

Historical archaeological site card

Heritage Inventory number and name

LAL LAL WATERWORKS ASSOCIATION
H7722-0086

Date received

Monday, 24 June 2024

Date accepted

10/7/2024

Hermes Number

212336

1. Place details

Place name:

LAL LAL WATERWORKS ASSOCIATION

Heritage Inventory Number (if any):

Other or former names:

Municipal Council:

MOORABOOL SHIRE

Address:

WEST OF COAL MINE ROAD, MOUNT DORAN STATE FOREST
LAL LAL, MOORABOOL SHIRE

Geographical coordinates (GDA94 or WGS84)
expressed in degrees and decimals of a degree:

Mapsheet name and number (1:100,000 only):

Bacchus Marsh 7722

2. Cadastral location

County:

Parish:

Township:

Section:

Allotment:

Standard Parcel Identifier (SPI):

Mt Doran State Forest

3. Details of site owner or land manager (where known)

First Name:

Surname:

Business or organisation name:

DEECA

Position title:

Address:

Email address:

Telephone:

4. Details of site occupier (where known)

First Name:

Surname:

Business or organisation name:

Position title:

Address:

Email address:

Telephone:

5. Aboriginal cultural values

Site has known Aboriginal values	NO
Site is recorded on the Victorian Aboriginal Heritage Register	NO

6. Current description of site

Please provide description:

A large distribution dam which has a water race running to a smaller dam. The race is typical of this type of feature, sometimes wide and pronounced and other times narrow and hard to trace. The embankment of the smaller dam has burrow pits (excavations to gain material to create the embankment) at both ends. Running south from the embankment is another race that feed water to a puddling machine. The puddling machine is quite well preserved.

Date recorded: Monday, 03 June 2024

On Victorian Heritage Register

On Heritage Overlay

Associated sites: Yes, within the Mt Doran State Forest there will be other races and the likelihood of more puddling machine sites.

7. Place history

Please provide a brief history of the place (at least 1 to 2 paragraphs):

Alluvial gold mining in the 19th century demanded large volumes of water to separate gold from the washdirt. Miners excavated extensive networks of races and dams to bring water from where it was available to where it was needed. Entrepreneurs saw the opportunity to capture and monopolise water supply and sell the water to miners at a profit. The Lal Lal Waterworks Association was created in 1858 and secured the first water right licence issued in Victoria, to deliver water to miners on the Moorabool goldfield south of Ballarat. The system included six dams and almost 100 km of races but

ultimately it failed to deliver as promised. Examination and mapping of the extensive archaeological remains indicate the scale and ambition of the enterprise and reveal some practical reasons why it was unsuccessful. For further information see *Pioneers of goldfields water management: the Lal Lal Waterworks Association*, Peter Davies and Susan Lawrence, *Australasian Historical Archaeology*, 36, 2018.

Part of the scheme lies within the Mt Doran State Forest including distribution dams and a network of water races which enable miners to work auriferous gullies.

8. Analysis of site (interpretation)

Include phases in the development of the site, functions and activities represented, as well as current place use:

The site is associated with the Lal Lal Waterworks Association and includes a small section of the scheme that lies within the Mt Doran State Forest. Further work in the future will add further sections to complete the picture.

Puddling machines: These machines were being used as early as 1853. These machines could be used after gold rush diggings had been deemed to be worked-out. A puddling machine comprised a circular wood-lined trough, one metre in width and usually 6.7 metres in diameter. On the central mound formed by the trough stood a wooden pivot post to which was attached a horizontal wooden pole, with a horse harnessed at the other end. The horse trudged repeatedly around the outer edge of the trough, dragging the iron rakes, which hung from the pole, through the washdirt in the trough, breaking it up and loosening the gold. Water was fed to the puddling machine from a dam, sometimes via a water race.

Water race: These features are linear earth-cut channels constructed to divert water from streams and, by force of gravity, convey it to the site of gold mining operations. The earth banks of water races can be retained by dry stone, especially if the terrain is sloping.

Many water race survive today. Most surviving water races are degraded and their courses disjointed; yet they can still be traced. In an isolated bush setting, a water race is a trail of crumbs to a historic mining landscape. Water races are unlikely to contain artefact-bearing occupation deposits. In rare instances, a race may have been constructed through land previously used for gold mining and habitation.

9. Statement of Significance

What is significant?

The site is associated with the Lal Lal Waterworks Association and includes a small section of the scheme that lies within the Mt Doran State Forest. Intact archaeological features on the site include water races, 2 dams with burrowing pits excavated the embankment of the smaller dam, and a puddling machine. There is a high likelihood of further archaeological features and subsurface deposits associated with the operation of the Lal Lal Waterworks.

How is it significant?

The site is archaeologically significant because it retains key aspects of the water distribution scheme and has a high level of intactness.

Intactness: retains evidence of the key aspects of the Lal Lal Waterworks Association Scheme – distribution dam, race connecting this dam to a smaller one, and a puddling machine site.

Integrity: the puddling machine site has a compact arrangement of relics which demonstrates the basic outlay of this type of mining operation.

Condition: retained fabric in a condition that can be understood and interpreted

Why is it significant?

The site is historically significant for its association with the Lal Lal Waterworks Association, which was a significant entity formed in 1858 in response for the demand for water on the Victorian Goldfields. The Association secured the first water right licence issued in Victoria and developed a large scale enterprise to attempt to meet this demand.

10. Suggested Protection : Heritage Inventory

11. Threat

Is the place under any threat? If so, what is the threat?

12. References / Informants

Please list books or other sources that may provide historical information about this place.

Pioneers of goldfields water management: the Lal Lal Waterworks Association, Peter Davies and Susan Lawrence, *Australasian Historical Archaeology*, 36, 2018.

13. Attachments

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14. Recording archaeologist's details

First Name:	David
Surname:	Bannear
Business or organisation name:	Historic Heritage and Archaeology
Position title:	
Business or company address:	
Email address:	
Telephone:	

15. Declaration

I state that the information I have given on this form is correct to the best of my knowledge.

SITECARD

FMQF165 – Race	FMQF168 – Puddler (mapped)
FMQF166 – Similar to landscape	FMQF163 – Race (mapped)
FMQF167 – Shallow pit	FMQF15 – Shaft 3m
FMQF171 – Similar to landscape	FMQF162 – dam wall (mapped)
FMQF155 – Similar to landscape	FMQF161 – Similar to landscape
FMQF24 – Shaft 10m	FMQF160-Shallow shaft
FMQF164 – Race	FMQF159 – Shallow pit
MINSITE368642 - Shallow workings	FMQF158 – Shallow pit
FMQF172 – Shallow workings	FMQF157 – Similar to landscape
FMQF25 – Shaft 2m	FMQF177 – Two shallow pits
FMQF24 – Stope 2m	FMQF178 – Linear feature
FMQF16 – shallow workings	FMQF176 – Shallow shaft
FMQF23 – Shallow workings	FMQF20 – Shallow shaft
MINSITE368648 – Shaft 5m	FMQF18 – Shallow shaft
FMQF17 – shallow shaft	
FMQF173 – Linear feature	

BACKGROUND

The Department of Energy, Environment and Climate Action (DEECA) and Parks Victoria (PV) are jointly undertaking a three-year Former Mines and Quarries Framework (FMQF) program to deliver a state-wide framework for abandoned and legacy mines and quarries on Crown land in Victoria. There is a responsibility under provisions of the Mineral Resources Development (Sustainability) Act (MRSDA) to ensure such sites are rehabilitated to safe, stable and sustainable landforms. A section of the Lal Lal Waterworks Association scheme in the Mt Doran State Forest was inspected as part of the FMQF program.

Historical Summary

Alluvial gold mining in the 19th century demanded large volumes of water to separate gold from the washdirt. Miners excavated extensive networks of races and dams to bring water from where it was available to where it was needed. Entrepreneurs saw the opportunity to capture and monopolise water supply and sell the water to miners at a profit. The Lal Lal Waterworks Association was created in 1858 and secured the first water right licence issued in Victoria, to deliver water to miners on the Moorabool goldfield south of Ballarat. The system included six dams and almost 100 km of races but ultimately it failed to deliver as promised. Examination and mapping of the extensive archaeological remains indicate the scale and ambition of the enterprise and reveal some practical reasons why it was unsuccessful. Part of the scheme lies within the Mt Doran State Forest including distribution dams and a network of water races which enable miners to work auriferous gullies.

For further information see *Pioneers of goldfields water management: the Lal Lal Waterworks Association*, Peter Davies and Susan Lawrence, *Australasian Historical Archaeology*, 36, 2018.

Puddling machines: These machines were being used as early as 1853. These machines could be used after gold rush diggings had been deemed to be worked-out. A puddling machine comprised a circular wood-lined trough, one metre in width and usually 6.7 metres in diameter. On the central mound formed by the trough stood a wooden pivot post to which was attached a horizontal wooden pole, with a horse harnessed at the other end. The horse trudged repeatedly around the outer edge of the trough, dragging the iron rakes, which hung from the pole, through the washdirt in the trough, breaking it up and loosening the gold. Water was fed to the puddling machine from a dam, sometimes via a water race.

Water race: These features are linear earth-cut channels constructed to divert water from streams and, by force of gravity, convey it to the site of gold mining operations. The earth banks of water races can be retained by dry stone, especially if the terrain is sloping. Different names were given to the various functions of a race, e.g. –

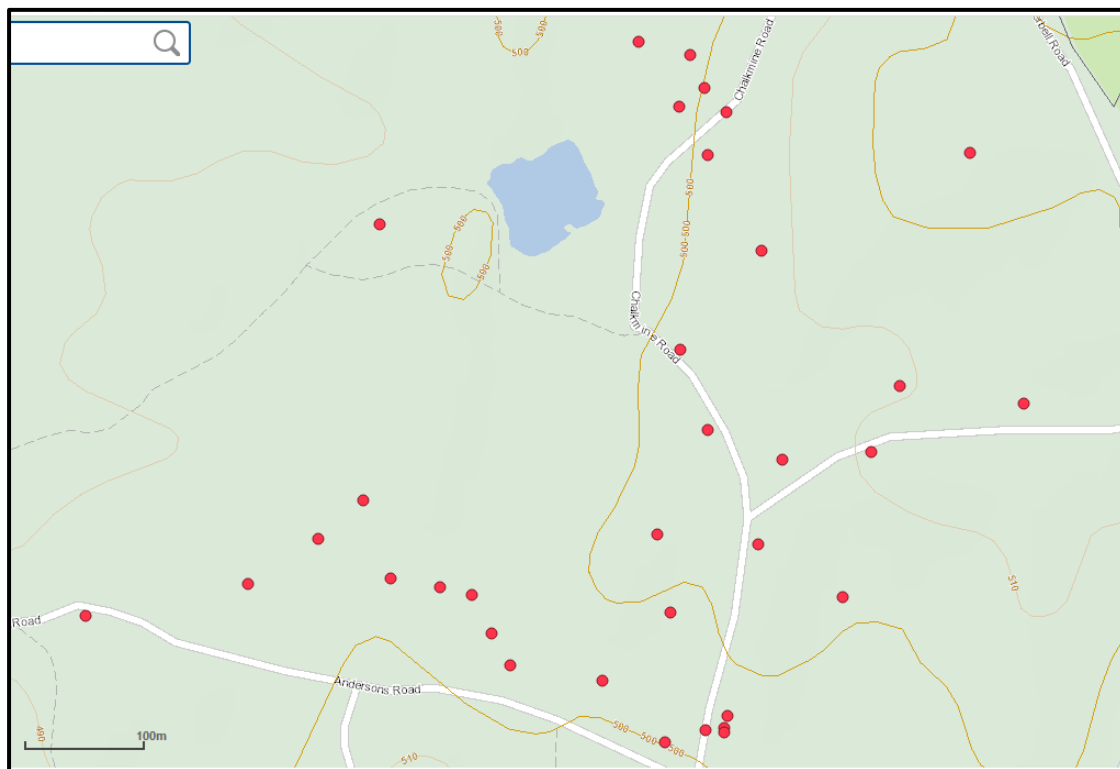
- contour race – the main or supply channel,

- distribution race – race that took water from the main channel to different parts of a gully or to nearby gullies,
- head race – the channel that supplied water to the top of a sluice hole, and
- tail race – outlet channel (sometimes a tunnel) that drained the water/sediments from a sluice hole.

Many water races survive today. Most surviving water races are degraded and their courses disjointed; yet they can still be traced. In an isolated bush setting, a water race is a trail of crumbs to an historic mining landscape. Water races are unlikely to contain artefact-bearing occupation deposits. In rare instances, a race may have been constructed through land previously used for gold mining and habitation.

Assessment as part of Former Mines and Quarries Framework Heritage Assessment Project

The FMQF Project has identified many mine openings in the MT Doran State Forest through which a section of the Lal Lal Waterworks Association scheme runs.

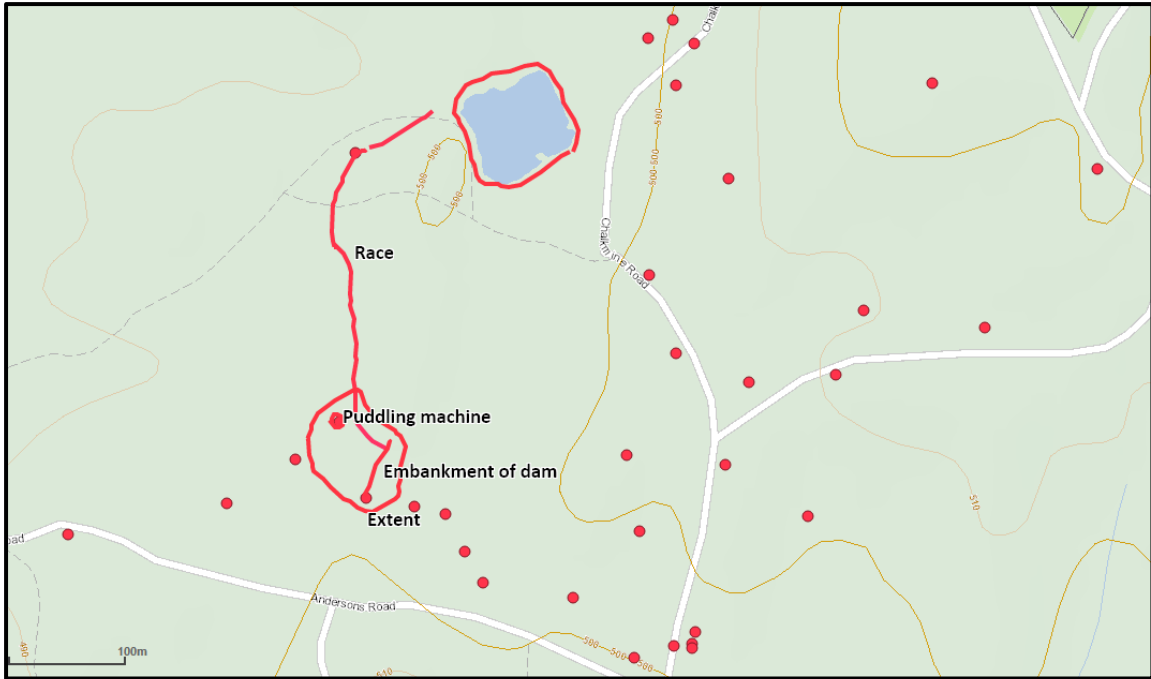


Red dots are the FMQF mine openings

Site Inspection/description

A section of the Lal Lal Waterworks Association scheme was mapped as part of the FMQF heritage project. Several of the locations picked up historic features that were mapped - FMQF165 – Race, FMQF164 – Race, FMQF168 – Puddler, and FMQF162 – dam wall. The mapped remains included a large distribution dam or reservoir (still retaining water), a water race running from the distribution dam to connect with a smaller dam. The small dam has an earth embankment with burrow pits at both ends. Another race runs from the embankment to a puddling machine. There is also another race that runs west from the embankment.

There is also another race that runs north from the north corner of the distribution dam. It is likely that there will be other races and associated puddling machines to be recorded at a later date and included as part of this new site.



Mapped extent of intact patch of the race etc. Centre of distribution dam is 55H240486 5823926, Lal Lal State Forest

Site Condition/Photos



Aerial showing the distribution dam or reservoir



Water race



Race



Embankment of the smaller dam



One of the burrow pits



Puddling machine site

PLAN
OF
WATER WORKS

SAN FRANCISCO

1887



432

432

2466/M/1