central goldfields. Pastoral properties like Woodlands homestead, Glenample homestead and Gulf Station and industrial sites like Anderson's Mill at Smeaton, Day's Mill and farm complex at Murchison were all listed by the Historic Buildings Council on the State Register of Historic Buildings then acquired by the State Government to ensure their long term protection through conservation management.

Other sites of State industrial history significance were identified on land already reserved for another public land management purpose for example, the 1840s whaling station site at Refuge Cove in Wilsons Promontory National Park, the limekilns at Walkerville in the Waratah Bay Coastal Park, the Mt Difficult quarry and stone cottages at Heatherlie in the Grampians National Park, the salt mines at Lake Crosbie in the Pink Lakes State Park, the Lal Lal Blast Furnace in the Bungal State Forest, the Kurth (charcoal) Kiln in the Gembrook State Forest and numerous quartz crushing stamp batteries in State Forest.

As well as these sites designated by the LCC or the HBC there are sites of industrial history significance reserved by C&E within townships and boroughs, such as the State Coal Mine Historic Reserve at Wonthaggi or the Central Deborah Mine in Bendigo. However, there has been no statewide survey to see where the gaps are in representative types of sites. It is not possible to define the number of historic purposes reserves out of the total 10,030 reserves currently existing in Victoria.

What is the significance of industrial relics surviving in-situ?
Significance is determined by the historical, aesthetic, scientific and social value of a place or site. The determination of significance requires an expert knowledge of the comparative value of types of places or sites through time. Sites or features which are either the first or last of the type, which are rare, unique or of extraordinary character, will clearly be significant. Intactness is also a major determinant of significance. A simple test of significance is to ask whether removal or damage of a feature will diminish the significance of the site.

The following criteria are grouped according to historic, scientific and social values using the format of the Burra Charter for the Conservation of Places of Cultural Significance of Australia ICOMOS (International Council on Monuments and Sites):

**Historic Values**

That the place or site:

- Represents a sequence of uses or functions over time.
- Is part of a group of network of sites, the totality of which is considered to be significant.
- Is of considerable age in circumstances where precise historical significance of the site is not at present known.
- Is associated with an important event(s), person(s) or cultural group.
- Demonstrates success or failure as a site in terms of its production levels, yields and as business enterprise. Influence on the economic development of town/area/region/state.

**Scientific Values**

- Represents a particular type of process, e.g. special process developed for the reserve or region to overcome water problems, or accessibility problem; an inventive or innovative process or response to site.
- Represents an important technology.
- Is able to answer timely and specific archaeological research questions.
Social Values
○ Represents, exhibits, or is an example of a way of life, custom, process or function, associated with a particular group or community e.g. Cornish mining tradition.
○ Demonstrates the influence on the social development of a community or region.
○ Demonstrates the importance of the site to the local community.

How many relics have survived in-situ?
Very few relics remain. For mining machinery, for example, Dr Peter Milner, of the National Trust's Industrial History Committee, has illustrated the magnitude of the loss by some calculations. For most of the latter half of the nineteenth century there were always about 1,000 steam engines in use on the Victorian goldfields; supposing that, on average, there was one steam engine at every site and that installations lasted, on average, for about 5 years, and that the really productive phases of mechanized mining lasted for 50 years (from 1860 to 1910), then there would have been about 10,000 sites where machinery was installed in Victoria. Such mining machinery as has survived was almost invariably first used after 1910 and earlier examples are extremely rare. These latter examples are located in areas so remote that it was considered uneconomic to cart the machinery away for scrap or for reuse.

Some of these sites have been identified and protected through LCC designated reserves such as the machinery in the Cassilis Historic Area or the Green's Creek battery in the Dartmouth Unit of the Alpine National Park. However, the majority of sites on Crown land are not yet specially reserved because they were not identified in the initial LCC study area reports. The LCC review of Alpine, North East and East Gippsland study areas resulted in 16 more reserves being designated. The Historic Places Section survey of the Melbourne East Study Area in 1989 has resulted in an initial list of 249 sites grouped according to types and period and from that a representative, but not all encompassing, system can be selected.

MINING
1. Alluvial diggings:
These earliest of sites from the initial 1850s gold rushes are very rare because the ground was generally reworked. Pockets survive however in the Castlemaine-Chewton Historic Area, at Andersons Creek in Warrandyte State Park, at Nerrina on the outskirts of Ballarat, at Golden Gully near Bendigo, along Burnt Creek at Moliagul, Redcastle near Heathcote, around Eatons Dam at Cresswick and the Wild Dog Diggings near Dunolly. These latter diggings contain a very dense pattern of shallow holes, both square European holes and round Chinese holes almost side by side.

In the Maldon Historic Reserve, the historic fabric of the shallow alluvial phase of mining includes remains of shafts, an adit, puddlers, dams and diversion banks. It is best represented to the south of Parkins Reef, at Eaglehawk Gully, Long Gully, Peg Leg Gully and along Sandy and Tarrengower Creeks.

2. Quartz reef mining:
Maldon is one of a handful of Victorian towns that was born with the great alluvial gold rushes of the 1850s and continued as a deep quartz reef mining centre until the 1930s. The Maldon Historic Reserve illustrates the evolu-
tion of the Victorian gold mining industry from primitive, shallow alluvial diggings through to capital intensive gold extraction and treatment processes. It retains evidence of a wide range of mining activities, technologies and gold processing methods used by European and Chinese miners. Examples of the entire range of gold mining activities, except deep lead mining, can be seen. In many instances, the historic features which remain are among the most intact or most important example of the type in Victoria.

The North British Mine site on Parkins Reef, Maldon, displays one of the most intact collections of evidence in Victoria of the evolution of the technology of gold extraction. The site contains a shaft (509 metres deep), mine dams, mullock heaps, sand heaps and a pump bob pit as well as the foundations of a steam engine, winder and winder engine, battery, boiler house, compressor, quartz roasting kilns, jaw crusher, chlorination plant, blacksmith’s shop and engineering shop. Such an extraordinary range of equipment on one mine site is an indication of the enthusiasm with which its owners kept up with the latest technology until closure in 1929.

The Beehive Mine (1854 to 1900s) in Maldon is distinguished by the tall brick chimney remaining. Other notable chimneys remaining at quartz reef mines are found at the Duke of Cornwall mine at Fryerstown, and at Sheepyard Flat in the Howqua Hills Historic Area.

Quartz roasting kilns are also a notable feature of the Maldon Reserve - the largest were at the Union Hill mine; others occur at the North British Mine. The New Chum Mine quartz roasting kilns above Red Jacket on the Jordan goldfield are bigger and more intact than any others so far identified in Victoria.

Quartz reef mines are scattered across Victoria and are distinguished by their large adjacent mullock heaps, such as those at Diamond Hill, Bendigo, Spring Gully south of Chewton, and around Smythesdale. Stamp battery sites, often containing the cast iron stamps and timber frameworks, are the most common machinery relics remaining of quartz reef mining.

Good examples remain at the Royal Standard mine on the Jordan goldfield south east of Woods Point, at the Wallaby mine in the Nine Mile Creek Historic Area near Beechworth, at Greens Creek near Lake Dartmouth and at a range of mines at Glen Valley and Mt Wills Historic Area. Government Batteries established earlier this century were restored to working order in the early 1980s to operate on demand for small tonnage crushings. They are located at Maldon, Creswick, Rutherglen, Mt Egerton, Bright and Elphinstone.
The Jordan goldfield which opened up in the 1860s is significant because the miners were also the explorers, the first white settlers, and because its isolated terrain of steep mountain gullies and plentiful water shaped a distinctive technology - waterwheels and incline tramways became characteristic of the field. Waterwheels were particularly dominant in the district's history and are represented in its physical heritage. One has survived intact at Donnelly's Creek and the remains of others indicate major battery sites. (This latter indicator is true of other sites such as the Garfield Waterwheel near Chewton and Cunningham Gully. Murmungee.)

Incline tramways, used to ferry ore from the mine to riverside batteries, and extensive tramway networks to supply wood for the boilers, were peculiar to mountain mining. At the Royal Standard and Sir John Franklin mines, for example, incline tramways survive as notable features in the forest and retain associated relics and stone retaining walls. Wathalla developed an intricate network of tramways to supply timber for the mines, and Italian woodcutters congregated at Poverty Point. The planned relationship of timber and gold has left some of the most interesting clues in the forests today.

The richest reef mines were at Wathalla, where 15 mines worked Cohens Reef. In total they produced close to one and a half million ounces of gold, making it the richest gold bearing reef in the world. Peak production was between 1885 and 1908. The most famous companies were the Wathalla Mining Company (after which the town was named in 1866), the Long Tunnel Company and the Long Tunnel Extended Company. The Long Tunnel Company became the wealthiest mining company in the world and still holds the record as the most successful mining company in Australia measured in yield per tonnes of ore crushed for a single company.

The Long Tunnel Extended Mine was unusual in that it had an underground machinery chamber. It is operated today by a committee of management as a tourist mine and visitors walk into it via a horizontal adit.

3. Deep Lead Mining:

Deep leads are "auriferous gullies, creeks or rivers, the source of which cannot be determined by the trend of the surface, in consequences of the drainage having been altered either by the eruption of basalt or lava, or by the deposition of newer layers of sand and gravel". They are buried rivers of gold and are found at a number of Victorian localities including Ballarat, Illabrook, Learmonth, Maryborough, Majorca, Chiltern, Rutherglen and Creswick.

Creswick was one of the major goldfields of Victoria in the 1870s and 1880s and The Madame Berry mine (named after the Premier of the day's wife) was the richest in the 1880s. The Berry Deep Lead system in the Shire of Creswick produced many of Victoria's major deep alluvial mines and advanced technology was employed in mining the leads located below water level. The technology was developed for mining in central Ballarat in the 1860s but was substantially improved to cope with the particularly severe water problems at Creswick. The area also witnessed Australia's worst mining disaster when 22 men drowned in 1882 in the New Australasian mine and local miners subsequently played a national role in the development of mass trade unionism.

The engine house at the Berry No. 1 mine is highly significant because it was there in 1884 that the first locally made beam pumping engine was installed. The beam, 32 ft. long and 6 ft. deep, was cast in two 25 ton sections. The cylinder was 6 ft. in diameter and weighed 10 tons. In December 1888 this pump lifted 60,000 gallons of water per hour. It was housed in a brick Cornish engine house, today a picturesque ruin, but a crucial reminder of technological development and the use of Cornish methods and labour on the Victorian goldfields.

This particular engine installation marked a high point in the development of mechanical engineering in Victoria signifying that in little more than 40 years after the first foundry had been started with the simplest of equipment, some firms had mastered the skills necessary to manufacture economically what, at that time, were examples of high technology.

The deep lead mines have also left a distinctive landscape of glistening quartz pebble dumps, huge mullock heaps and slimes and ruined engine houses and footings dotted across the green pastoral plain. This physical evidence is testimony of the enormous labour performed by men of the villages, such as Broomfield and Allendale, which sprang up in the Shire of Creswick to support the mining industry.

4. Hydraulic Mining or Sluicing:

Sluicing operations in the 1850s were carried out by cradle but by 1873, mines were using hydraulic hoses to break down the wash-dirt with a head of water brought by races constructed down or along valleys through the bush.
Oriental Claims Historic Reserve, just south of Omeo, is the site of large deposits of gold-bearing alluvium worked by a series of prospectors and companies between 1856 and 1904, when the Sludge Abatement Board prevented the discharge of tailings and sludge into Livingstone Creek. The deposits, about 30 m deep, are thought to occupy the bed of an ancient mountain lake and are auriferous for almost the complete depth. Exposed cliff faces up to 30 m high, showing deposition strata, and a pondage area are all that remain.

Other hydraulic gold sluicing sites are reserved as historic areas in the Tallangalook - Dry Creek area and Nine Mile Creek in north-east Victoria and most dramatically, the Pioneer Hydraulic Sluicing Company alluvial gold-mining claim (1884-1904) beside the Mitta Mitta River. This area contains what is claimed to be the largest gold mining open cut in Victoria with excavated cliffs up to 76 m high produced by hydraulic sluicing over some 20 ha.

Hydraulic sluicing areas are also characterized by a complex system of water diversions such as exhibited in the Magpie Creek Reserve at Wooragee, at Nine Mile Creek, at Spring Gully and Vaughan, and most dramatically the 90 km Jirnkee water race which brought water from the head of the Wentworth River to the sluicing works at Tongio West in the Cassilis Historic Area.

5. Dredging:
Massive corrugated iron-clad floating dredges worked the beds of gravelly streams for gold (and sometimes tin). Reputedly, the most successful in Victoria was Cocks Eldorado NL dredge built in the early 1930s to work the bed of Reedy Creek. The structure is listed on the Historic Buildings Register and the site (a large pond) is now an historic reserve. Other dredges operated at Harrietville on the Ovens River and at Porcupine Flat, Maldon.

6. Iron-ore mining
It had been known from 1857 that a substantial deposit of iron ore existed near Lal Lal on the west bank of the Moorabool River. Consequently, enterprising contemporary businessmen decided to set up their own pig-iron industry instead of hauling their supplies from distant sources plus they hoped to capture the nearby Ballarat market.

The Lal Lal Iron Company Ltd. was registered in 1874 and experimental blast furnaces built. In 1880 a 17m high furnace was built and its remains can be seen today at the base of five hand-hewn terraces on a steeply sloping hillside over the river. Financial problems bedevilled the whole history of the company although in 1883 a peak production of 600 tonnes occurred. In 1884, some 160 men were employed in this unique Victorian industrial venture. Their house and hut sites can be found in the nearby forest as can the greater part of the three and a half mile long tramway constructed in 1883 to the newly provided railway siding at Lal Lal.

There are no other sites of iron ore mining in Victoria.

7. Coal mining:
Despite coal mining at Korumburra and Outtrim from 1878, these mines were only producing about 50 per cent of Victoria's domestic consumption in 1899. Victorian Railways locomotives consumed about 1,000 tons of black coal per day, or one third of Victoria's total in 1908. When New South Wales miners went on strike in that year, the Victorian government decided to establish the State Coal Mine at Wonthaggi. Despite its poor deposits of coal the Wonthaggi State Coal Mine was thereafter able to remove Victoria's total dependence on coal from New South Wales.

When interstate coal supplies were again cut off in 1929/30, over 1,700 men at Wonthaggi annually produced over 600,000 tons of coal and were able to meet most of Victoria's needs. But from the early 1930s Wonthaggi could not compete economically with the coal produced in New South Wales and after World War II "King coal" was dethroned by alternative energy sources. By the late 1950s, Wonthaggi's coal simply was not needed and the mine finally closed in 1968.

Today most of the old coal plant has been removed and there is little above ground to remind visitors that 1,800 men were employed by the State Coal Mine in 1929. Fortunately, one of the old mines - East Area - has been partially reopened and forms the focus of the State Coal Mine Historic Reserve, which includes six other historic mine sites around Wonthaggi. tragically, at most of the mine sites only dilapidated ruins - the huge timber and corrugated iron coal loading braces at Central (No. 5) and Kirrak, the concrete footings at Nos. 18 and 20 shafts - remain.

At East Area, a replica of the original bath house has been constructed and developed as a museum of the working world of the miners:

Historic Environment VIII 3&4 (1991)
the hardships and dangers (two fatal accidents per year for the first ten years and the 1937 explosion which killed 13 men), the role of the union in fighting for better wages and conditions and the role of community groups such as the Women’s Auxiliary in the life of this former mining community.

8. Lime burning:
Limestone in the cliffs was used from the earliest days of the colony for mortar in masonry buildings. Deposits were worked at Point Nepean and at Limeburners Point in Corio Bay, Geelong (just below the present Botanic Gardens) in the 1840s and ’50s and shipped to Melbourne in small lighters.

At present day Walkerville lime mining began in 1878 and the adjacent township of Waratah was established. Six kilns were constructed at the base of the cliffs, each was about 40 feet deep, brick lined and tapering to a narrow neck at the base, where a grate opened into the back of a large shed. The limestone was hewn from the cliff-face, carted to the kiln head in horse-drawn tip trays and deposited there to be shovelled into the kiln for fixing between layers of firewood, which was then sent alight and allowed to burn slowly to a powder when it was scraped from the grate at the base as quick lime, bagged and stored ready for despatch. Iron rails run from each storage shed to the 350 yards long jetty, which was unusual in that it was built with several curves in its length to avoid having to drive piles through the hard rock reef fringing Waratah Bay.

The peak of production was in 1890 when up to 80 men were employed. Steam boats of the Huddard, Parker line on the regular run to Lakes Entrance picked up the lime. Production continued throughout World War I but in the postwar building trade other materials began to replace lime and in 1926 the kilns closed and Walkerville became a ghost town.

Other major lime kilns of this period operated at Coimadai but are now drowned beneath the waters of Lake Merrimu reservoir. Less impressive lime kilns have been recorded at Holey Plain, Moondarrah and Coopers Creek.

9. Quarrying:
Areas of stone for quarrying were reserved from the earliest days of settlement. Granite quarries on coastal headlands were worked often because of the economic advantage of cheap shipping: this was the case at Refuge Cove in Wilsons Promontory National Park, Gabo Island and Cape Woolamai. Many bluestone quarries were worked on the basalt to the west of Melbourne, while in Gellibrand Hill Park near Tullamarine Airport, granite was quarried from the side of Gellibrand Hill itself in the 1860s and used in the construction of Princes Bridge over the Yarra River while basalt cliffs of spectacular columnar structure were quarried along Moonee Ponds Creek until 1970.

However, the most intact quarrying complex is located at Heatherlie on the eastern flank of the Mt Difficult Range in the Grampians National Park. A Stawell stonemason recognized the
potential of the Mt Difficult stone in the late 1860s and it was chosen for the west facade of Parliament House in the early 1880s. A branch railway from Stawell to the quarry face was constructed, the township of Heatherlie surveyed and building lots there were sold in 1888.

The creamy sandstone known as "Stawell Freestone" in the building trade, was sought after for major buildings in Melbourne including the Town Hall and Post Office. The Heatherlie quarry was abandoned in 1941 and most of the railway line removed. However, horizontal boilers, a large crane, railway line and ore wagons, and three stone huts are located near the quarry face, where about 25,000 tonnes of quarried blocks lie in reserve. Use of these is permitted for repairs to historic buildings that are already faced with Stawell freestone.

10. Other Minerals:
Tin ore was located around Mt Wills and by 1891, some 300 exploration leases totalling more than 5,000 ha were pegged out. This represented about 50% of Victoria's mineral leases granted at that time. By 1893 the field proved to be a failure and gold mining took over. The area is now the largest historic reserve (i.e. 9,000 ha) in the State.

Tin was also mined at Toora Falls above Foster, at Mt Hunter in Wilsons Promontory National Park from 1920 to 1936 and at the head of the Bunyip River near Gembrook from 1876.

Copper ore was mined at Cooper's Creek on the Thomson River from 1863 until 1881 and produced a total of about 800 tons of copper, mostly in its final years.

Wolfram (tungsten-bearing ore) was discovered at Mt Murphy in 1890 and mined until 1920 when the falling price for tungsten caused the company to cease operations. This mine was reopened in the middle of 1942 to meet the war-time demand for tungsten but closed at the end of 1943. Relics remaining on site include hut remains, building foundations, adits, heaps of ore, metal tram tracks and the remains of a stamp battery. This area is now an historic reserve. Wolfram was also mined at Wilks Creek Track.

The Crystal King quartz mine in the Tallangallock-Dry Creek historic area is the only site in Victoria where systematic mining for piezo-electric quartz crystals (for such uses as radio transmitters) was carried out.

FORESTRY
The first Europeans to venture into the vast mountain forests east of Melbourne regarded them with awe. They were different to the intensively used woodlands of the western plains and central goldfields. Some colonists regarded the lushness and magic of the mountain forests as almost un-Australian: here the oft-derided eucalypt was actually impressive and the massive tree ferns seemed tropical and mystical. But this wonder at the forests did not stop Victorians from destroying them at the outset despite regulations and licensing of sawyers from the 1840s and the creation of timber reserves totalling over one million acres by 1875.

The first Conservator of Forests, George Perrin, appointed in 1888 was virtually under siege in his own bureaucracy in the Lands Department and a Forests Act creating a Department of Forests was not passed until 1907. Much of the momentum for this legislative change came from the devastation and exhaustion of forests near the goldfield districts. The exhaustion of the mixed species Wombat Forest by the end of the century turned the eyes of the sawmillers east. It should be noted that the Anderson Brothers of Smeaton had a large timber mill at Barkstead and the huge messmate beams in their flour mill testify to the produce of the Wombat Forest while the site of their mill at Barkstead is today marked by a huge sawdust heap flanked by two mature American fir trees.

The large scale era of sawmilling was initiated in the southern forests of the Otways and Gippsland and in the eastern forests by the extension of the Victorian Railways system: to Wandong and Nar Nar Goon in the 1870s, Yea (1883), Healesville (1889), Fern Tree Gully (1890), Port Albert (1892), Gembrook (1898), Warburton (1901), Alexandra (1909), Erica and Walhalla (1910), Beech Forest and Crowes (1911), Won Wron (1921) and Woodside (1923). These towns developed as railheads for the local timber industry. During the period from 1885 to 1950, sawmilling developed a common and relatively stable pattern. On the basis that sawn timber was easier and cheaper to transport than giant logs, mills were established in the forest with associated communities and tramways were developed as an efficient and year-round means of conveying timber to the Victorian Railway lines.
Sawmilling peaked in the 1920s and again immediately after World War 2 with salvage work from the 1939 fires. The number of forest sawmills in Victoria dropped steadily from 241 in 1921 to 169 in 1930. Yarra Junction, where lines from the Warburton and Powlettown forests met, boasted that more timber passed through it than any other place in the world except Seattle in the United States of America.

In the 1920s sawmilling moved further east again, into the Erica district replacing the defunct gold mining activity at nearby Walhalla and in the 1930s sawmillers moved into the bush country near Matlock and on the Tanjil River.

The 1939 Black Friday bush fires claimed the lives of many timber workers, destroyed 69 sawmills and razed large areas of forest. After the salvage operations were completed in the 1940s, sawmills were established more safely in towns - a move facilitated by the use of roads and trucks - and the industry concentrated its activities further east again. Roads took over from tramlines, the chainsaw replaced the axe and cross-cut saw, diesel and electricity replaced steam power and milling equipment became more sophisticated.

This technological revolution and the retreat to the towns brought an end to the era of sawmilling which is most represented in the physical relics left in the forest today - the tramway era. Sawdust heaps, mill sites and huts, tramway formations, cross-log bridges, make-ups and trestle bridges remain as evocative reminders of this colourful and often dangerous phase of the industry, and of the human communities once harboured by the forest.

There are relics of varying significance scattered through the bush. The Comet mill site (1890s) on Mt Disappointment plateau is a very good example of an early mill site with its sawdust heap remaining and rock edging of workers gardens. A notably huge sawdust heap remains at the Clark and Pearce No. 1 mill site (1907-1939) in the Rubicon area, while that company’s other mill sites have boilers remaining on-site.

The most intact remaining incline is the Vic Oak incline off the Mt Margaret tramway. The Drain, Cook mill tramway at the base of the Cathedral Range has bogies remaining in-situ on the line, while the nearby Buxton Sawmilling Company tramway is fairly intact and has a good example of a gantry remaining. Kirchubel’s tramway is probably the most intact surviving - it is 2.5 km in length with 15 bridges including excellent examples of crib construction.

Ingram’s skyline in the Western Tyers forest appears to be the only surviving relic of skyline haulage in this part of Victoria. The skyline consisted of a 65 mm diameter steel cable stretching for approximately 1 km in a straight line to slide logs across the valley to a tramline where a Fordson rail tractor hauled the logs to an incline: once lowered down this the logs were hauled to Ingram’s mill - road trucks took over this section after 1949.
After the 1939 bushfire there was a need to develop uses for inferior timber while first class sawmilling forests advanced to maturity again. With petrol rationing during World War 2 there was a demand for charcoal as an alternative fuel for motor vehicles and charcoal production was urged as the best way to use these poorer timbers as well as the remaining dead and ringbarked trees. In 1941 Kurth Kiln was constructed near Gembrook. It was the only charcoal kiln built in Victoria which could operate continuously.

Changing demands and technology have altered the patterns of forestry and new types of relics will be identified in future.

WATER PRODUCTION

Water Supply:
Harnessing water supply requirements from the forested catchments has left a legacy of hydraulic engineering relics. The colony's first major waterworks was the Yan Yean reservoir designed by civil engineer, James Blackburn and opened in 1857. A thirty foot high earth embankment was constructed to create a 6,400 million gallon reservoir. It drew attention in the 1850s as one of world's largest artificial water storage reservoirs. Construction of the Wallaby Creek weir and aqueduct in 1883 and the Silver Creek weir and aqueduct in 1886 expanded the supply system. These dams, weirs and bluestone aqueducts are remarkable early feats of surveying and engineering and many of them, now notable historic features, continue in use.

Hydro-power:
Harnessing water for power generation was widespread for mining purposes from the 1850s and left a legacy of water races, sluice-gates and waterwheels. Later schemes were developed for producing hydro-electricity.

The Cassilis Company's hydro-electric power scheme was located on the Victoria and Cobungra Rivers for the purpose of providing electricity to the mine and treatment works in Powers Gully near Cassilis. A dam constructed on the Victoria River supplied water by race to a pressure dam located on a spur immediately above the power station on the Cobungra River. From the power station, a transmission line extended 27 km to the mine and works. Groundwork for the scheme commenced late in 1906 and it was operational in 1909 - the first such scheme in Victoria.

A hydro-electric scheme was mooted for Snobs Creek in 1910, but one was eventually established in the Rubicon district in 1928 when five generating stations opened on tributaries of the upper Goulburn River and fed into a substation at Sugarloaf near the new Eildon Dam. The Eildon Reservoir went through a further transformation - for irrigation and power supply - when it was greatly enlarged in the 1950s. The State Electricity Commission shared the Rubicon forest with the timber-getters and has perpetuated the art of trestle bridge building and maintenance.

AGRICULTURE

As mentioned most agricultural and pastoral processing occurred on freehold land but some significant sites have been repurchased by the Government to ensure their long term conservation.

Flour-milling:
Anderson's Mill at Smeaton is one of Victoria's outstanding monuments to the mid-nineteenth century pioneers who established the new colony. It is a five storey bluestone mill driven by waterpower and is the only water-powered grain mill remaining in Victoria. It is also the largest bluestone mill surviving in Victoria. The waterwheel is significant itself because it was a product of the Victoria Foundry in Ballarat at its most active period, the early 1860s, and displays clearly the manufacturing capabilities and levels of craftsmanship attained by the foundry no more than five years after it started; in addition, the wooden patterns from which the cast iron components of the wheel were made have survived and make it possible to see the way in which the wheel was constructed - these patterns are on display inside the mill today.

The mill complex also includes the wrought iron flume which connects with the earthen water race which runs for approximately one kilometre south to a bluestone weir on Birch Creek. The mill is significant for showing the changing technology of grain milling when stone-ground mills gave way to roller mills; the oatmeal kiln also illustrates Scottish knowledge of milling wetter climate grains. The mill building and office demonstrate the art of the early stonemasons in working local basalt into dressed bluestone.

Anderson's Mill illustrates the economic
development of the new colony when profit from the gold diggings was reinvested in local development; the Anderson Brothers accumulated capital from goldmining then established timber mills in the Bullarook Forest and then diversified into agriculture in the Smeaton district by 1856. These economic links were finally illustrated by the construction of the flour mill in 1862 to serve the surrounding grain growers. It illustrates the transfer of technical knowledge and social customs from the Old World to the New; John Anderson had been an apprentice wheelwright at a water-powered grain mill in New Cumnock, Ayrshire, and we have recently received measured drawings of this mill from the National Monuments Record of Scotland.

Day’s Mill and Farm complex south of Murchison is significant for other reasons. It is arguably the best preserved and most complete example of a flour mill from the nineteenth century to have survived to the present in Australia. Also on the site is a wide range of domestic and farm buildings and artefacts which provide an extraordinary record of farming and nineteenth century flour milling as well as rural life in Victoria.

The existing buildings include a three storey steam-powered brick mill and granary and a two storey house. There is also a complex of buildings in brick, timber and galvanized iron including chaff shed, blacksmith, dairy and butchering room, large stable and machinery shed with loft above, a milking shed, shearing shed and piggery as well as many smaller out-houses, chicken coops and pens. The whole complex is approached from a gatehouse via a driveway lined with mature pines.

Development of the complex occurred as follows: establishment and construction (1858-1860s); flour milling, wheat, dairy and mixed farming (1870s-80s); sheep/wheat farming with some milling (late nineteenth century); cessation of milling, continuation of mixed farming, seed cleaning (1910-60s); decline and eventual closure of the farm (1970s-80s). In 1986 the Historic Buildings Council purchased the complex and C&E is currently undertaking a detailed conservation analysis and minor restoration program.

The uniqueness of Day’s Mill and Farm derives from the combination on the site of buildings and artefacts (8248 catalogued!) representing farming, milling and domestic life. As a complex there is little that is comparable.

Woodlands homestead, a large portable timber house in Gellibrand Hill Park was erected in 1842. It is the oldest surviving pastoral homestead in Victoria and the property was originally named because of its landscape setting. Although the external features of the homestead were altered in 1918, the stables and coach house date from the 1840s and, the whole complex enables visitors to understand the functions of a large pastoral property before the gold rushes.

Gulf Station at Yarra Glen is one of the oldest farms remaining intact in Victoria and the most complete example of timber slab building construction surviving. It was constructed in the 1850s and 60s of hand hewn timber with shingle roofs. There are fifteen main buildings and the milking shed is being used again to milk a herd of Ayrshire cows. The complex was listed on the Historic Buildings Register and the State government purchased it in 1976. Since then it has been managed by the National Trust.

LESSONS FROM THE PAST FOR TODAY

How do we present the lessons from these past industrial sites for the public today? The most common process is one of interpretation, which has been defined by Freeman Tilden of the U.S. National Park Service, as

“an educational activity which aims to reveal meaning and relationships through the use of original objects, by firsthand experience, and by illustrative media rather than simply to communicate factual information”.

This approach has been the standard one favoured for over 30 years and widely adopted.
by National Parks authorities in Australia for outdoor, on-site activities chiefly focused on the bush and natural history but often applied to industrial sites. Where machinery from such sites has been removed to a museum, a static display with a didactic message is often the result. Although such museums may act as visitor orientation centres and stimulate the visitor to go bush and look for the site of the real object in its original functional setting.

The most obvious means of site interpretation in Victoria are through tourism programs, school curricula and on-site identification of relics remaining in the landscape.

Tourism:
A number of outdoor historical parks featuring re-created industrial history have been developed on public land by separate and independent groups. The most successful, with over 500,000 visitors annually, is Sovereign Hill at Ballarat. The Mining Museum is an unexpected and memorable bonus for visitors drawn by the thunderous noise of the quartz-crushing stampers, and suddenly finding themselves in the pulsating, hissing world of steam-operated machinery. This re-creation allows them to understand three dimensionally the actual relics of such machinery lying in pieces in the bush or on-site as at the Berry Deep Leads, north of Creswick.

There are often restored industrial sites on public land which are promoted as outdoor tourist attractions. Central Deborah Mine in Bendigo is one example where visitors can go underground and are guided through the workings; the Red Gums Works at Echuca is another example where steam driven sawmills operate for tourists to observe the process. In addition museums, such as the 50 listed in the central Victorian goldfields region, display items and stories of industrial history from their localities and these museums are often promoted on tourist brochures.

Tourism also uses historical symbols in its advertising and promotion and this marketing technique of "selling" history keeps people aware of their connections with the past.

Education:
Australian history is now part of the school curriculum at all levels of education. Students are made familiar with the facts and there is an ever increasing stream of published histories, facsimiles of maps and select official documents and archival finding guides. Some museums have education services and link their collections with the curricula such as Sovereign Hill which has two gold rush era schools where modern classes can book in for a two day re-enactment of 1850s educational methods and curricula.

Smaller museums allow access to their archival records and photograph collections for students' local or community history projects. C&E also allow access for serious researchers to our archival records especially where this will result in a brochure, display or publication about a site or group of sites on public land. In addition, the Historic Places Section has published books on the history of Steiglitz goldfield, Wonthaggi State Coal Mine, Ferntree Gully National Park (especially its recreation history) Barmah Forest and Anderson's Mill, Smeaton. These books provide information for education and interpretation programs. Some parks like Point Nepean have specific "school kits" with preliminary reading, class lessons and tasks. We have also contributed to the National Trust's Industrial Heritage Education Kit launched for Heritage Week and this makes our research information available to a much wider audience.

On-site interpretation:
Many industrial sites are listed on the State's Register of Historic Buildings which gives statutory protection for their conservation. The Department of Planning and Housing and relevant municipalities have actively maintained support for restoration of these sites and their structures. In conjunction with committees of management or our Department, brochures or leaflets have been produced to encourage visitors to walk, cycle or drive around the sites and this hopefully enhances knowledge and appreciation of the industrial heritage being interpreted.

For sites managed directly by the Department of Conservation and Environment, the approach is one of minimal development through structural stabilization, restoration where appropriate, controlled access and provision of on-site interpretative signs, where visitor numbers or site significance warrants this.

Visitors to historic mining sites are confronted with the evidence of the unquantifiable amount of human efforts and manual labour which went into the search for gold. This is in sharp contrast to today's means of making a livelihood and this message deserves to be delivered as well as the facts about opening, person-
nel, production figures, and colourful events as well as the decline of the industry on that site.

The least intrusive, although often most expensive, method of site interpretation is by way of guided walks. Due to budget constraints, public land rangers trained in the history of sites in their localities will have to be replaced by volunteer guides or commercial tour operators.

Tensions and conflicts arise in interpreting industrial history.

1. An obvious problem arises where the owner/manager of a place does not want to acknowledge its industrial history. For example, national park managers are concerned to preserve “natural” ecosystems and accordingly want to obliterate relics of activities associated with past exploitation of the land or resources such as sawmills and tramways or whaling stations.

2. The “ownership” of the culture being interpreted can cause problems. Is it the city based shareholders, the mine manager or the miners story which is being presented? The virtues of bygone heroes are inflated and admired forebears acquire qualities esteemed today, however anachronistic, and their faults are concealed or excused.

David Lowenthal, in discussing “changing the past” shows how Americans shun reminders of what seems shameful or demeaning because their history has to be a chronicle of national greatness. We can all think of recent “glorifications” here during the Bicentennial euphoria instead of examining the historical record, which for example would reveal the unsafe working conditions of miners in the “great golden era” at the New Australasian mine at Creswick where 22 miners died in 1882.

3. The anti-intellectual nature of much site interpretation has been highlighted by academic critics. We have no understanding of history in depth but instead are offered a contemporary creation of “yesteryear”. It is clear that the more interpretation become available, the more people rely on it; they prefer to imbibe history in comfort in visitor centres and are seldom conscious of, or worried about, the alterations of the past that interpretation implies.

As Hewison says in “The Heritage Industry”, the past is domesticated and, by regulation, made safe; it is rescued, removed, rebuilt, restored and rearranged”.

Nostalgia for the industrial past and the rise of industrial archaeology is an ironic commentary on the decline of the industries it studies. We need to know much more about the detailed making of the industrial landscape before we can be very confident of its meaning in the past, present or future. Charles Fahey’s work on the changes wrought to the local landscape by the activities of the Anderson brothers at Smeaton shows how generalizations about gold rush generated agricultural development do not necessarily fit specific parishes. David Uzzell, a psychologist who has researched the design and effectiveness of interpretation programs argues in favour of the “hot interpretation of war and conflict” to focus on “the cost in lives and human misery” rather than descriptive eulogies. This is very appropriate for industrial site interpretation.

4. Provision of visitor facilities can create great tensions in using and managing historic sites. From the first act of sign posting the site, we draw attention to its special status. Markers interpreting this relic or forbidding access to that one profoundly influence what we make of them. Some visitors to history-laden places attend more to the markers than to what they celebrate. Signposting can turn a site into a visually intrusive outdoor museum. From my experience it is often better to be temporarily “lost” than to be overinformed, to let the sense of the place soak in and to conserve some of the mystery of the place.

Protective measures may detract from the appearance or understanding of the site fea-
tures of an historic place, yet without them the relics/features may decay or vanish all the sooner. Protective grilles, walk ways, steps and stairs, scaffolding and props all fall into this category.

Popularity threatens the fabric and the history of a place and to prevent such damage further affects surviving relics. Thus preservation sets in motion extensive remodelling of the very past it aims to protect. Removing dirt or rust, reconstructing a ruin, restoring an old building to what it might or should have been all aim at improving on what has survived.

However, restoration, reinstatement and reconstruction are necessary processes for maintaining the physical fabric of an historic place. The general public enjoy reconstructions. Few have the taste or the training to appreciate the past simply from fragmentary remains. Sovereign Hill in Ballarat provides 500,000 visitors annually with an image and an understanding of the Victorian gold rushes of the 1850s yet many of the original sites remain abandoned, overgrown or readapted in the nearby countryside awaiting detection by the curious "cultural tourist".

The furnishing and presentation of historic houses and sites is another area where visitors arrive with preconceptions of what they will find. At Woodlands homestead, an 1840s prefabricated English timber house in Gellibrand Hill Park near Tullamarine Airport, visitors comment that they hope we get the funds to furnish the house and finish the restoration. They have failed to read our introductory panels which tell them why this house is different and not furnished! The 1847 paint scheme revealed in one room has been criticized as "too dull", visitors having become accustomed to the new, brighter heritage colours replicated by leading paint companies and applied to other unrevealed sections in other rooms.

Toilets, car park and attractive picnic barbecue areas can create intrusions or provide recreational opportunities and draw crowds not primarily interested in the heritage resources which were originally the reason for the reservation of that place. Access to historic places can generate its own traffic problem for the local community.

5. The physical capacity of an historic place may also cause tensions for both managers and visitors. The historic structure may be too small or fragile for the crowds wishing to inspect it and peak loads have to be spread throughout the opening times. Differential entry charges can be used to achieve this in some cases. Visitors cause physical wear and tear on floors, tiles and steps and air breathed out can cause humidity and mould growth on fragile surfaces.

Physical safety is also an issue for historic site managers. Unexploded ordinance at the former Army Reserve which is the new Point Nepean National Park means that visitors must book in to visit and travel only along designated routes within the park to visit the various forts, barracks and gun emplacements. Lead poisoning in rifle butts remaining in an historic park is another concern as is the cyanide from gold processing which has leached into the soils of many gullies now in picturesque historic reserves in the central Victorian goldfields. Original industrial machinery with exposed belts and pulleys whirring away is a hazard to the throng of visitors fascinated by past motive power and protective grilles and cages can almost destroy the visitor's appreciation and understanding of the processes being exhibited.

Sometimes there is the opposite problem when the historic site may be too large or complicated for the visitor to appreciate the past functional linkages. For example, at Walhalla the majority of visitors only go to the township in the valley floor but miss the "outer suburbs" and cricket ground on the ridge and the tramways snaking along the contours of the valley sides.

On rural historic sites, there is often room to develop other facilities away from the historic core but this new development can change the original character and function of the historic place. For example, at Gulf Station the National Trust is proposing a large capacity visitor centre and carpark across the gully from the farm complex but this could turn the timber slab buildings into a destination or product to be inspected "up the hill" instead of the present delight of just finding oneself in the middle of the historic complex.

The tensions and conflicts outlined must be faced by managers wishing to interpret industrial history sites.

CONCLUSION

The preceding sections have outlined a range of industrial sites on public land in Victoria - C&E's legacy of "wrecks and ruins" which
demonstrate relics of mining, forestry and agricultural activities. It has also outlined some of the problems in managing and interpreting these sites.

Few people have realized the variety and richness of this complex of industrial sites. There is more to the bush than the trees and shrub cover, which is the dominant image of the casual uninformed observer. The mellowed landscape has taken on a new cultural identity which awaits deciphering by the discerning visitor. But the visitors need to learn new ways of deciphering the landscape. There has been a concentration on the “oldest” or “earliest” whereas multiple pasts co-exists on site, and it is equally important to understand ongoing processes as well as having knowledge of the origins of a site. The real challenge of interpreting industrial history is to encourage study of functional relationships and the processes of change. As Barrie Trinder has concluded in his 1982 book entitled “The Making of the Industrial Landscape”:

“Landscapes are the most fragile remains of past industry. Machines can be preserved and placed in museums. Buildings can be conserved and adapted for new purposes. But the features of one period are almost inevitably overlain by those of subsequent generations, whether a site has continued in industrial use or not. Yet an understanding of industrial history demands a sensitivity to landscape as well as an awareness of how machines and processes worked and an unpatronizing sympathy for past generations of workers. Such characteristic landscapes as remain need to be cherished as much as our most famous buildings if our children are to gain an adequate understanding of one of the critical periods of our history”

Bibliography


