
CHILEAN MILL, BUCKEYE BRIDGE (BUCKEYE BRIDGE CONSTRUCTION MATERIAL & STOCKPILE)

Location

BUCKEYE LANE AND BUCKEYE CREEK RAVENSWOOD, GREATER BENDIGO CITY

Municipality

GREATER BENDIGO CITY

Level of significance

Heritage Inventory Site

Heritage Inventory (HI) Number

H7724-0327

Heritage Overlay Numbers

HO629

Heritage Listing

Victorian Heritage Inventory

Statement of Significance

Last updated on -

State significance. The Chilean Mill is a rare example of a technical feature once common on the goldfields. The group of sites are a rare example of a group of features probably all associated with railway construction.

Permit Exemptions

General Conditions: 1. All exempted alterations are to be planned and carried out in a manner which prevents damage to the fabric of the registered place or object. General Conditions: 2. Should it become apparent during further inspection or the carrying out of works that original or previously hidden or inaccessible details of the place or object are revealed which relate to the significance of the place or object, then the exemption covering such works shall cease and the Executive Director shall be notified as soon as possible. Note: All archaeological places have the potential to contain significant sub-surface artefacts and other remains. In most cases it will be

necessary to obtain approval from Heritage Victoria before the undertaking any works that have a significant sub-surface component. General Conditions: 3. If there is a conservation policy and plan approved by the Executive Director, all works shall be in accordance with it. Note: The existence of a Conservation Management Plan or a Heritage Action Plan endorsed by Heritage Victoria provides guidance for the management of the heritage values associated with the site. It may not be necessary to obtain a heritage permit for certain works specified in the management plan. General Conditions: 4. Nothing in this declaration prevents the Executive Director from amending or rescinding all or any of the permit exemptions. General Conditions: 5. Nothing in this declaration exempts owners or their agents from the responsibility to seek relevant planning or building permits from the responsible authorities where applicable. Regular Site Maintenance : The following site maintenance works are permit exempt under section 66 of the Heritage Act 1995, a) regular site maintenance provided the works do not involve the removal or destruction of any significant above-ground features or sub-surface archaeological artefacts or deposits; b) the maintenance of an item to retain its conditions or operation without the removal of or damage to the existing fabric or the introduction of new materials; c) cleaning including the removal of surface deposits, organic growths, or graffiti by the use of low pressure water and natural detergents and mild brushing and scrubbing; d) repairs, conservation and maintenance to plaques, memorials, roads and paths, fences and gates and drainage and irrigation. e) the replacement of existing services such as cabling, plumbing, wiring and fire services that uses existing routes, conduits or voids, and does not involve damage to or the removal of significant fabric. Note: Surface patina which has developed on the fabric may be an important part of the item's significance and if so needs to be preserved during maintenance and cleaning. Note: Any new materials used for repair must not exacerbate the decay of existing fabric due to chemical incompatibility, obscure existing fabric or limit access to existing fabric for future maintenance. Repair must maximise protection and retention of fabric and include the conservation of existing details or elements. Fire Suppression Duties : The following fire suppression duties are permit exempt under section 66 of the Heritage Act 1995, a) Fire suppression and fire fighting duties provided the works do not involve the removal or destruction of any significant above-ground features or sub-surface archaeological artefacts or deposits; b) Fire suppression activities such as fuel reduction burns, and fire control line construction, provided all significant historical and archaeological features are appropriately recognised and protected; Note: Fire management authorities should be aware of the location, extent and significance of historical and archaeological places when developing fire suppression and fire fighting strategies. The importance of places listed in the Heritage Register must be considered when strategies for fire suppression and management are being developed. Weed and Vermin Control : The following weed and vermin control activities are permit exempt under section 66 of the Heritage Act 1995, a) Weed and vermin control activities provided the works do not involve the removal or destruction of any significant above-ground features or sub-surface archaeological artefacts or deposits; Note: Particular care must be taken with weed and vermin control works where such activities may have a detrimental affect on the significant fabric of a place. Such works may include the removal of ivy, moss or lichen from an historic structure or feature, or the removal of burrows from a site that has archaeological values. Landscape Maintenance : The following landscape maintenance works are permit exempt under section 66 of the Heritage Act 1995, a) landscape maintenance works provided the activities do not involve the removal or destruction of any significant above-ground features or sub-surface archaeological artefacts or deposits; b) watering, mowing, top-dressing and fertilising necessary for the continued health of plants, without damage or major alterations to layout, contours, plant species or other significant landscape features; c) pruning to control size, improve shape, flowering or fruiting and the removal of diseased, dead or dangerous material, not exceeding 20% of the crown of the tree within a period of two years; d) tree surgery by a qualified horticulturalist or tree surgeon necessary for the health of those plants. Public Safety and Security : The following public safety and security activities are permit exempt under section 66 of the Heritage Act 1995, a) public safety and security activities provided the works do not involve the removal or destruction of any significant above-ground structures or sub-surface archaeological artefacts or deposits; b) the erection of temporary security fencing, scaffolding, hoardings or surveillance systems to prevent unauthorised access or secure public safety which will not adversely affect significant fabric of the place including archaeological features; c) development including emergency stabilisation necessary to secure safety where a site feature has been irreparably damaged or destabilised and represents a safety risk to its users or the public. Note: Urgent or emergency site works are to be undertaken by an appropriately qualified specialist such as a structural engineer, or other heritage professional. Signage and Site Interpretation : The following Signage and Site Interpretation activities are permit exempt under section 66 of the Heritage Act 1995, a) signage and site interpretation activities provided the works do not involve the removal or destruction of any significant above-ground structures or sub-surface archaeological artefacts or deposits; b) the erection of non-illuminated signage for the purpose of ensuring public safety or to assist in the interpretation of the heritage significance of the place or object and which will not adversely affect significant fabric including landscape or archaeological features of the place or obstruct significant views of and from heritage values or items; c) signage and site interpretation products must be located and be of a suitable size so as not to obscure or damage significant fabric of the place; d) signage and site interpretation products must be able to be later removed without causing damage to the significant fabric of the

place; Note: The development of signage and site interpretation products must be consistent in the use of format, text, logos, themes and other display materials. Note: Where possible, the signage and interpretation material should be consistent with other schemes developed on similar or associated sites. It may be necessary to consult with land managers and other stakeholders concerning existing schemes and strategies for signage and site interpretation. Mineral Exploration : The following Mineral Exploration activities are permit exempt under section 66 of the Heritage Act 1995, a) mineral Exploration activities provided the works do not involve the removal or destruction of any significant above-ground features or sub-surface archaeological artefacts or deposits; b) preliminary non-intrusive exploration, including geological mapping, geophysical surveys, and geochemical sampling and access to shafts and adits; c) advanced forms of exploration (drilling), including the location of drill pads and access tracks where this has been the subject of on-site negotiation and agreement with representatives of Heritage Victoria, DSE and Parks Victoria, and where all significant historic site features have been identified and protected as part of an approved work plan. Minor Works : Note: Any Minor Works that in the opinion of the Executive Director will not adversely affect the heritage significance of the place may be exempt from the permit requirements of the Heritage Act. A person proposing to undertake minor works may submit a proposal to the Executive Director. If the Executive Director is satisfied that the proposed works will not adversely affect the heritage values of the site, the applicant may be exempted from the requirement to obtain a heritage permit. If an applicant is uncertain whether a heritage permit is required, it is recommended that the permits coordinator be contacted.

	F1: THE FIVE CUT AND SQUARED BLOCKS ARE FINISHED AND LIKELY TO BE INTENDED FOR USE IN THE BUCKEYE CREEK RAIL BRIDGE. THEY WERE EVIDENTLY SURPLUS TO THE CONSTRUCTION REQUIREMENTS AND WERE DISCARDED ON SITE.
Interpretation of Site	F2: THE CHILEAN MILL WAS A STRUCTURE SIMILAR TO A WHIM WHICH HAD A CENTRAL WOODEN POST ON WHICH WAS MOUNTED A CROSSBEAM. ON ONE END OF THE CROSSBEAM WAS A LARGE CIRCULAR MILLSTONE AND ON THE OTHER END WAS A HORSE HARNESS. THE CIRCULAR WALL WAS BUILT UP TO A SHALLOW HEIGHT AND THE HORSE TYURNED THE MILLSTONE TO CRUSH ROCK. THIS WAS A PRE-CURSOR TO THE MECHANISED STAMPER BATTERIES ON THE GOLDFIELDS BUT WOULD ALSO HAVE BEEN USED TO CRUSH BASALT FOR THE RAILWAY.
Hermes Number	12780
Property Number	

History

A Chilean Mill is a grinding mill composed of one or two vertcial rollers running in a circular enclosure with a stone base, used for finely grinding mineral ore such as quartz. In the classic use of these mills gold particles break out of the rock during the process. The massive stone wheel in this mill weighed up to two tons and was powered by a horse. (A later refinement in quartz processing for gold recovery was the manufacture of a pair of cast iron wheels revolving in a metal pan, the revolving centre post being linked (by geras) to a steam engine). Ore was dropped into the pan to be crushed by the roller and the crushed ore had to be shoveled over the lip of the pan in what must have been a fairly labour-intensive operation.

The 1888 classic reference 'Victoria and its Metropolis' Volume 2, page 512, tells of Jacob Branche, who arrived at Forest Creek in 1854 just as alluvial mining was wannig and quartz mining was in its infancy. Drawing on his South American experience Jacob Branche set up a quartz-crushing machine, the first Chilean Mill in Victoria at Specimen Hill near Chewton. In Flett's book there is an illustration on page 44 of "Bruce's Crshing Machine at Kangaroo Flat in 1857" which depicts a steam driven dual roller chilean mill, so the technology, pioneered twenty miles to the south and is use five miles to the north of Buckeye Creek, was known locally. But it had to be adapted in themost primitive manner at Buckeye Creek, reverting to the horse-powered version.

The Chilean Mill at Buckeye Creek is an interesting intact archaeological site and reflects the activities of the railway construction workers in 1862.

The measurements are 2200 mm inner dia. circle of spalls, 200 mm dia. axle pole (missing), 560 mm square (or cube) blocks of 'Harcourt graniodorite' in the bed and 8920 mm dia horse path.

The roller is not on site. There was an article in the 'Bendigo Advertiser' dated February 10 1972 which depicted a granite roller alongside the railway on the property of Mr R J Comini, Ravenswood and this was described as the roller used in compacting the railway embankments. The dimensions of the roller were stated to be 4'6" dia and 4'6" width. That converts to 1372 mm and thus eliminates this roller out of contention as the roller for the Chilean Mill/ A 1372 wide roller would not operate in a 2200 circle.

The position of the mill at the base of the bridge works rather than at the side on the same level as the rail line indicates its use for some works associated with the bridge rather than an attempt to make ballast out of granite. There is little evidence of granite ballast on the actual line although there is plentiful supply of granite in the hill alongside the site. the ballast on the line is basalt and scoria. Local materials (metamorphosed sandstone) were crushed for ballast at Harcourt (Leslie & Ross) but not at Big Hill. There are cuttings to north and south of the bridge from which many huge lumps of granite have been hewn but the probability of the use of granite for ballast is just about zero.

So what was the mill used for? Close inspection of the site suggests that, given the coarse nature of the sand and gravels at Buckeye Creek, the granitic sand and gravels were crushed to powder to mix with lime to make the mortar for the bridge abutments and piers. These granite piers and abutments are quite notable structures, extremely well built and show very little sign of deterioration over 141 years of use. the work would have taken quite some months as you can only lay two or three courses of granite in a day. The mortar courses are fairly thin so very fine sand was called for - hence the need for the Chilean Mill.

This theory is based on the position of the mill and its presence in non-gold bearing country. It is supported by the existence of a large waterhole in the creek just to the ext of the bridge, the water hole (in size) is out of character with the rest of the creek channel in the vicinity and it is probable that the sand and gravels were excavated at this site, a few metres from the Chilean Mill, and carted to the mill for crushing.

This site certainly indicates that there were ex-miners among the railway construction workers, and testifies to the adaption of technology from one 'sector into another as well as to the use of the materials to be found on the job-site. They were really resourceful folk these railway builders, working in remote locations such as this, with a tight budget.

This is an accessible, excellent and well preserved example of technology particularly redolent of the gold-rush era but which illustrates the challenges and the resourcefulness involved in the construction of the railway. the Buckeye Bridge, like all the bridges on the line, was built to a superior design, the builders conscious that their efforts (and probably shall) last a thousand years. Preservation of sites that illustrate with such clarity the construction techniques and the resourcefulness of the builders are rare and should be given legislative protection.

This place/object may be included in the Victorian Heritage Register pursuant to the Heritage Act 2017. Check the Victorian Heritage Database, selecting 'Heritage Victoria' as the place source.

For further details about Heritage Overlay places, contact the relevant local council or go to Planning Schemes Online <http://planningschemes.dpcd.vic.gov.au/>