

Outcrops of Reefs on supposed Extension South of the New Chum Line of Reef from the Eureka Extended Company's Ground, 1886, State Library of Victoria

The Evolution Of Housing On The Bendigo Goldfields: A Case For Serial Listings

The City of Greater Bendigo

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10th July 2020

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EXECUTIVE SUMMARY

Purpose

The purpose of the Report is to explore the potential for serial listing 19th century houses in the Greater Bendigo local government area.¹ If serial listing is established, then assess the proposed serial listings against established criteria of local heritage significance that might justify their inclusion on the heritage overlay of the Greater Bendigo Planning Scheme. Make available the use of the findings in other heritage studies.

The Report tasks therefore focus on surveys and analysis of areas within the Greater Bendigo area which are not currently included in the heritage overlay of the Greater Bendigo Planning Scheme. This includes the following:

- geographical areas where 19th century houses remain but are not protected;
- domestic building typologies where the form, design, technology and material have been overlooked or omitted from current heritage grading systems;
- series of 19th century houses which share similar historic themes that have important heritage significance to Greater Bendigo.

In 2012, a group of 91 early 1860s to late 1870s miners' cottages in the Ironbark area were incorporated into the Greater Bendigo Planning Scheme as a single serial listing in the heritage overlay schedule. The questions asked by this Report are:

- If there are any other serial listing of 19th century domestic building typologies, whether they were lived in by miners or not?
- If further serial listing may likewise be bound to the evolution of gold mining practice, interpretation of mining law and the multifarious details of locality, personal history and place?

Part One: Introduction

The Report is divided into three parts. The introduction to Part One sets out a methodology for identifying potential serial listing of Victorian houses. It includes a list of historical resources and a glossary of essential terms that are used in gold mining, all necessary to understand the evolution of gold mining in Bendigo.

The term 'auriferous land' is used throughout the Report. Bendigo was mapped by colonial government surveyors according to the location of auriferous land, which was gold bearing land reserved by the Crown as public land for gold mining. Auriferous land was protected from private sale in conjunction with the establishment of goldfields' commons, of which over 80 were declared in Victoria. Throughout the 19th century gold mining period, auriferous land was managed by a series of Mines, Residence Areas and Land Acts that were controlled through a

¹ The Greater Bendigo local government area is located in central Victoria and covers an area of 3,000 square kilometres or 1,200 square miles. It is made up of the former Borough of Eaglehawk, Shire of Strathfieldsaye, Shire of Huntly, Rural City of Marong and parts of the Shire of Mclvor as well as the City of Bendigo.

system of leases and licences through the Courts of Mines,² Warden's Courts and Mining Registers. In 1898 the administration of the Bendigo Mining district was taken over by the Department of Mines.

Part One includes a review by Dr Charles Fahey of current heritage studies, thematic histories and gap review reports that were commissioned by the City of Greater Bendigo.

Part Two: History

Part Two of the Report takes as its starting point the findings made by Dr Charles Fahey. It surveys what are considered geographical gaps in the heritage studies which relate to development on auriferous land, reserved for the purpose of gold mining. The aim of Part Two is to determine what factors if any in a new reading of local historic themes on former auriferous land, might lead to identifying distinctive housing types. Part Two investigates the following:

- 1) New archival historic research tracing the development of mining law.
- 2) The status of the photographic archive of the Bendigo goldfields in order to generate new ways of thinking about the Mines Acts.
- 3) The diaries of five gold miners with reference to the Mines Acts.
- 4) A comparative analysis of 19th century houses focussing on Golden Square.

Authorship

The historic work is prepared by Dr Charles Fahey and the methodology designed jointly. The preparation and structure of the report, architectural reviews, significant assessment and recommendations are prepared by Jane Amanda Jean. The City of Bendigo made available digital mapping of the Golden Square area, which is selected for comparative analysis.

Part Three: Findings

- 1) Bendigo's development in the 19th century is unique. This is because it provides the best evidence of the development of Australia mining legislation and judicature from its inception in 1855 to its maturation in 1898 when the management of the Sandhurst Mining District (Bendigo Mining District after 1898) was taken over by the Department of Mines. The quartz gold boom in the 1870s attracted thousands of miners and their families seeking waged employment in the labour-intensive quartz mines. Bendigo became the richest gold mining area in Australia. Every effort was made by the Crown to prevent alienation of potential mining land (auriferous land) from private ownership.
- 2) Crown land reserved for mining or auriferous land was tightly controlled by the application of the Mines Acts and Residence Areas Acts through a leases and licensing system and administered by the Courts of Mines and Wardens' Courts.³ The latter court was part of the judicature and administered disputes. The Mine Wardens were elected by the miners themselves from each of the mining districts.
- 3) Nearly ninety percent of Bendigo's population, who were mainly miners, lived and constructed their homes on Crown land under the Mines Acts licensing system during the

² Courts of Mines were established in 1858 replacing Local Courts (1855-1858). Each mining district had its own locally elected Court of Mines and Warden's Court.

³ A mining lease gave the holder an exclusive rights to mine for minerals over a specific area of land.

19th century. There were over 2,400 miners' Residence Areas listed on the Bendigo goldfields' commons just before the Mines Act of 1892. The Sandhurst Mining District comprised the largest goldfield's commons, 130 square miles, in Victoria.

- 4) The government policy of preventing the sale of Crown land known to contain gold and following 1892, reserving the right of Crown ownership of all minerals on any land, had a profound influence on the development of Bendigo. In general, the Mines Acts fixed the area of a gold lease at about 20 to 30 acres, and prior to 1897 no consolidated lease was permitted larger than 640 acres. This policy resulted in hundreds and thousands of scattered gold mining tenements across the lines of reef that made up the Bendigo goldfields commons, each with their associated Miners' Residence Areas and houses.
- 5) There has been no consistent identification, analysis and assessment of the heritage significance of auriferous land, the Bendigo goldfields commons, with respect to the domestic and private lives of miners, their families and houses.
- 6) The growth of Bendigo during the 19th century and 20th century coexisted in parallel fashion on both freehold land that is private land and auriferous land or non-alienated Crown land, gold mining land. Development on freehold land is well represented by the heritage studies and protected by heritage overlay schedules and maps. The latter, former auriferous lands, Bendigo goldfields commons, is not.
- 7) The commonly recognized economic patterns of boom and bust associated with Melbourne and other places do not apply to the historic development of Bendigo. The continuous search for gold imposed different cycles on Bendigo. New gold finds were dependent on geology and innovative mining technology.
- 8) The review of the heritage studies by Dr Charles Fahey revealed that the regulative, bureaucratic, institutional orders that exercised control over development and the lives of gold miners as a local historic theme is missing from these heritage studies.
- 9) The historical analysis in this Report offers criteria about the extent to which the 19th century miner's house still communicates an authentic expression of this important phase of Bendigo's history.
- 10) The gradual transition of auriferous land to freehold title occurred throughout the 20th and 21st centuries. The viewing pattern of the miner's house gradually becomes cluttered and its context, heterogeneric in appearance. This is especially the case where the former miner's house is viewed as random and scattered, amidst the complexity of later incremental infill development.
- 11) Serial listing of the typology of miners' houses seems justified particularly as visual context affects aesthetic experience. The heterogeneric character of development on former auriferous land tends to visually obscure the 19th century miner's house. The potential for continual infill development is high.

- 12) The distinctive geographical location of former auriferous land is strongly associated with the historic theme of the gold mining, the development of the Mines Acts and evolution of the miner's house as a single most important building typology of Bendigo's history. The potential for additional serial listing of 19th century miners' houses is high.

Part Three: Recommendations

The Report recommends that three fundamental changes in the typology of the miners' houses which are directly attributable to key phases in the development of mining law, warrant consideration as three new potential heritage serial listings. This is in addition to the Ironbark miner's cottage serial listing. The recommendations of the Report are that these three serial listings as described below satisfy the threshold for local heritage significance, which justifies their inclusion on the heritage overlay of the Greater Bendigo Planning Scheme.

- 1) **Quartz Gold Boom Miners' Houses Serial Listing.** The simple modest timber frame, weatherboard and hip roof house associated with 1870s quartz mining boom. They are associated with the Mines Act, 1865, the Residence Areas Act 1881 and the Amendment in 1884 that removed competitive aspects of auction, controlled annual licences fees of the Residence Areas on auriferous land.
- 2) **Workers and Mine Speculators' Houses Serial Listing.** The late expansion of the Residence Area opened auriferous land for habitation to non-miners, that is manual and skilled workers and women holders of Crown land leases. The associated Mines Act, 1890, and Mines Act, 1892, negated the power of mining officials to cancel Residence Areas for the purpose of mining operations. Certainty of tenure, and growth of the middle class led to the construction of opulent housing styles. In contrast, the Mines Act, 1897, considerably reduced annual fees of the Residence Areas and the Mines Act, 1910, permitted the transfer of Residence Areas to widows whose husbands had died intestate and without probate, to continue occupation and furthermore permit inheritance of these places.
- 3) **Quartz Reefers' Houses Serial Listing.** The 19th century miners' houses were commonly built in the early colonial regency architectural styled by aspiring speculators and quartz reefers, the first mining tenement leasees. It is a characteristic of the greater Bendigo region that many of these reefers and investors built their homes near their mining tenements and mines. They took advantage of the Mines Act 1865 to convert their Miner's Rights into freehold properties. Their homes were permanent, secure, usually built of brick or stone and spread across the quartz mining district. This serial listing has potential state level of significance.

It is recommended that the collection of 19th century miners' houses, which were built on mining lands, in the greater area of Bendigo between 1855 and 1900 are of potential local and state heritage significance and should be provided heritage protection under the Heritage Overlay of the Greater Bendigo Planning Scheme. In addition, the earlier separate serial listing of the Ironbark Miner's Cottage should be reviewed to include the following:

- 1) **Ironbark Miners' Cottages Serial Listing.** Amend to include all early gable roofed miners' cottages associated with the Miner's Rights 1855, the Mines Act 1856 as well as miners' cottages associated with alluvial, puddling and early quartz reef mining phases of development in the Greater Bendigo area.

1 INTRODUCTION

1.1 Purpose

The purpose of the *Report Into Heritage Serial Listing For Victorian Houses 2020* is to investigate the potential for serial listings of Victorian houses across Bendigo because their scattered nature makes it difficult to protect them in precincts of the heritage overlay. And if possible, assess the serial listing against the established threshold of local heritage significance. The objective is to provide a statement of significance or multiple statements, that might justify inclusion on the heritage overlay of the Greater Bendigo Planning Scheme or could be used in further heritage studies.

1.2 Study Area: The Greater Bendigo Area.

The historic suburb of Golden Square, Bendigo, which is located within the Greater Bendigo area was selected as a case study where a local comparative analysis could take advantage of its early history as the location of the first gold discovery in the Greater Bendigo area. Golden Square provides examples of different types of 19th century and 20th century development on auriferous land, that is gold bearing Crown Land, from the alluvial gold mining, puddling, early quartz reefing to large successful quartz mining that continued into the 20th century. The area is also the location of one of the earliest examples of a colonial government town survey subdivided blocks, which were available for sale and freehold purchase from the late 1850s.

See 'Figure 1' below, the centre of Golden Square lies between Bendigo Creek and the Bendigo Railway line. Each of the many lines of reef, running almost due north, were the location of intensive gold mining. Field work and site inspections took place both on the west and east side of the railway line, centring on Golden Gully, and the lines of reef that run south to north across former auriferous land.

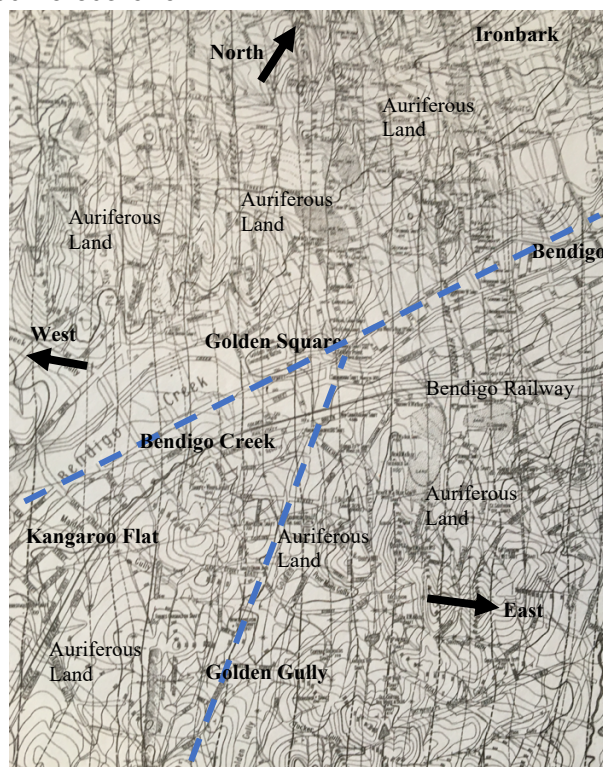


Figure 1 Golden Square, showing auriferous land, lines of reef, where mining was established and town survey. H. S. Whitelaw and H. Herman's map of the Bendigo Goldfields 1923.

1.3 Methodology

The Report references the Australia ICOMOS Charter for Places of Cultural Heritage Significance (the Burra Charter) and its guidelines. All terminology is consistent with the Burra Charter. The methodology, approach and recommendations of the Study were guided by the following:

- The VPP Practice Note *Applying the Heritage Overlay* (2018).
- Comments made by relevant Independent Panel reports and, in particular, the Advisory Committee appointed to undertake the *Review of Heritage Provisions in Planning Schemes*.
- Guidelines for using the Hercon criteria and significance thresholds prepared by Heritage Victoria.
- A comparative review of the potential serial listing against those already included in the HO and the *Ironbark Heritage Study* serial listing for Miner's Cottage HO999.
- Comparative analysis referenced the *Greater Bendigo Thematic Environmental History, Overview Report and Aboriginal History*, Lovell Chen, 2013, and the *Eaglehawk and Bendigo Heritage Study*, Graeme Butler & Assoc., 1993 and other written sources listed below:
 - *City Of Greater Bendigo Heritage Gap Analysis*, 2019 Landmark Heritage Pty Ltd with David Helms;
 - *Ironbark Heritage Study*, 2011, Mandy Jean;
 - *White Hills and East Bendigo Heritage Study Stage 1, Bendigo Hospital Area*, 2014, Lovell Chen;
 - *White Hills and East Bendigo Heritage Study Stage 2, Ascot, Bendigo, East and North Bendigo Epsom and White Hills*, 2016, 2 vols, Context Pty Ltd;
 - *Golden Square Heritage Study Stage 1 Chronological and Thematic History*, 2019, Dr. Robyn Ballinger;
 - *Former Shire of Marong Heritage Studies*, 1994 and 1999, Andrew Ward & Assoc; and reviewed by the *Heritage Policy Citations Review*, 2011, Lovell Chen;
 - *Former Shires of Mclvor and Strathfieldsaye, Heathcote-Strathfieldsaye Heritage Study, Stage 1, 2002, Earthtech*;
 - *Former Shires of Mclvor and Strathfieldsaye Heritage Study, Stage 2, 2010, Context Pty Ltd.*;
 - *Survey of Potential Miners' Cottages not in the heritage overlay (Minerva Heritage, 2017)*.

1.4 Fieldwork

Fieldwork was undertaken in 2019 and 2020 jointly by Mandy Jean and Charles Fahey. Site inspections included the properties recorded on Council provided maps that had been generated by heritage and gap studies.

Site inspections included development on former mines lands, auriferous lands, Crown lands and the Residency Areas. Significant mining sites identified in the *Eaglehawk and Bendigo Heritage Study*, 1993 were viewed.

1.5 Historic Research

The following summary provides a detailed description of the major primary sources used in this Report. It also provides a definition of some essential terms used in the Report.

Sources For Studying Domestic Heritage

The evolution of mining suburbs can be pieced together from archival sources. The printed census returns can illuminate the general housing fabric of the Bendigo goldfields, but more detailed sources are required to investigate local regions or individual houses.

Cadastral Plans

The parish plan is the base map for understanding European settlement in nineteenth century Victoria. Victoria was surveyed into 26 counties and these were subdivided into parishes. The county and parish are a cadastral and not an administrative unit. The number of parishes varied from county to county and parishes were subdivided into sections and allotments. The urban area of Bendigo and Eaglehawk were located in the parishes of Sandhurst and Nerring. Parish plans were working documents used by a number of land administrators and they were frequently updated. When a block was sold the original owner, the date of purchase and area was recorded on the map. Only the first freeholder is shown on parish plans, subsequent owners are not recorded.

Parish plans also recorded various forms of Crown usage: licences and leases. In the case of the Bendigo district the most important tenants were Miner's Residence Area holders. These annotations on maps were changed when tenancies changed hands. Such changes were recorded on working copies in Lands Department Offices. From time to time office annotations were transferred to updated and published parish plans. The working copies were 'put away'. The Victorian Public Record Office holds a collection of 'put away' plans.

Mines Department Plans

The Mines Department produced a number of plans through the nineteenth and early twentieth centuries listing the location of mining leases and reefs. These occasionally recorded additional information such as shafts, engine plant and houses on Residence Areas in the vicinity of mining leases. An excellent example of these is: *Outcrops of Reefs on Supposed Extension of the New Chum Line of Reef, from the Eureka Extended Company's Ground* (Figure 2 see page 6)

Rate and Assessment Books

The most important records for examining the location and ownership of houses on the Bendigo gold field are municipal rate books. These exist for Bendigo from the formation of the Borough in 1856 and for Eaglehawk from 1863. Rate books list the name of the owner and occupier of the land, improvements on the land and the net annual rental value of the land. The location of a property is described but not pinpointed by section or allotment.

For this reason, the accurate locating of land is very difficult, and location must be determined by following the rate collector's path through the streets of Bendigo. Many Miner's Residence Areas were not on surveyed streets and these are frequently listed as being in a gully, flat or reef or 'off' a surveyed road. From 1863 in Eaglehawk and 1866 in Bendigo the occupation of the rate payer is recorded. Before 1873 the Bendigo rate books record whether land is in Crown or freehold possession.

Rate assessment books were the working documents of the rate collector and these included additional and important information. The assessment book was used to estimate the population of the city for the colonial government and the number of residents in each house is recorded. Critically the assessment book recorded whether a house was a miner's residence area or freehold. Eaglehawk assessment books listed the material buildings were built from. Assessment books are available for Eaglehawk from the 1890s into the twentieth century. Their survival from Bendigo is patchy.

Assessment books were stored in the town hall clock tower, sustaining severe water and vermin damage. In 1994 they were lent to La Trobe University and returned in 2019 to the council for conservation work and eventually deposited in Bendigo Regional Archives Centre. As a consequence, historians have made little use of the assessment books for research.

The Assessment books form an important source in a study of the miner's cottage by Tony Dingle and have been employed by Charles Fahey in his study of Victoria Hill and district. The earliest surviving book is from 1873, and there are several from the 1880s and the 1890s. The first complete listing of Residence Areas in the City of Sandhurst and the Borough of Eaglehawk was in 1891. By the second decade of the twentieth century details on Crown ownership and numbers of inhabitants were recorded on Bendigo City rate books.

Probate Records

A great deal of information on housing is recorded in probate inventories. Details include location, including street name and section and allotment details. The probate inventory usually records both capital and annual value, the number of rooms and the construction material of buildings. Unfortunately, most Miner's Residence Areas were transferred to heirs without a grant of probate.

1.6 Glossary of Terms

The Miner's Residence Area

The Miner's Residence Area is a distinctive feature of land administration that was used to control the goldfields. The leases and licensing system on Crown Land were a very different model of land use management to that of the suburban expansion in Melbourne. Under the *Mining Statute of 1865*, holders of mining rights could occupy up to $\frac{1}{4}$ of an acre for a residence. Miners used this provision to build homes close to where they worked gold deposits, initially as alluvial prospectors and later as pioneering and self-employed quartz reefers. Early wage-earning, quartz reef miners also occupied such Crown land. Built on auriferous areas these homes were usually located on land that had not been officially subdivided for sale. Proper surveying followed in many cases years after first settlement. The residences were widely dispersed and followed the major lines of reef and, with the rise of company mining, were located on the edges of mining leases.

Constructed before survey, they were frequently orientated away from subsequent road reservations. For many years they were vulnerable to possession by mining companies looking to expand mining operations, and the issue of tenure became a major political issue. The *Residence Area Act 1881* gave Residence Area holders ownership of the improvements they

made to their blocks and right to sell these improvements when annual licences were transferred. This act set the annual rent at 5/- and permitted holders to bequeath their houses to their heirs. The *Mines Act 1897* reduced the rent to 2/6d, and the *Residence Areas Holders Act 1910* act permitted the transfer of the house to heirs without a grant of probate if total assets were less than 250 pounds. This legislation ensured that the Residence Area remained a major source of domestic tenure well into the twentieth century.

Alluvial Mining, 1851-1865-6

Alluvial mining was the exploitation of gold eroded from quartz reefs and washed down water ways. The first rushes from 1851 to the mid-1850s exploited the richer alluvial gold. It used simple shafts sunk down to the bed rock (about 3 metres), and the Californian cradle and a simple tin dish were employed to separate the gold from clays, sands and pebbles. From the mid-1850s to the great drought in the summer of 1865-66, puddling machines were employed to wash vast quantities of top-soil to separate finer particles of gold.

In the Huntly district deep lead alluvial mining was worked. A deep lead was an ancient and buried alluvial stream. Deep lead alluvial mining is more associated with the Ballarat district – central Ballarat and Creswick – Maryborough and Chiltern-Rutherglen in the north-east of the colony. Deep lead mining required vast amounts of timber to create workplaces in unstable ground and pumping machinery to drain ancient aquifers.

Quartz Reefing 1855-1914

Early prospectors noticed surface outcrops of quartz with gold. This was mined with primitive gads and hammers. From the mid-1850s early prospectors such as the Ballerstedts mined surface quartz reefs with primitive open cuts. The reefs were then explored underground. Sinking shafts changed the dynamics of mining. Sinking through hard rock required mining experience and was labour intensive. When mines reached about 12 metres below the surface the water table was encountered, and machinery had to be employed to pump water. This further propelled the industry to a capitalistic industry with company formation and wage-earning miners.

Auriferous Land

The goldfields' commons were established over large tracts of public land in Victoria to protect gold bearing land, potential mining areas, known as auriferous land, from alienation by sale under freehold title. The goldfields' commons were intended to provide pasture and grazing for holders of miner's rights on the goldfields while maintaining the Crown's possession of the land and control over mining by the Mines Acts. There were more than 80 goldfields commons established. The largest, covering 83,702 acres (130 square miles), was at Bendigo. The goldfields commons were an introduced ancient land management system from England.⁴ In English mining districts, miners were free to enter upon 'common' or 'wastrel' lands, stake out a claim, build a house and use timber, fuel and water. The enclosure movement of the

⁴ Common to all miners: the Inglewood Gold Field Common', *Provenance: The Journal of Public Record Office Victoria*, issue no. 16, 2018. ISSN 1832-2522. Copyright © Peter Davies, Karen Twigg & Susan Lawrence. https://prov.vic.gov.au/explore-collection/provenance-journal/provenance-2018/common-all-miners#_edn7

seventeenth to nineteenth centuries took away common rights and destroyed an ancient part of English society, economy and landscape.⁵

A Number Of Mining Phases Can Be Outlined:

- 1855-1866 the early phase of exploration.
- 1866-1875 a boom in company formation and the discovery of rich reefs. In this period the great fortunes of mine owners were made, and city became a working-class community. In these years the residence under the Miner's Right became the major domestic tenure for miners.
- 1876-1880 a phase of retrenchment when the great discoveries of the early 1870s were exploited and there was a need for further exploration. There was widespread unemployment and significant industrial unrest in these years.
- 1881-1887 – a revival in quartz reefing in part promoted by the introduction of compressed air rock drills which expedited sinking through rock. In 1882 *the Residence Area Act 1881* formalised housing on Crown land.
- 1888-1892 local depression as the need for more exploration was required but was hampered by lack of capital. These years saw widespread unemployment and out-migration.
- 1893-1901 depression in Melbourne and a stable price of gold promoted further exploration and deep sinking. Gold mining boomed while Melbourne languished in economic depression. Deep sinking saw Bendigo host mines that were sunk below 1000 metres.
- 1901-1914 the last great period of quartz reefing centred on the Moon group of mines in Eaglehawk. These years saw depression in the old mining areas of central Bendigo – New Chum and Ironbark. The end of this period saw a revival in labour militancy.

1.7 Review of the Greater Bendigo Heritage Studies

The basis for heritage assessment for cultural heritage significance has changed fundamentally since the preparation of the earlier Bendigo heritage studies in the 1980s. Changing the methodology of heritage assessment can result in very different conclusions. Volume Five of *the Bendigo and Eaglehawk Heritage Study* encapsulates how the grading of houses and streetscapes according to architectural merit rather than recommended current heritage criteria can be misleading. Dr. Charles Fahey's review highlights the changing assumptions made over time in these documents.

Bendigo Heritage Studies

The Bendigo and Eaglehawk Heritage Study undertaken by Andrew Ward and Graeme Butler in 1993, was both a major step forward in the evolution of heritage studies, but also a lost

⁵ Common to all miners: the Inglewood Gold Field Common', *Provenance: The Journal of Public Record Office Victoria*, issue no. 16, 2018. ISSN 1832-2522. Copyright © Peter Davies, Karen Twigg & Susan Lawrence. https://prov.vic.gov.au/explore-collection/provenance-journal/provenance-2018/common-all-miners#_edn7.

opportunity that seriously compromised the heritage of domestic housing from the nineteenth century.⁶

In the late 1980s historians entered debates on heritage arguing that most studies undertaken by architects only looked at the architectural heritage of study areas and ignored buildings that might inform us of important historical heritage values. In this scheme buildings with obvious architectural importance were accorded more value than vernacular architecture or industrial sites. Under this model middle class villas were rated more highly than working class houses or industrial sites.

Such criticisms were particularly pertinent in mining areas where large areas of public land were former mining sites. To overcome this bias Heritage Victoria introduced environmental histories as a prelude to undertaking the assessment of buildings and sites. The 1993 *Bendigo and Eaglehawk Heritage Study* set new ground with an environmental history written by Dr Chris McConville and a study of mining sites conducted by Dr Peter Milner. The missed opportunity of the *Bendigo and Eaglehawk Study* was that the environmental history of McConville did not inform the field work of the architects Ward and Butler.

Chris McConville's environmental history provided a wide-ranging overview of the physical development of Bendigo and Eaglehawk looking at parks and gardens and public and commercial buildings as well as domestic housing. In examining housing McConville drew most of his data from the colonial census taken at ten-year intervals from 1861.⁷ Of these the most detailed was the 1861 Census which collected a great deal of data on housing - including number of rooms, types of building material - and, critically recorded this information for small geographic areas.

McConville was able to employ this to reconstruct housing patterns across the gullies and emerging reef districts of the goldfields as well as the areas that had been surveyed, subdivided and sold at auction, most importantly the inner city and adjacent hamlets – Golden Square, White Hills and Eaglehawk. From 1871 through to 1901 the census provided less detailed tabulations of housing.

Most unfortunately the local detail was replaced with broader municipal divisions – the Borough of Eaglehawk and the three ridings of the City of Sandhurst – Sutton, Darling and Barkly. Although McConville provided a thorough analysis of the census, his examination of the years after 1861 lacked the fine local detail he provided for 1861. Unfortunately, in his environmental history McConville made very little use of the local archival data, most importantly shire and borough rate books. In the early 1990s these were still stored in the local council offices and not easily accessed.

Despite the lack of local detail available after 1861, McConville's environmental history unequivocally demonstrated that Bendigo and Eaglehawk working class communities were

⁶ Referencing the grading of buildings according to their architectural merit and ignoring the way social history contributes to our cultural heritage environment.

⁷ Before the introduction of the decennial census, there were two earlier censuses taken in 1854 and 1857.

mostly housed in small timber cottages, usually of four to five rooms. This unfortunately was ignored by Graham Butler and Ward when they examined domestic architecture.

In undertaking fieldwork, Butler and Ward undertook a thorough visual assessment of the then extant housing of Bendigo and Eaglehawk. This assessment was based largely on their understanding of Victorian architecture and there was little archival investigation into the nature of housing, nor was there any real acknowledgement that the peculiarities of the goldfield – its distinct working-class social structure and systems of land alienation – might have influenced housing patterns. Butler and Ward also used a system of ranking that said more about their values than the historic character of the nineteenth century city. The problems with their analysis can be seen in the recent micro-history of the Victoria Hill-Happy Valley district recently undertaken by Charles Fahey.

The Victoria Hill district was one of the most important areas where quartz reefing was pioneered in Bendigo. A number of private claimholders prospected for reef gold in the 1850s and rich finds were made in the 1860s and early 1870s. The district was also used to pioneer deep sinking and the Quartz King, George Lansell, used his 180 Mine to this end. From the late 1870s, the area suffered the inevitable decline that all gold mining districts experienced. In the 1860s, as company mining became the major form of mining, wage earning miners replaced the original prospectors. These miners lived in humble weatherboard cottages built on Crown Land, known as the Miner's Residence Area.

In 1873 Happy Valley Rd adjoining Victoria Hill had 55 houses as well as a few shops. There was one grand brick home, Bon Accord, built by the quartz miner owner William Rae. In the 1890s his son also built a brick villa.

As mining declined weather-board houses were abandoned or moved to new locations as miners left the district looking for work. By the end of the century the number of houses had declined to 40. This decline continued through the twentieth century and by the time Butler and Ward surveyed Happy Valley Rd only five houses survived that they considered were part of the nineteenth century landscape. **Only three houses were listed** in the study as being individually significant (Butler and Ward gave such houses ranks of A–C). These were the two brick houses built by the Raes and stone and stucco house known as Coath's cottage. Of the other two houses listed in the study one was ranked D (contributory/representative) and the other E, presumably considered of little heritage significance. Although these two houses did not fit into contemporary fashions of heritage significance, both houses defined the distinct historical character of the district as a working-class, mining suburb with cheap housing.

The problems of the Butler and Ward survey were not isolated to the Happy Valley/Victoria Hill district; they were repeated in all districts where mining had been undertaken. What was not appreciated in both the 1994 environmental history and the field work was the impact that mining had on the morphology of private housing.

Across the area of the City of Sandhurst, the Borough of Eaglehawk and lands lying adjacent to the boundaries of these two urban municipalities in the shires of Marong, Huntly and Strathfieldsaye, were large areas of possibly auriferous land. In these areas land was not initially alienated as freehold land but was leased out in various forms of crown tenure: mining leases,

garden and timber leases and, most critically, the Miner's Residence Area. The 1994 environmental history and field work failed to explain how this provision created distinctive communities scattered across the Bendigo Goldfield wherever gold was exploited. Mining areas are defined in the tables to follow set out on page 20 and page 21.

Chris McConville's environmental history with its bird's eye view of the whole goldfield and reliance on the published census correctly portrayed the general character of the city but could say little about local areas. Such work required detailed examination of archival records, most importantly rate books, maps, vital records and probate returns.

An important corrective to the work of McConville, Ward and Butler was the study undertaken by Amanda Jean on the Ironbark district. With its predominant fabric of working-class housing, with the occasional brick or stone villa of successful quartz reefers, Ironbark housing stock was largely designated D (contributory/representative), and humble vernacular buildings were afforded little protection under the 1993 heritage study. Amanda Jean in her 2011 survey of the Ironbark study drew on the work of social historians, and undertook detailed studies of individual buildings using exhaustive searches through the council rate books and careful examination of the existing building fabric.

Her study outlined the very important vernacular timber and mudbrick housing, some dating back to 1860s, which gave this district its distinctive character and was in the heart of the goldmining boom of the 1860s and early 1870s. Her work uncovered a highly significant heritage precinct.

The environmental history written by Dr Chris McConville in 1993 was one of the first undertaken to guide a Victorian Heritage Study. Since this pioneering work, such studies have become a mandatory part of the process of undertaking Heritage Studies, and the guidelines for these have been formalized in the Heritage Council of Victoria's Framework of Historic Themes⁸. These clearly set out major factors that have shaped the current environment of Victoria's Municipal Areas, and are the basis for the Greater Bendigo Thematic Environmental History June 2013.⁹ The nine themes adopted for the thematic history are:

Theme 1: Shaping Greater Bendigo's Environment

Theme 2: Peopling Greater Bendigo's places and landscapes

Theme 3: Connecting Greater Bendigo by transport and communications

Theme 4: Transforming and managing Greater Bendigo's land and natural resources

Theme 5: Building Greater Bendigo's industries and workforce

Theme 6: Building towns, cities and the Greater Bendigo area

Theme 7: Governing Greater Bendigo area

Theme 8: Building Greater Bendigo's community life

Theme 9: Shaping Greater Bendigo's cultural and creative life

⁸ Heritage Council of Victoria, Victoria's Framework of Historic Themes, Heritage Council of Victoria, Melbourne, Vic, February 2010.

⁹ *Thematic Environmental History, Prepared for City of Greater Bendigo, Final Report Adopted by City of greater Bendigo Council July 31, 2013.*

The use of these themes has the undoubted benefit of directing Heritage Studies to explore sites and buildings important for their historical and not only architectural importance. This was clearly evidenced in the *White Hills and East Bendigo Heritage Study 2016*. Building on the Amanda Jean's Ironbark investigations, the *White Hills and East Bendigo Study* identified a number of vernacular timber houses important for understanding the historical character of these two areas, and assessed these with exemplary archival investigation of individual sites.¹⁰

For an understanding of the evolution of housing in Bendigo, the *2013 Thematic Environmental History* has some major limitations. *The Framework of Historic Themes* helps researchers to examine an area in terms of themes that have been designed to understand an area's heritage sites in the context of the general history of Victoria; its major disadvantage is that it can hinder investigation of those factors that define the particular character of an area, or a group of areas such as the goldfields. The other major problem is that the *Thematic Framework* highlighted major themes but ignored how these themes interacted with each other to shape the built character of an area. These points can be illustrated with the *2013 Thematic Environmental History* and our understanding of housing.

A crucial factor in assessing the heritage of domestic architecture in Greater Bendigo is understanding the evolution of occupation of Crown land for residences. The *Thematic Environmental History* identifies the introduction of the *Miner's Right* in 1855 but does not explore the development of the legislation governing this over the course of the nineteenth century into the early twentieth century.¹¹ Most importantly it does not reference the *Residence Areas Act 1881* and its amendments and the amendments to the various *Mining Statutes* which eventually formalized the *Miners Right* into *Residence Areas*. This legislation provided cheap housing that had security of tenure and all the rights of freehold possession. The evolution of this form of tenure was path dependant on the geological disposition of both alluvial gold and quartz reefs, and distributed the *Miner's Residence* along all the lines of quartz reefs and into the alluvial gullies. Settlement in this way created a pattern of disorderly mining suburbs, often occupied before formal survey of roads and allotments, and quite distinct from the orderly subdivision of Melbourne working class suburbs.

The chief building material on the Residence Area was timber, and evolution of the laws governing Residence Areas, with secure tenure, altered the form of the simple cottage, encouraging extensions and decorative embellishments. As the *Thematic Environmental History* acknowledges, Government surveys and public auctions were made in the 1850s,¹² and these provided early freehold security where landowners could build stone or brick housing and commercial premises. This mixed pattern of discrete areas of freehold possession and widely dispersed Crown possession on mining areas shaped the built domestic form in Greater Bendigo. Although useful the *Framework of Historic Themes* must be explored with an eye to local context and history.

¹⁰ *White Hills and East Bendigo Heritage Study 2016*, Vol.2: Place and Precinct Citations.

¹¹ *Thematic Environmental History*, see p. 114.

¹² *Thematic Environmental History*, pp. 104-105.

The *City of Greater Bendigo Heritage Gap Analysis* (2019) provided an exceptionally detailed analysis of the existing heritage studies.¹³ Although the study undertook field surveys, the study added no new documentary research – other than reviewing existing studies – but it did call for local thematic histories and recommended that a study of Golden Square be undertaken as a first step in this process. The report recognised the importance of miners’ cottages. Addressing the *Miners Cottages Survey, 2017*, the report observed:¹⁴

The miner’s cottages could be added to the existing serial listing (HO999). The completeness of this serial listing, and thus its strategic justification, would be strengthened if the first step of this work was a review of the historical location of these cottages along mining leads (sic) to determine if there are any more likely locations that have not been surveyed either in this study or the Ironbark Heritage Study. Any additionally identified miner’s cottages can be added to the assessment.

For this report a miner’s cottage was clearly a type of building rather than a building ever lived in or built by miners. It referred to miners’ cottages in Echuca East, an area of working-class housing but without any miners. The report also added that mud-brick houses should be approached in a similar fashion. The report did make the very important recommendation that it was important to ask: ‘Are there any areas, beyond the scope of the *Miners Cottages Survey, 2017*, that are likely to contain such houses?’

This is a very important recommendation and it begs the question: how to identify such buildings? This report argues that we need an environmental history that understands the history of the evolution of miner’s cottages.

Such a history will show why and where houses were built. By understanding the evolution of their built form – itself a product of changing legislation – we can recognise that miner’s cottages were often built over time and that mud-brick houses were not a separate category – mud brick was sometimes combined with timber or stone – of cheap housing that permitted rapid housing on Crown land.

While the call for suburban or local Thematic Environmental Histories is valuable, these add little value if they simply replicate the city-wide history. Their job should be to show how the local story fits into the bigger picture and what factors in the local environmental history might lead to distinctive housing (and other building) types.

¹³ The City of Greater Bendigo Heritage Gaps Analysis Prepared for City of Greater Bendigo, Landmark Heritage Pty Ltd Final Report 28 May 2019.

¹⁴ *Ibid.*, p 54.

PART TWO

2.0 HISTORY

2.1 Introduction

In order to understand how the urban morphology and housing forms of Bendigo evolved from 1852 to 1914, we need to understand the history of Bendigo's mining industry. We also need to appreciate the relationship of gold mining to other sectors of the local economy.

Rich alluvial gold was discovered in Bendigo in late 1851 and the first great rush took place in 1852. Men and women who dug for gold in the 1850s later proudly recalled the tumultuous days of the diggings. In the 1880s many of these miners from the valley of Bendigo in 1852 established the 'Old Pioneers Society'. Only those who came into the valley in the first year of gold were eligible to join the society. Later historians have also been fascinated by the great alluvial rushes.¹⁵

One of the ironies of the Old Pioneers Society was that, while it celebrated the alluvial rushes and honoured men who arrived in 1852, it later included among its prominent members men who prospered during the latter phase of quartz reefing. In a group portrait celebrating these worthy pioneers, the centre and most prominent image is George Lansell, the so-called Quartz King. Moreover, date of arrival was not the only condition of membership of the society, members had to pay a hefty sum of £1 to join. When the group photograph was assembled in 1894 Bendigo was no longer a poor man's mining field and it was one of the more industrialized regions in the Australian colonies. Its most important worker, the underground miner, had a weekly wage half the cost of joining the society.¹⁶

Industrial metal mining began in Australia in the 1840s with the opening up of the great Burra copper mine.¹⁷ After the discovery of gold in Victoria, the move to company mining was led by Ballarat with the opening up of the field's deep lead alluvial mines, the mining of ancient gold bearing aquifers. This exploration was under way by the mid-1850s. These mines required the skills of hard rock miners to sink below the basalt and to tunnel drives under the buried rivers to permit draining. Pumping water was essential to draining the leads and this gave impetus to the birth of a local engineering industry.

Despite initial difficulties Ballarat and Creswick deep lead mining boomed during the late 1860s and helped to establish a stable urban society. Deep lead mining collapsed in the early 1870s, and resulted in widespread unemployment. Mining companies explored the ground below the deep leads volcanic strata and found workable quartz reefs beneath. From the 1880s through to the Great War quartz mining was the major source of employment for Ballarat miners.¹⁸

¹⁵Frank Cusack devotes the first 17 of 22 chapters to the years leading up to the great quartz boom of 1871. See F Cusack, *Bendigo, A History*, Heineman: Melbourne, 1973.

¹⁶ For the Old Pioneers see Michael Roper, 'Inventing Traditions in Goldfields Society: Public Rituals and Town Building in Sandhurst 1867-1885', Unpublished MA, Monash University 1986, pp. 1-7.

¹⁷ For the Burra mines see Geoffrey Blainey, *The Rush that Never Ended*, Melbourne University Press: Melbourne, 1963, pp. 109-114.

¹⁸ The most detailed account of Ballarat mining is W. Baragwanath, *The Ballarat Gold-Field, Memoirs of the Geolgoical Survey of Victoria*, No. 14, Department of Mines: Melbourne, 1923. For the social

Fortunately for many miners, the collapse of the Ballarat deep lead mining industry coincided with rich quartz reef discoveries in Bendigo and a stock market boom in the formation of public mining companies. In the early 1870s miners left Ballarat (and other declining fields) for Bendigo. From the early 1870s the centre of Victorian gold mining moved from Ballarat to Bendigo and, for almost half a century, Bendigo maintained its position as the major mining city of the Victorian goldfields. Quartz reefing defined the economy and social structure of Bendigo and morphology of the urban area and its building forms. The most characteristic form of building was the weatherboard house.

2.2 Alluvial Mining 1851-1865

Late in 1851, the first diggers took up positions on the edge of the Bendigo Flat, at Golden Point. The first real rush to Bendigo occurred between January and March 1852, but a lack of rain slowed down the progress of mining. When the rains broke in March diggers began in earnest the task of freeing precious gold from alluvial wash dirt. From March to April New Chum, Ironbark, Long and California Gullies were prospected. Through the late autumn and winter months of May to August, the diggers moved north-west to Eaglehawk, Peg Leg and Sailors' Gully and into the edges of the forest at Devonshire Gully and Myers Flat.¹⁹

The earth around the Bendigo Creek was composed principally of pipe clay. Gold was found in this clay down to a depth of six metres, where bedrock was met. The whole, or nearly the whole, of this pipe clay and gravel in the various layers was turned over to release the gold. In the process, the valley and its surrounding hills were denuded of trees and undergrowth. In May and June 1852 miners tried their luck on a series of seven white hills, composed of a concrete mixture of sands, pebbles and clays. Here for the first time the traditional mining skills of drilling and blasting were employed.

In the first years of mining miners worked in teams - usually three or four men – on small claims and sunk shafts of two to three metres through the clay to reach the alluvium, a mixture of sandstone, quartz, sand, gravel, ironstone and white clay. Any visible nuggets were picked out with a knife, while the remaining soil was hurled to the surface and washed and stirred in a large tub. From the tub the earth was passed through a cradle, separating larger gold from fine particles. The former fell to the bottom of the cradle and the finer gold and dirt was collected at the head of the cradle and then washed in a tin dish.²⁰

By the end of 1854 this form of mining had passed its peak and high average rewards of 1853 were halved. A return to prosperity occurred with the introduction of horse driven puddling machines from the mid 1850s. The puddler was essentially a donut shaped wooden box sunk into the earth with a harrow suspended into the tub from a central pivot. Earth and water were shovelled into this tub and a slurry was created by a horse dragging the harrow around the circular tub. Each party of puddlers could treat up to three dray loads of wash dirt per day, and

and economic impact of gold at Ballarat see Weston Bate, *Lucky City, The First generation at Ballarat 1851-1901*, Melbourne University Press: Melbourne, 1978, see especially pp. 77-95 and 192-206.

¹⁹ Cusack, *Bendigo a History*, see pp. 37-47.

²⁰ The most graphic account of early alluvial mining is Tom Griffiths and Alan Platt (eds.) *The life and adventures of Edward Snell: The illustrated diary of an artist, engineer and adventurer in the Australian colonies 1849 to 1859*, Angus and Robertson Publishers: Sydney, 1988.

by December 1858 the local mining officials reported a total of 2200 puddling mills. By the end of the following year there 3277 mills.²¹

Puddling distributed miners across the Bendigo gold field. At the 1857 census the largest concentration of miners was, not unsurprisingly, in the area of the Borough of Sandhurst. (Table 1). Outside the borough boundaries there were large concentrations of alluvial miners in the Epsom-Huntly district. Four years later when the next census was taken alluvial mining remained the dominant form of mining and puddlers were again widely distributed across the goldfield.²²

Puddling suffered from a number of major disadvantages. By the late 1850s puddling had created a major environmental problem in the form of vast concentrations of moving mud, which blocked up major creeks and threatened the very operation of mining. Moreover, the industry relied on a ready supply of water and dry, *El Nino*, years in the early to mid-1860s brought alluvial work to a virtual standstill. Finally, alluvial gold was a limited resource and returns inevitably declined. By the mid-1860s the industry was in crisis.

2.3 The Miner's Right of 1855 and Alluvial Mining

In the face of these disadvantages puddling did not encourage a permanent community. In the late 1850s and early 1860s central Bendigo was often threatened by a viscous mud, christened sludge, and had a ramshackle, unfinished appearance.²³ Domestic housing did little to alter this impression of impermanence. Members of Victoria's first Legislative Assembly passed *An Act to amend the Laws Relating to the Gold Field* 1855 which established the 'Miner's Right'. For an annual fee of £1 prospectors were permitted to 'mine for gold upon any waste lands of the Crown' and to occupy a portion of this land for residence.²⁴ This provided cheap land upon which miners erected rudimentary housing. In 1857 over 80 per cent of housing was simply labelled in the census as a one roomed hut or tent.²⁵

²¹ *Reports of the Mining Surveyors and Registrars*, December 1858 and March 1859.

²² The censuses of 1857 and 1861 provide detailed descriptions of social geography of the Bendigo goldfield, and give detail down to small areas. The tables from the Census have been digitised into Excel spreadsheets and are available at <http://www.ada.anu.edu.au>.

²³ For an account of the sludge problem on the Victorian goldfields see Susan Lawrence and Peter Davies. *Sludge, Disaster on Victoria's Goldfields*, La Trobe University Press: Melbourne, 2019

²⁴ *An Act to amend the laws relating to the Goldfields* (Assented to 12 June 1855), (18 Vict. No.37). This act also established Business Licenses which also permitted residences.

²⁵ Census of Victoria, 1857 and 1861.

Table 1 Distribution of Miners on the Bendigo Goldfield

	Number	Per cent
Kangaroo Gully	350	3.33
Tipperary Gully	127	1.21
Sheepwash	91	0.87
Charcoal Gully	74	0.70
Spring Gully	171	1.63
Back Creek	245	2.33
Campaspe	3	0.03
Emu Creek	17	0.16
Grassy Flat	227	2.16
Bendigo Creek, East, below the Municipality	44	0.42
Doctor's Gully.	29	0.28
Strathfieldsaye Parish	3	0.03
Epsom	1344	12.79
Sandhurst Parish within the Borough of Sandhurst	2350	22.36
Sandhurst Parish outside the Borough of Sandhurst	611	5.81
Golden Gully within the Borough of Sandhurst	263	2.50
Diamond Hill within the Borough of Sandhurst	34	0.32
Kangaroo Flat within the Borough of Sandhurst	82	0.78
Ironbark Gully within the Borough of Sandhurst	370	3.52
Long Gully within the Borough of Sandhurst	428	4.07
Specimen Hill with in the Borough of Sandhurst	292	2.78
Derwent Gully within the Borough od Sandhurst	184	1.75
Lockwood Borough	1	0.01
Lockwood rest of parish	21	0.20
Kangaroo Flat, West.	262	2.49
Robinson Crusoe Gully	177	1.68
Myers Flat.	117	1.11
Sailors Gully	130	1.24
Peg Leg Gully	89	0.85
Napoleon Gully	116	1.10
Sydney Flat	244	2.32
Whipstick	303	2.88
Eaglehawk Gully and Town	692	6.59
Pennyweight Flat	268	2.55
California Gully	149	1.42
Jackass Flat	296	2.82
Epsom West	283	2.69
Bendigo Creek west below the Borough of Sandhurst	12	0.11
Long Gully Flat	9	0.09
Total	10508	100.00

Source: Census of Victoria 1857

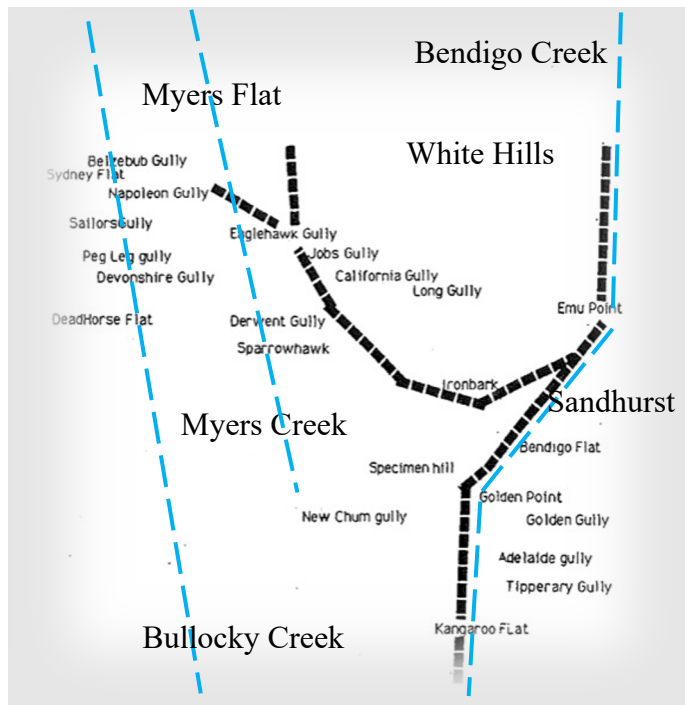


Diagram: Mayor Gullies on the Bendigo Field in 1850s.
From the Environmental History, Vol2 page 10, Figure 2-2.



Alfred Selywn's field sheet a working copy of Victoria's first geological map, 1853.
(The Early Years Geological Map).

The major force driving a change in the permanence of settlement and housing was the rise of the quartz mining industry.

2.4 The 1865 Mines Act and Quartz Reefing

From the first days of the alluvial rushes, prospectors hacked away at surface outcrops of quartz with primitive gads (pointed picks) and hammers. Realising the potential of quartz reefs, pioneer quartz reefers sought to open up reefs with simple open cuts. They then chased the reefs 'below grass' by sinking shafts. The first reefers, like alluvial puddlers, worked in co-operative

groups and actively engaged in the physical labour of mining. This was an inherently risky enterprise and sinking through hard rock was expensive. When the water table was reached costs rose and, if gold was not found, means had to be found to finance operations. One solution was to form public companies or take in non-working partners. The most prominent non-working partner was George Lansell, dubbed the 'Quartz King' when his investments proved successful in the 1860s. A boom in share speculating resulted in an expansion in quartz mining in 1858 and company formation. Yields, however, failed to reach expectations and the boom quickly collapsed.²⁶

Quartz claims and companies limped into the early 1860s. The lucky quartz reefer used early gold returns to finance subsequent exploration while the less successful faced a constant battle finding capital. In the lean years of the early and mid 1860s partnership teams changed hands, mines were reorganised as companies, and many original speculators lost their holdings through failure to pay calls. By the mid-1860s a small elite of successful reefers and investors can be identified. In the late 1860s these men began to build houses appropriate to their new won wealth. One of the defining features of the Bendigo goldfield was the propensity of these mine owners and speculators to build near their mines, and their houses, usually of brick and stone, were spread across the quartz mining districts of the Bendigo goldfield. These men were able to use the provisions of the *Mining Statute of 1865* and *The Amending Land Act 1865* to buy freehold land.

In 1865, as Bendigo made the transition from alluvial to quartz reefing, the Victorian legislature overhauled mining law, and the new bill set the ground rules for cheap housing of the new working-class population. Under section four of the *Mining Statute of 1865* the taking out of a Miner's Right for 5 shillings per year (reduced from £1) permitted the holder to occupy on any goldfield Crown land for a residence. The area was to be set by local bye-laws. The Act permitted the holder to erect a dwelling and remove timber. When this land was sold by the Crown the value of improvements was added to the upset price of £1 per acre. If the occupier was the highest bidder at auction, a valuation of improvements was deducted from the purchase price. The Act also continued the provision of providing business licenses with residence rights attached (to these licenses). This system of tenure was in place until 1881 when the Miner's Residence Area Bill was legislated.

2.5 The 1870s Boom

The gold-boom of the early 1870s transformed the social-geography of Bendigo. Over the five years, 1871 to 1876, the Bendigo mines were highly profitable, and employment was buoyant. As alluvial mining struggled many prospectors moved out of mining and many left the community. During the years of alluvial mining the search for gold encouraged men from diverse backgrounds to try their luck as prospectors. With the rise of quartz miners, the industry was dominated by a new type of miner: miners recruited from the metal mines of the south-west of England, Cornwall, (and to a lesser extent from Germany). At the same time many Irishmen,

²⁶ For the first boom and laws governing quartz mining companies see Ralph Birrell, *Staking a Claim, Gold and the Development of Victorian Mining Law*, Melbourne University Press: Melbourne, 1998, pp. 106-120. For the career of George Lansell see Charles Fahey, 'From Kent to New Chum: The Families of Isaac Edward Dyason and George Lansell, 1871-1915' in Charles Fahey and Alan Mayne, *Gold Tailings: Forgotten Histories of Family and Community on the Central Victorian Goldfields*, Australian Scholarly Publishing: Melbourne, 2010.

with little hard-rock mining experience, left the industry and often the community. Although Cornish miners had been prominent in Bendigo mining from the 1850s, the boom of the 1870s encouraged new migration from the metal mining districts of England and from less prosperous Victorian goldmining communities. The migrants of the 1870s had no illusions that fortunes were to be won; they came looking for waged work and they brought with them wives and children.²⁷ There was a pressing need to quickly provide housing.

The ready availability of crown land and the weatherboard cottage was the means of creating instant suburbs. The peripatetic prospector (travelling prospector) used the miner's right to provide land to erect temporary buildings of canvas, slab, stone and bark. With the arrival of the wage-earning, family miner these vernacular materials were replaced by factory sawn timber frames and weatherboards. Although most land in the centre of the city was alienated in land auctions commencing in the 1850s, land near and adjoining mining leases remained in Crown ownership. Large areas in the neighbouring shires, such as Marong, were deemed auriferous and available for occupation under a miner's right. Miners for a nominal rent of 5 shillings per year could take up ¼ acre allotments and erect cottages.

The Cornish Tradition Of Owner Building

In their native Cornwall many miners came from a tradition of owner building on mining leases, and the miner's residence area permitted them to transport this practice to their new homes in Bendigo²⁸. Alluvial mining dispersed miners across the whole Bendigo mining field; quartz reefs were concentrated on the western side of the surveyed centre of Bendigo and ran in a north-south direction. Miners residences were spread out along the main lines of reef. On the New Chum line of reef miners' houses extended from the Spring Gully Reservoir to north of the town of Eaglehawk. Miners walked to work and often worked night shifts. Living in close proximity to work was essential.

There were concentrations of miner housing in areas of successful mines. The districts of New Chum, Garden Gully, Ironbark and Victoria Reef were distinctive miner suburbs. Yet miners built where the mines were located and where auriferous Crown land was available. At St Just Point miners built on Crown land both within the City of Sandhurst and the Shire of Marong. Richard Pope, the diarist, built his house just west of the city at St Just Point in Marong in 1871. Unlike Melbourne, these were not orderly subdivisions created by developers with terraces fronting onto streets. In many areas miners and their families walked along rough tracks, and houses were located in seemingly random ways. On Ironbark hill cottages looked down the hill and often do not face the streets that were surveyed decades after the cottages were built.

²⁷ The most articulate account of migration into Bendigo during the boom was provided by the Cornish migrant Richard Pope. See Charles Fahey, 'Richard Pope: A miner's life in the inland corridor' in Alan Mayne and Stephen Atkinson, *Outside Country, Histories of Inland Australia*, Wakefield Press: Adelaide, 2011, pp.135-158.

²⁸ For the Cornish tradition of owner builder see Damaris Rose, 'Home ownership, subsistence and historical change: the mining district of West Cornwall in the late nineteenth century, in Nigel Thrift and Peter Williams, *Class and Space: The making of urban Society*, Routledge & Kegan Paul: London and New York, 1987, pp. 108-153. For the building of homes in the Victoria Hill district of Bendigo see Charles Fahey, 'Happy Valley Road and the Victoria Hill District: A Microhistory of a Victorian Gold-mining Community, 1854-1913, *Victorian Historical Journal*, Volume 90, No. 2 November 2019.

Cycles Of Mining Activity

In understanding the evolution of housing in Bendigo, the periods used to describe the general Victorian economy, such as the boom of the 1880s and the depression of the 1890s, do not strictly apply to Bendigo. The search for gold imposed different cycles on Bendigo. During the good years of the early 1870s the prodigal payment of dividends and the failure to set aside reserves limited the exploration mining companies could undertake when yields declined in the late 1870s. In the early 1880s deep sinking, aided by compressed air rock drills, opened up new reefs.²⁹ Yet by the late 1880s investors had turned to a booming Melbourne and funds for exploration were constrained. Unemployment among miners was high in the late 1880s.³⁰ During the 1890s depression, the stable price of gold and the failure of metropolitan investments encouraged exploration of gold mines. Gold yields improved in 1893 and 1894 at the very time unemployment peaked in Melbourne.³¹ In the early twentieth century gold received a last boost as mines were developed in Eaglehawk, particularly at the Moon group of mines.

Urban Development in Melbourne and Bendigo 1851-1914		
	Melbourne	Bendigo
1850s	Rapid population growth as commercial city and port for gold rush migrants.	Alluvial gold mining – shallow digging and puddling. Housing often in tents or bush materials.
1860s	Slower population growth with many diggers settling in inner Melbourne. Extensive family formation of gold-rush generation.	Development of Quartz Reefing. Housing changing to weatherboard cottages.
1870s	Development of small manufacturing in old suburbs – Carlton, North Melbourne, Fitzroy and Collingwood. Housing largely brick and tenanted.	Quartz boom first half of decade slow down post 1875. Rapid growth in weatherboard housing on Crown land occupied by wage earning miners.
1880s	‘Marvellous Melbourne’ Extensive migration including from the declining goldfields And family formation of children of the gold-rush generation Growth of new working-class suburbs - Footscray, Brunswick and South Melbourne. Weatherboard widely used in the new suburbs with higher rates of working class home-ownership.	Early 1880s increasing deep sinking with rock drills and a revival of quartz mining. Late 1880s slowdown in quartz mining and growth of mining unemployment. Security of tenure for houses on Crownland and extensive remodelling of miner’s residence area housing.
1890s	Collapse of the boom and rapid loss of population. Collapse of building.	Revival of quartz reefing.
1900s	Revival of population growth. Migration from the goldfields often to new working-class suburbs. Growth of new working-class suburbs – Northcote, Coburg, Brunswick and Footscray. New broadacre manufacturing in new suburbs.	The centre of goldmining moves north to Eaglehawk. Extensive outmigration. The miner’s residence area a bulwark against unemployment and poverty.

Table showing the evolution of housing in Bendigo and Melbourne, by Dr Charles Fahey.

²⁹ For mining in the 1860s, 1870 and 1880s we have the detailed information recorded in the *Quarterly Reports of the Mining Surveyors and Registrars*. These appear to have been victims of the 1890s government retrenchment.

³⁰ *The Annual Reports of the Department of Mines* recorded mining unemployment between 1884 and 1891. In 1884 9.2 per cent of members of the Miner’s Union experienced a period of unemployment; this rose to 13.1 per cent in 1888 and 15.1 per cent in 1889.

³¹ See the Editorial in the *Bendigo Independent* 1 January 1894 gloating about local prosperity in the face of Melbourne’s plight.

During the thirty years from the boom of the 1870s to the turn of the century Bendigo became a mature and industrial gold field. For the visitor to Bendigo, the lines of reef were clearly identifiable by head frames, poppet heads, and engine flues running north-south. The field had one of the highest concentrations of steam machines in the Australian colonies. In the 1880s deep sinking was undertaken and by 1890 mines were over 1000 metres deep. And the traditional Cornish tap and hammer miner was challenged by the miner working a compressed air rock drill.³²

Economic Diversification

The fluctuations in gold production resulted in considerable migration out of Bendigo, and young workers were particularly prone to leave, either for other mining fields and in the 1880s and 1900s for Melbourne.³³ Nonetheless, Bendigo remained the premier mining community of Victoria and the established mining industry helped to promote an engineering sector, and a range of consumer industries were supported by the mining workforce – brewers, bakers, bootmakers and tailors, carriage makers and flour millers. The city also acted as a regional centre providing transport, commercial, medical and legal services for a growing rural hinterland. This phase as a mature mining city was reflected in the built fabric of Bendigo.

Table 2 Occupations of male household heads, Bendigo and Eaglehawk 1866-1891

	1866	1871	1891
Business	370	515	660
Clerical & White Collar	89	109	270
Labourer & other unskilled	351	240	914
Miner	2705	2925	1880
Professional	123	54	135
Skilled	755	681	1535
Gentleman	60		94

Source: Estimated from a one in five systematic sample of the Bendigo and Eaglehawk Rate Books. The first Bendigo rate books listing occupations is 1866.

Building And The 1870s Boom

The confidence engendered by the 1870s boom encouraged building in a number of ways. First, the buoyancy of the business community saw them rebuild the centre of the city, a process that was continued over the next three decades with major building by local government, the churches, and the colonial government. T

³² For deep sinking see Special Edition of the *Australian Mining and Financial Standard*, 1 July 1899. *The Annual Report of the Minister of Mines* in 1901 listed 8 shafts below 1000 metres. The deepest mine, the Victoria Quartz mine, was 1143 metres deep.

³³ For population fluctuations on the goldfields see Charles Fahey, 'Peopling the Victorian goldfields: from boom to bust, 1851-1901' in *Australian Economic History Review*, Volume 50, Number 2, July 2010, Special Issue: A world in search of gold, Guest editors: Keir Reeves, Lionel Frost and Charles Fahey.

The fact that centre of the city was freehold land gave them the confidence to build substantial structures safe in the knowledge that it could not be resumed for mining. Second, the prosperity of these years encouraged the successful business and mining community to build new houses sufficiently grand to acknowledge their new won fortunes. It is these buildings that were listed as significant in the 1993 *Bendigo And Eaglehawk Heritage Study*. Finally, there was a continuing need to accommodate the working population of the city.

When he returned to Bendigo in 1875, after an absence of four years, a journalist with the *Bendigo Advertiser* recalled that when he first arrived in 1869 Sandhurst was a primitive town indeed.³⁴

There was only the skeleton outline of streets, over an extensive area certainly, but no appearance of uniformity or regularity in the buildings which studded the course of the thoroughfare [Pall Mall]. Pall Mall and one or two streets that branched off to the left and right were the only grand exceptions, and even these could not bear a critical survey. Great open gaps were observable even at street corners, and great post and rail fences enclosed patches of diggings at almost every turn. The only store of any architectural pretension was the Old Beehive, and with one or two exceptions, the banks and hotels were anything but imposing. Revisiting the city less than a decade later, he found that this 'grovelling architecture' had disappeared.

The drivers of this transformation were the city's businessmen enjoying the prosperity of the boom. The exuberant optimism of these years is epitomised in the history of the Beehive. In August 1871, at the height of the stock boom, the Beehive Store and Exchange was destroyed by fire. Within nine months it was rebuilt on an even grander scale. The *Bendigo Independent* reported that the cost of the building as a whole would not fall short of £25,000 and there was not a private building in Victoria which had 'so much spent upon it' and, they added, 'so wisely' spent upon it.³⁵

At the same time that the business community improved the civic architecture of the city they also addressed their domestic comfort. This process had begun as early as 1866 and the rate books for this year list just under 100 houses valued at £50 or more annually. In the top decile of houses, these residences were generally brick and were comprised of six or more rooms. With the boom of the 1870s the number of houses of this calibre doubled, and the local middle class continued to build throughout the 1870s and 1880s. The rates book of 1891 assessed over 300 with a net annual value of £50.

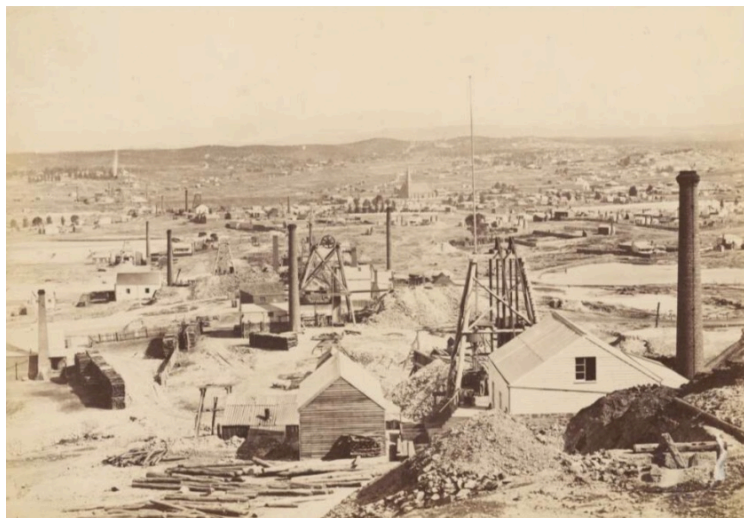
Today these houses give a substantial feel to inner Bendigo street scapes and define the middle-class character of streets such as View, Forest, Rowan or Barkly Terrace.³⁶ Yet a characteristic of Bendigo is that these comfortable villas were never far from less substantial workers' housing, leading to a patchwork of housing styles unlike the more uniform styles in the suburbs of Melbourne. A distinctive feature of Bendigo's social structure was its working-class

³⁴ Quoted in Roper, 'The Invention of Tradition', p. 113. Michael Roper has an excellent account of town building during the boom. See Chapter Three, 'Town Building in Sandhurst, 1868-1887'.

³⁵ *Bendigo Independent* 28 August 1871 and 11 June 1872.

³⁶ For the villas of Bendigo see Mike Butcher and Gill Flanders, *Bendigo Historic Buildings*, National Trust of Australia (Victoria): Bendigo, 1987.

character (Table 2), and after the boom this working class became more complex as manufactories sprung up to serve the needs of mining and the city's residents.



New Chum Gully, Bendigo, Victoria 1875 Nicholas Caire, 1837-1918, National Library of Australia

Nicholas Caire photographing a boom town

Photographers, with a commercial eye, were keen to record the rapid transformation of Bendigo. The most important series of photographs were those taken by Nicholas Caire. Although Caire's main pre-occupation was the public buildings of the city and the major lines of reef, a number of his views captured the domestic architecture, including the homes of miners. The most famous of these views shows New Chum, an area intensively mined during the early 1870s. Prominent in this picture is West End Hall, the home of the quartz reefer Barnet Lazarus and in the distance is Fortuna Villa occupied from 1870 by George Lansell. Dominating this picture, however, are the timber cottages of miners. Captured during the boom these houses often appear very modest, in many cases they contained only two main rooms. Few have verandas to provide protection from the summer sun.³⁷

In the years after 1882 many of these homes were altered with verandas and additional rooms. Household changes were initiated by the changing composition of the family, a change few miners and their families would have been prepared to undertake without important reforms of the legislation.

The battle for land

In the 1860s and 1870s access to Crown land was one of the major issues driving political conflict in Victoria. On one side stood the old elite of pastoralists, or squatters, who had settled on indigenous land in the 1830s and 1840s.³⁸ On the other stood the migrants of the 1850s; a

³⁷ Nicholas Caire, *Views of Bendigo*, originally published in 1875 and republished by the Bendigo Trust: Bendigo, 1979.

³⁸ The initial illegal settlement of Victoria by squatters was subsequently given legal sanction by Governor Bourke in September 1836. See J.M. Powell, *The Public Lands of Australia Felix*, Oxford University Press: Melbourne, 1970 pp. 4-12 and 282. For the failure of the British government to acknowledge Indigenous ownership see James Boyce, 1835: the founding of Melbourne and the conquest of Australia, Black Ink: Melbourne, 2013.

group imbued with a more radical and democratic ethos. Although a measure of security was promised to squatters by the granting of long-term leases from London in 1848, Governor Charles La Trobe did not actually issue leases. Although the pastoralists were left in possession of Crown land, the ultimate future control of this land fell into the hands of a local legislature elected on adult manhood suffrage after 1856. The broadly elected Legislative Assembly and the Legislative Council, elected on a high property suffrage, battled for control of land from the late 1850s through the 1860s. From 1860 to 1869 a number of selection acts were passed to offer Crown land to settlers of limited means. The most important of these, the 1869 selection before survey act, opened northern Victoria to agricultural settlement. Many diggers, rather than work in the new quartz mines, selected land on the Northern Plains.³⁹

In the late 1870s there were major constitutional clashes between the Assembly and the Council. On the goldfields local members elected by a large constituency of miners favoured liberal land laws and reform of the Legislative Council. The big land battles for control of Crown land were mirrored on goldfields by a demand for more security of residences granted under the 1865 Mines Act. Although holders of miner's rights could occupy Crown land for residences, they had little security of tenure. Miner's rights had to be renewed annually, they could be resumed for mining and holders could not leave the land unoccupied. In 1882 William Borrows, a local Legislative Assembly member, piloted through the first of a series of acts that essentially gave all the benefits of freehold.⁴⁰

2.6 The 1881 and 1884 Residence Area Acts

As noted above, the *Residence Area Act* 1881 was to be read as part of the *Mining Statute of 1865* and came into operation on 1 April 1882. A Residence Area was defined as any Crown land not exceeding a ¼ of an acre occupied 'for the time being in accordance' with the provisions of the Mining Statute by any holder of a miner's right or a general business license. The holder of a residence area had to have his block endorsed on the miner's right document and this was registered by the Mines Department. Existing miner's right land holders, who had held their land for more than 12 months, were granted all the rights and privileges of the new act. New holders of a miner's right had to build a residence within four months. If no residence was erected after a further three months the residence area could be cancelled. After 12 months the holder could let out the residence area with all the rights and privileges of normal landlords and tenants.

This was particularly important in the mining economy of the early 1880s as it permitted miners to leave their residence area in search of new employment. They could also hold another residence area if it was not within 10 miles of an existing area. Although a residence area was exempt from occupation for mining under any miner's right, the Governor in council could temporarily exempt any portion of a district in which a new discovery of gold had been made. In such cases compensation had to be paid. After twelve months holders of a residence area could

³⁹ Powell, *The Public Lands*, see especial chapters 3, 4 and 5, pp. 59-144.

⁴⁰ For Victorian politics in the 1860s and 1870s see Stuart Macintyre, *A Colonial Liberalism, The Lost World of Three Victorian Visionaries*, Oxford University Press: Melbourne, 1891. For the politics of Bendigo see Charles Fahey, "Foreign To Their Feelings As Freemen", liberal politics in a goldfields' community, Bendigo 1853-1883, *Journal of Colonial History*, Vol 10, No. 1, 2008 pp. 161-181.

sell their interest in the residence area. The new holder had to hold a miner's right and they had to have the residence area endorsed by the Mines Department on their miner's right.⁴¹

Clause 21 of the Residence Areas Act 1881 legislated for conversion of Crown land to freehold by auction at an upset price to be determined by the Governor in Council. The *Residence Areas Act 1884* amended the sale provisions to remove the competitive aspect of auction. Those who had held Residence Area for 2 ½ years were given exclusive right of purchase if there were no objections to alienation on the grounds that the land was auriferous or required for other purposes. The value of the land was to be approved by an appraiser nominated by the Board of Land and Works, and the holder was to receive a valuation for improvements if the land was required by the Crown. This same act increased the area available from one quarter to one acre.

2.7 The 1890,1892, 1897 Mines Act and 1910 Residence Area Holders Acts

These provisions were incorporated into the *Mines Act 1890*, and the right of existing holders not to have their residence areas negated by mining officials was legislated in an amendment to the *Mines Act 1892*. The *Mines Act 1897* reduced the annual miner's right fee to two shillings and six pence. The *Residences Areas Holders Act 1910* permitted the transfer of residence areas to widows whose husband died intestate without a grant of probate if the area was valued at less than £250 and the total value of the estate was less than £250. This removed from poor widows the expensive legal costs of seeking probate.⁴² These laws, as we shall see below, enabled miners to make improvements to their dwellings.

The Geography of Residence Areas

The geography of housing took on a number of quite distinctive features in the 1870s and 1880s. Describing this is difficult and incomplete. From the mid-1860s through until 1891 we do not have records of the distribution of residence areas across the Bendigo goldfields. From 1866 to 1871 the Bendigo rate books divided land by freehold and Crown status, while the rate books of Eaglehawk and surrounding rural municipalities did not distinguish freehold from Crown land. From 1872 until 1913-14 the Bendigo Rate Books did not distinguish Crown from freehold land. In these years this has to be estimated from surviving assessment books.⁴³ In the case of Eaglehawk the proportion of land held in Crown ownership is available from 1891. Unfortunately, we have no similar records for adjoining shires. Auriferous areas surrounded the

⁴¹ *Bendigo Advertiser* 12 November 1881 and *Residence Areas Act 1881*.

⁴² The full descriptions of the two basic residence area bills are: The Residence Areas Act 1881, 24 December 1881, (48 Vict. No. 801) and An Act to amend "The Residence Areas Act 1881", 4. December 1884, (48 Vict No.801). This was consolidated by an Act to consolidate the Law Relating to Mines, 10 July 1891, (54 Vict. 1120) and An Act to Amend the law relating to Mining 27 September 1897 (61 Vict. No. 1514). Secure tenure was given by An act to amend the Mines Act 1890, 3 October 1892, (56 Vict. No. 1263). For intestate estates: An Act to amend the Law relating to Holders of Residence Areas under the Mines Acts who die intestate, 17 December 1910, (1 Geo V No. 2281).

⁴³ The Public Record Office was slow to classify assessment books as permanent records and they were poorly stored in the tower of the town hall. In 1994 they were lent to La Trobe University. They have since been returned to the City of Greater Bendigo Council and await conservation work and deposit in the Public Record Office collection. The assessment books record whether land was crown or freehold and the number of residents in each dwelling. The Bendigo assessment books are not complete.

designated municipal boundaries of Bendigo and Eaglehawk, and Crown land under miner's residence was common in adjoining shires.

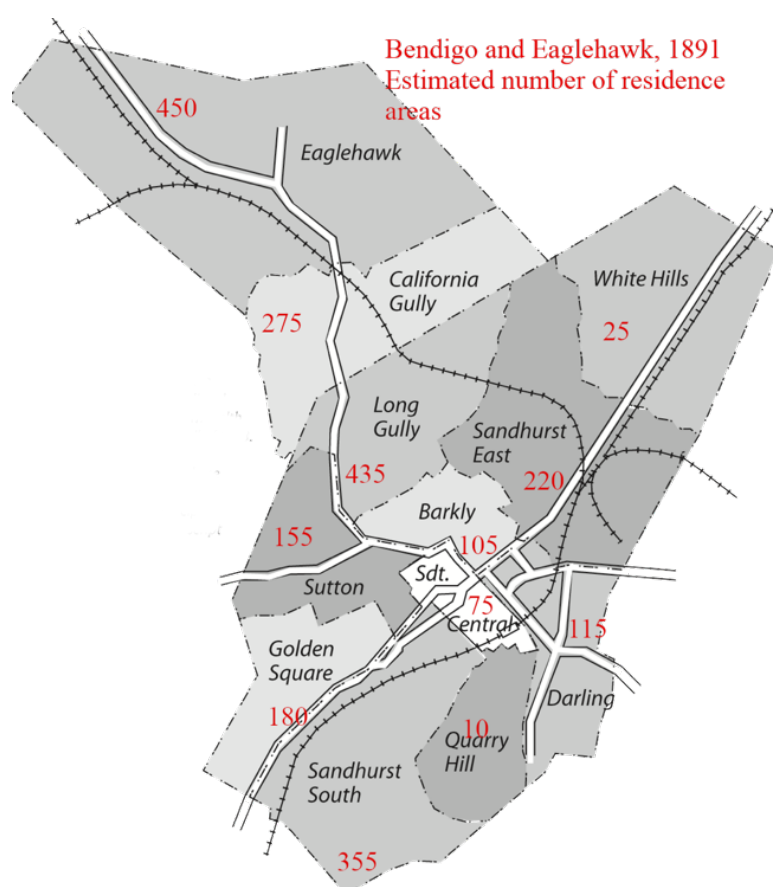


Figure 2 Map showing the number of Residence Areas and corresponding miners' houses in Bendigo and Eaglehawk in 1891. These figures are inclusive of all types of miners' houses that are associated with the four different types of serial listing.

Table 3 Location of Residence Areas in City and Borough Districts

	Freehold	Residence Area	Total
Barkly	426	105	531
California Gully	140	275	415
Darling	741	115	856
Eaglehawk	670	450	1120
Golden Square	260	180	440
Long Gully	195	435	630
Quarry Hill	220	10	230
Sandhurst Central	740	75	815
Sandhurst East	425	220	645
Sandhurst South	245	355	600
Sutton	265	155	420
White Hills	105	25	130
Total	4430	2400	
Source: Estimated from City of Bendigo Assessment Book, 1891 and Borough of Eaglehawk Rate Book, 1891			

To explore the geography of the city twelve suburbs have been designated based on electoral subdivisions used for the first federal electoral roll in 1903 (Map 2). With the decline of alluvial mining the widespread distribution of miners across the field contracted and mining was largely located on the western side of the city. The White Hills subdivision demonstrates this starkly. The number of miner ratepayers fell in this division from 175 miners in 1871 to 25 in 1891. The number of miners in the inner-city subdivisions also declined substantially as quartz mining became the dominant form of mining. The decline was probably even more pronounced as many alluvial miners worked on the edge of Sandhurst in the Shire of Huntly, where rate books have not survived. Occupation of a miner's residence area remained a critical part of the housing system throughout the century.

By 1871 the proportion of houses occupied on a miner's right in Sandhurst (figures are not available for Eaglehawk) was 48 per cent; by 1891 the proportion was still 32 per cent. If we include Eaglehawk the proportion rises slightly to 35 per cent (Table 3) The miner's residence area was located in all areas in 1891 but it was more common in the divisions with significant quartz mining operations: Sandhurst South, Golden Square, Sutton, Long Gully, California Gully and Eaglehawk It was also significant in Sandhurst East where brickworks and noxious industries were located (Table 4).

Here residence areas were located on former alluvial mining land. By 1891 changes in the law broadened the diversity of the miner's residence area holders beyond simply miners; miners occupied 58 per cent of residence areas, while other manual workers -skilled and unskilled - occupied just over a third. The remaining residence areas were spread among the other occupational groups. Women became important holders of crown land through the death of their husbands (Table 4).

Table 4 Tenancy Status City of Bendigo and Borough of Eaglehawk, 1891

	Residence Area	Freehold Owner	Tenant on Freehold	Total
Female	210	285	270	765
Male	2190	2095	1780	6065
Total	2400	2380	2050	6830

The Geography Of Manufacturing

As the mining industry matured, social structure of the city became more complex and this was reflected in housing. Nineteenth century mining plant was not mass produced and local blacksmiths had an advantage in being in the position to make immediate repairs. From simple repairs a number of enterprising tradesmen established foundries and general engineering works. The great days for these were from the mid-1870s through until the 1890s. In 1891 the city accommodated five foundries. Three of these, and the more extensive, were located close to the centre of the city: Abraham Harkness established his works at the corner of Ophir and McKenzie Streets, Abraham Roberts in Wills St and Joel Horwood on the corner of Mackenzie and Vine Streets. This region gave access to both the railway and early quartz mining districts. Two other prominent engineering works were located in the heart of the mining district at Ironbark and Long Gully. The engineering works gave employment to highly skilled and well-

paid tradesmen. Skilled tradesmen were also employed in the carriage building industry. In 1891 the city housed one major carriage works, which looked to the construction of railway rolling stock to expand, and a handful of small artisanal shops as well as saddlers, wheelwrights and blacksmiths. Representatives of these trades were also distributed across the city.

Prominent among the city's manufacturers were its flour millers and brewers. The major flour mills were located close to the centre of the city, while brewers were south of the city in Golden Square, in Sandhurst East and in Eaglehawk. Although the centre of the city was a major retail centre, in an age before refrigeration and mass transit, food producers - butchers and bakers - were spread throughout the city. The eastern side of the city was the home of noxious industries - bone mills and soap works - and clay pits for brick works. The division of Sandhurst Central also was the home of the Bendigo gas works. As one of the earliest public companies, the centre of the city provided the gas works with the security of freehold land. The arrival of the railway in 1862 required both skilled workers - engine drivers, booking clerks and fitters - and unskilled workers - porters and line repairers. Work in the railways provided steady employment for the unskilled and regular and high wages for the skilled. These workers usually lived in close proximity of the railways and on freehold land. Alluvial mining dispersed migrants across the goldfield. The mixed mining, manufacturing and commercial functions of the mature town also spread manual workers throughout the city (Table 5).

Table 5 Housing and Occupation of Household Heads Bendigo and Eaglehawk 1891

	Average Net Annual Value	Median Net Annual Value	Net Annual Value 90 percentile
All Males	21.0	14	30
All Females	18.7	14	35
Business	39.8	24	65
Farmer	16.2	18	20
Gentleman	31.5	20	70
Professional	33.4	29	58
White Collar	21.4	19.5	40
Skilled Manual	20.4	16	35
Unskilled Manual	14.8	14	22
Labourer	11.4	12	16
Miner	12.4	12	16

Source: City of Bendigo Assessment Book, 1891 and Borough of Eaglehawk Rate Book, 1891

As well as the new industries created under the impetus of a stable mining industry, each mine also employed skilled tradesmen. As steam winding engines replaced horse whims, engine driving became an important job. Upon the skill of the engine driver rested the lives of miners hauled to and from the stopes. Cautious engine drivers were needed to prevent miners being hauled to the top of the head frame or dropped into water filled sumps. The government recognised the need for skilled engine drivers and certificates were required for this work. This resulted in a wage premium for engine drivers. At the mine, carpenters were required to slab shafts, and blacksmiths to sharpen tools. Each mine, therefore, had a core of skilled tradesmen.

Mining dispersed non-miners through the mining districts and tradesmen found work in the scattered consumer industries. Although skilled workers were not closed off from the

occupation of residence areas, their higher wages frequently encouraged them to purchase or live in higher standard accommodation. When working in the industries of the city centre, they were forced to live in an area where more land was freehold and houses were more expensive to both buy and rent. For those able to afford it, the weather board hipped roof house was a step up from the gabled miner's cottage (Table 6).

Types Of Houses In A Mature Mining Community

The simple two roomed house, built with commercially sawn timber and erected on Crown land, was the means by which miners arriving in Bendigo with their families could be rapidly housed, and these migrants provided the labour required to win gold from unforgiving rock. In the late 1860s many of the more rudimentary bush buildings that were scattered across the alluvial diggings were abandoned. For almost half a century the humble timber house remained the defining housing form in Bendigo. In these years the so-called 'miner's cottage', with its gabled form was extended and improved, and substantial numbers of hipped houses were added to accommodate the more prosperous working class, either a skilled tradesman or a miner who had come by some savings after a successful tribute or a period of regular employment. Miners, when they were promoted to mine managers, often upgraded their housing to reflect their improved employment status. Across the city, more substantial houses were erected by the local businessmen whose customer base was local residents, and in the inner city, where freehold land replaced crown land status, there was a concentration of more substantial housing (Tables 5 and 6).

Table 6 Housing Values and City and Borough Districts, 1891

	Mean NAV	Median NAV	NAV 90 percentile
Barkly	22.3	15	44
California Gully	15.1	13	22
Darling	23.5	16	40
Eaglehawk	16.4	13	23
Golden Square	17.5	15	28
Long Gully	15.9	15	21
Quarry Hill	19.6	18	28
Sandhurst Central	30.3	22	50
Sandhurst East	13.2	13.2	20
Sandhurst South	14.2	14.2	18
Sutton	19.2	19.2	26
White Hills	10.7	10.7	16

Source: City of Bendigo Assessment Book, 1891 and Borough of Eaglehawk Rate Book, 1891

The rate books for 1866 show a city in a state of rapid change. Across the city, rate collectors – in both Sandhurst and Eaglehawk - recorded vacant houses built by speculators – often builders – and vacant land also purchased as a speculation that buyers hoped subsequent growth would make valuable. Where speculators purchased in areas of largely alluvial mining these dreams provided futile. In 1866 the median rateable value of city houses was just £10 per annum and a tenth of housing was little more than shacks valued at £5 or less per year. Over the course of the next two and a half decades the value of housing rose. In 1871 the median assessed value was

£12 and by 1891 it was £14. This improvement in housing was undertaken by all sections of society.

2.8 Housing The Miner

Although Bendigo had a diverse group of manual workers in 1891, the quartz miner remained the head of almost one third of households and over sixty percent of mining households remained on Crown land. By the 1870s quartz reefing had become an established industry and it survived economic cycles of growth and retraction as mines under-took mineral extraction and exploration. While men and their families were constantly moving in and out of the city, a large core established permanent homes. In the last three decades of the nineteenth century stable families made additions to their houses. With high marital fertility rates, most mining families quickly outgrew the simple two room house.

The most important alteration was to add extra rooms either with an additional gable or a skillion at the rear. With these additions, the typical house occupied by a miner grew to four rooms: net annual values of rated miners' properties suggest that four fifths of miners' properties were four rooms or less. Changes in the law permitting a measure of security of tenure encouraged miners to make additions. The mining diarist, Richard Pope made extensions to his house at St Just Point during a period of steady employment as a mine manager from 1880 to 1886. In 1881 his house was rated by the Shire of Marong at £10: less than five years later additions had increased the rateable value to £18.⁴⁴



Ironbark Hill view of miners' houses circa late 1870s, courtesy of Bendigo Historical Society

In 1881 the median capital value of miners' cottages was £75 in today's terms; by the end of the century the figure was £125.⁴⁵ By the standards of metropolitan Melbourne, Bendigo houses remained cheap at two thirds the annual miner's wage in 1881 and just over the annual wage at the end of the century. The miner's cottage generally had an external chimney, and they were

⁴⁴ For Richard Pope's house, Marong Valuation Books VPRS 17061, Units 2 and 5. This house was destroyed in the Black Saturday bush fires of 7 February 2009.

⁴⁵ These figures are based on examining all probate inventories for these years. Rate books valued houses annually, on the rent that would be received if let for a year.

lined with hessian and paper. In a four-room house space was at a premium; in 1891 the average household size was 4.7 residents and over a third of houses accommodated six or more persons.

The greater security of tenure provided by the residence area bills may have also encouraged local councils to provide improvements. When we first encounter the house of Henry Noy in the Bendigo rates in 1869, he is listed as living in Golden Point. Possibly encouraged by the residence area acts he improved his house in the 1880s and by the rate return of 1891 he was living in a surveyed street. Over the same period, he took advantage of the provisions of the residence area acts to obtain freehold. (Table 7).

Table 7 Henry Noy's House 1869-1896

Year	Rate number	Address	Net Annual Value £	Occupation
1869	393	Golden Point	10	Miner
1871	430	Golden Point	9	Miner
1876	453	Golden Point	10	Miner
1880	433	Golden Point	10	Miner
1882		Golden Point	14	Miner
1886	417	Golden Point	14	Miner
1891	398	Booth St	14	Miner
1896	432	Booth st	14	Miner

Source Bendigo Rate Index. In 1895 the house was described as a four-room weatherboard cottage with a detached stone kitchen in Noy's probate inventory and valued at £120. Probate file 59/041. The stone kitchen may have been Noy's original house.

As the example of Richard Pope indicates rebuilding also took place in the adjacent shires. Richard John Harvey, a miner, purchased a very humble residence area soon after he married Emily Rebecca Treganowan in August 1882. In 1884 he was rated by the Shire of Marong on a wood dwelling at St Just Point valued at £8. He was 21 and she was 18. As the family grew the house was substantially remodelled and by 1891, when the house had six residents, it was a timber hip-framed house valued at £15. By 1905 it was home to eight residents, still with a valuation of £15. In all eight children were raised in this house. In multiple ways this family was a typical Bendigo mining family of the late nineteenth and early twentieth centuries. Richard was a native of Eaglehawk and Rebecca was born in Cornwall and raised on the Victorian goldfields.

They both had fathers who were miners, and Richard experienced little social mobility working most of his life as a miner. When he died, he bore the curse of mining families and was suffering from fibrosis of the lungs. At age 63 he was in longer in the workforce and his death certificate recorded him as an old age pensioner. What undoubtedly helped to keep him from penury was his humble miner's residence area and when he died this was transferred to his widow without a grant of probate. Their house still stands in St Just Point.⁴⁶

⁴⁶ Marriage certificate 1882/4365. Marong Assessment Books VPRS17061 and death certificate 1925/10170.



The house of Alexander Pope, miner.

The more sophisticated occupational structure that emerged with a mature mining community required the services of a range of unskilled workers and tradesmen. On the eastern side of the city and in the inner city, unskilled labourers worked at a variety of occupations such as unloading trains and carting goods or working in the flour mills, bone mills, brickyards and slaughter yards. Housing for these workers shared most of the characteristics of the miner's cottage of four, weatherboard rooms. They were less likely to be on a Miner's Residence Area, and in the centre of the city were more frequently rented from private landlords.

More Substantial Timber Homes

The housing of skilled tradesmen and mine managers was usually a step up from the four-roomed gabled house to a four, five or even six roomed hipped roof weatherboard-house. The transition to more salubrious house can be illustrated with John Jewell, a Cornish miner who arrived in Bendigo in 1875. Settling in Bendigo, after a spell working in mines in Queensland, Jewell occupied a typical miner's cottage valued at £10 per annum in Long Gully.

For the next eight years he lived in and around Long Gully and Ironbark in similar style of housing. In 1884 he was appointed as a mine manager and he made the transition to a weather board house in Bolt St Long Gully of five rooms rated at £15. In 1898 he occupied a house on the lease of the mine he managed valued at £22. His final house in Thomas St Ironbark was rated on freehold land at £32 in the early twentieth century.

A weatherboard house, this last abode told his neighbours that he was a man of substance. This house had four bedrooms, a spacious hall, a drawing room, a dining room, a kitchen a pantry and a scullery. It was furnished appropriately. Most miners had simple furniture valued at around £10; John Jewell's house was furnished to the value of £116. His status in the community was also signified by the eight rental houses he owned and generous loans to the Long Gully Methodist Church.⁴⁷

Jewell made his major jump in housing when he became a mine manager; skilled tradesmen had a wage premium over miners from their early twenties. And this permitted superior housing. A skilled blacksmith working in a foundry earned a third more than miners for the last three decades of the nineteenth century, while a blacksmith in a mine received a quarter more. Differentials for building tradesmen were similar to foundry tradesman. At the margins between

⁴⁷ Probate papers 111/993 and death certificate 1910/962

skilled and unskilled work was the mining engine driver who earned just over ten per cent more than a miner.⁴⁸



The house of John Jewell, miner.

The 1891 rate books of Bendigo and Eaglehawk show that skilled tradesmen had an average rateable house £14.7 with a median of £14. Among this group a quarter lived in houses with a rateable value of £18 or more. Typical of the house of skilled tradesman was the residence William James, a blacksmith, began to build in Jackson St California Gully in 1896. In this year, in an uncompleted state, it was rated at £16. When finished the following year it was assessed at £18. With a hipped roof and verandah, decorated with iron lace, this residence had four main rooms under the main roof and a substantial lean-to kitchen.⁴⁹ This style of housing was employed by the better-off working man from the boom through until the Great War. Across the two municipalities, around one fifth of houses in 1891 were double fronted, hipped weatherboard houses of five or, in a minority of cases, six rooms. The dimensions of the timber elements and house sizes were all standardized by the use of timber products purchased from industrialized construction factories, and then erected by skilled carpenters.

The Transition From Timber To Brick

At a net annual value of £20 or more, a transition was made to six or more weather board rooms, and hessian and paper was often replaced with lath and plaster. The Bendigo elite generally lived in houses rated at £30 or more in 1891. This value marked a division between the ubiquitous weatherboard house to the more substantial brick villa. Although the latter were dotted across the greater urban area, they were typically found in the inner-city areas of Barkly, Darling and Sandhurst Central.

More substantial houses were built in the outlying mining regions but generally had a lower rateable value due to their distance from the city centre. Angus Kennedy built one of the very early brick residences on the Bendigo goldfield. In 1859 he was rated at £25 at Sheepshead Gully, when most miners lived in tents or bark and slab huts. Over the next forty years he continued to reside here, working as a miner from 1866 to 1872. His claim proved unsuccessful and in the late 1870s he selected land. By the early 1880s he had returned to mining and worked his trade as an engineer for the next three decades. In one of the less successful mining districts, his house of seven brick rooms, had lost value by the 1880s and was rated at £20.⁵⁰

⁴⁸ The *Annual Reports of the Minister of Mines and Mineral Statistics* give weekly wages throughout the nineteenth century

⁴⁹ Bendigo Rate Books, 1896 and 1897. Charles Fahey lived in this house in 1991.

⁵⁰ Bendigo Advertiser, 19 June 1913 probate papers 130/988.



The house of Angus Kennedy, miner.

Charles Henry Corrie, a neighbour of Kennedy likewise occupied a more substantial house. In 1866 Corrie occupied a modest house rated at £10 in Sheepshead Gully where he worked as a miner. By 1875 he had assumed the management of a mine and improvements to his house, or more likely a new house, was rated at £28. Corrie occupied this seven-room weatherboard house until his death in 1896. His widow, Eliza, remained here until her death in 1911. By the turn of the century distance from the centre of the city had reduced the value of the property to £20.⁵¹

A final example, the house of Robert Lisle, demonstrates a substantial house built by an early quartz reefer. In 1864 Lisle was listed on the Sandhurst rate books as the rate payer of the Union Company's properties at Sheepshead Gully. By this date the company was a leader in the establishment of mining plant and was rated on a mining property valued at £167. Robert Lisle, encouraged by the success of this claim, built a substantial six room Georgian style brick house rated at £40 in 1866.

At this stage Lisle continued working as a humble miner. When the field boomed in the early 1870s, he styled himself a mine manager. Surrounded by the detritus of mining his house declined in value, and from 1881 was rated at £34. This was still a high valuation for the area. When he died in 1911 his house was listed as located in Belle Vue Road. Built before this road was surveyed his house faced away from the road and the verandah looked down the hill. Presumably this had once provided, before the area was scared with mullock, a pleasant outlook.⁵²



The house of Robert Lisle, miner and quartz mining speculator.

⁵¹ Probate papers 61/763 and 121/905

⁵² Bendigo Independent 17 July 1911 probate papers 121/602.

Conclusion

Gold created social problems by rapidly creating concentrations of population. In the 1850s, when the prospector was often a young, unmarried man, rough accommodation was sufficient in the mad scramble for gold. The dream of riches was a compensation for rough living. With the rise of the industrial, company mining, the footloose and frequently single digger gave way to the proletarian miner, who generally was a family man. The prosperity of the mining and business elite permitted the market to provide for freehold land and residential building. Housing the rapid influx of mining families, most of them migrants with limited capital, was a much more complex problem. The reluctance of the government to alienate auriferous land provided a source of cheap housing on Crown land.

This evolved from the simple and insecure miner's right to a more permanent miner's residence area, which by the mid-1880s provided all the benefits of freehold. This built on a Cornish tradition of owner building and may have been the origin the owner-building so prevalent in Australia in the decades after World War Two.

The small weatherboard cottage was the basis of housing the gold miner and his family. The grand public buildings shape public consciousness of the wealth of Victoria's nineteenth century gold mining industry. But there was a more modest face of goldmining and the ubiquitous timber framed house is very much a defining feature of goldfield's society.

PART THREE

3.0 FINDINGS AND RECOMMENDATIONS

3.1 Serial listing: Local significance

It is recommended that the collection of 19th century miners' houses, which were built on mining land, in the Greater Bendigo area are provided with heritage protection under the heritage overlay as four separate serial listings associated with the development of the Mines Acts and Residence Area Acts. They are as follows:

- **Ironbark Miners' Cottages Serial Listing** -amended to include all early gable roofed miners' cottages associated with the Miner's Rights 1855, the Mines Act 1856 and alluvial, puddling and early quartz reef mining phase.
- **Quartz Gold Boom Miners' Houses Serial Listing** - associated with the Mines Act 1865, Residence Area Act 1881 and 1888 Amendment.
- **Workers and Mine Speculators' Houses Serial Listing** -associated with the Mines Act 1890, Mines Act 1892, Mines Act 1897 and Mines Act 1910.
- **Quartz Reefers' Houses Serial Listing**- associated with the Miner's Rights,1855, and Mines Act1865.

The case study investigated the distribution, history and physical attributes of 19th century houses in Golden Square using the research outlined in Chapter Two of this Report. The findings highlight that there are certain principal characteristics that are shared between all 19th century former mine workers' houses, namely the commonality of their occurrence across mining land in Greater Bendigo. The scattered nature of their location warrants potential heritage serial listing. The evolution of each typology is sufficiently different to comprise four different types of serial listings. Each miner's house type is associated with different but progressive changes to the administration of mining land during the second half of the 19th century and early 20th century. These changes in design, form, scale and appearances are easily recognizable.

Although each of the four serial listings of miners' houses are different from each other in size, design and appearance, they all share a number of important underlying historic factors, which are outlined below:

- All miners who built their homes on mining land were holders of a Miner's Right. This right entitled them to take out a lease for a Residence Area on mining land and build a home, called a miner's house in this Report. The Miner's Right was an exclusive right that authorized certain rights and privileges and entitlements of the holder in the 'waste land' over which the British Crown claimed ownership. The Miner's Right only applied to auriferous land or 'waste land' that had been reserved by the British Crown as public land for its potential to yield gold. The holder of a Miner's Right did not need to be an applicant or holder of a lease for a mining tenement, that is, be an owner of a license for gold mining production. The Miner's Right was unique in the world. The miner's right of the Californian goldfields was not a legal document such as this.

- All miners' houses were built by holders of a Miner's Right on auriferous land, that is land that was reserved as goldfields' commons by the colonial government to protect the economic resources of the Crown. Gold belonged to the Crown. The goldfields' commons introduced an ancient land management system from England. Bendigo had the largest goldfields commons in Victoria, covering 318.569 square kilometres that was potentially available for housing.
- There were other types of commons such as town commons and farmer's commons among others. The goldfields' commons were specifically located on auriferous land and were controlled by the Courts of Mines and Warden's Courts (and after 1898 by the Department of Mines), that sat in each of the six or eight declared mining district jurisdictions. The Mine Wardens and Mining Board members were elected by the miners from the Bendigo Mining district. They judicated over the series of Mines and Residence Area Acts according to local circumstances and conditions.
- Mining law is unique in relation to the rights of the miner. The Warden's Court was established to protect those rights. This is part of the judicature system that was established on the Victorian goldfields.
- These auriferous lands served to accommodate thousands of newly arrived migrant miners and their families during the 1870s quartz boom outside township surveyed areas.
- The management of the Mines and Residence Area Acts did not extend to investment into public health, sanitation, rehabilitation of contaminated mines sites or road services. The mining areas were outside the jurisdiction of local municipal and borough councils.
- Like all commons, closure of the gold mines meant the land was abandoned and became waste lands. Many miners relocated their houses elsewhere.
- The opening up of licenses on auriferous lands through the 1890s Mines Act allowed other industries to operate on Crown Land, near an available workforce that was housed under the Miner's Right license.
- The Warden's Courts encouraged the purchase and conversion of Residence Areas to freehold title since the 1856 Mines Act, but particularly after the Mines Act 1892. Disposal of land for private sale was sporadic, unregulated and haphazard. It meant irregular shaped freehold titles were located in the midst of mining areas, often for over a century. The lots remained un-serviced and without formal roads until gradually incremental infill development and land sales transformed some areas during the 20th and 21st centuries.

The Planning Practice Notes 1 *Applying the Heritage Overlay, 2018* states as follows

Places that share a common history and/or significance, but which do not adjoin each other or form a geographical grouping may be considered for treatment as a single heritage place. Each place that forms part of the group might share a common statement of significance; a single entry in the Heritage Overlay Schedule and a single Heritage Overlay number.

Accordingly, the following are considerations for the proposed serial listings:

- The former miners' houses share the same heritage criteria, namely, historic, aesthetic, representative value and potential to yield further information. Differences in design typology, location and survival rates are associated with different Mines Acts.
- The former miners' houses are part of former historic mining settlements and mining communities.
- Their locations are tied to the geology of the place and former gold mines.
- They are generally associated with the peak periods of activity of some of the most active mining areas in Bendigo.
- They have recognisably common building typological form.
- Very few mining houses are intact to the period of construction due to changes in the Mines Acts, mining cycles and the freedom to make improvements without penalties.
- The miners' houses are now often surrounded by unrelated buildings and do not form cohesive visual heritage precincts.
- The original quarter acre blocks of the Miner's Residency areas have often been subdivided and in many cases neighbouring miners' cottages relocated.
- The street layouts were built later. The roads were superimposed upon irregular formation of scattered mining communities.
- The Mines Acts allowed extended secure tenure of very cheap social housing into the late 20th century that accommodated generational change, all at a very low annual rent, with security of tenure.
- They have strong historic and thematic associations with the development of different phases of mining in Bendigo and manufacturing industries;

3.2 Ironbark Miners' Cottages



Former alluvial miners' cottages in Panton Street, beside Golden Gully and Woodward Street.

Statement of Significance

What is Significant

Victoria became a key colony of the British Empire during the 19th century due to enormous wealth that was created by the Victorian goldfields. Colonial administration of the goldfields introduced a license and gold licensing system that implemented the 'Miner's Rights'. The rights afforded to miners under successive Mines and Residence Areas Acts were the single most influential government measure that changed the face of the central Victorian landscape. The provision of cheap public land on which to build, created high levels of working class home ownership by the end of the gold mining boom in 1900. It led to the construction of thousands of miners' cottages. These factors in conjunction with the simultaneous juxtaposition of the gold rush coming at the time of immense social upheaval in Europe led to an unprecedented long distance migration of family groups.

The most defining characteristic element of the central Victorian goldfields is the highly domesticated nature of the mining cultural landscape. The miner's cottage became a major feature of the former mining landscape of Central Victoria.

The miner's cottage belongs to a vernacular typology that despite regional differences can be linked to specific gold mining reefs, quartz and alluvial goldfields as well as different migrant groups, who incorporated their traditional building technologies in the construction of their homes. The earliest miner's house was a one or two room hut with gable ends referred to as the miner's cottage. Many of these cottages were built from the mid 1850s across Bendigo. Some were derived from timber framed tents with detached kitchens. They were often subsequently altered with additions, front verandahs and decorative details. The dimensions are small between 3.6 metres wide and approximately 6 metres long. This size was influenced by available building technology and materials. In most cases, houses were of timber composite structure with exterior timber weatherboard cladding, the roofs were covered in timber shingles, and later corrugated metal sheets and the chimneys were external. There was a great diversity in dimensions and proportioning of window and door sizes and spacing. Other building materials included handmade red brick, local stone, slag from the mines and mud pise blocks.

The very small miners' cottages are associated with the early development of the goldfields during the alluvial rushes and early quartz finds. They are governed by the Miner's Right Act, 1855, and the Mines Act, 1865. The greatest agent for determining the incidence of these miners' cottages is geology and landscape. Each gold rush area led to different responses to the establishment of shelter and construction of miner's cottages. Typically, this type of miner's cottage is found interspersed throughout the Bendigo mining district. Examples are associated with the 12 clusters of extensive mine sites that comprise 44 important former gold mines distributed along the 14 main lines of gold bearing reef such as the great alluvial and early quartz mining areas of Long Gully, Ironbark, Californian Gully, Sparrowhawk Gully, Spring Gully, Golden Gully, Bendigo Creek and New Chum Creek among many other former alluvial mining creeks and gullies.

The miners' cottages located in Long Gully and Ironbark are associated with some of the earliest quartz mines in Bendigo. They were built by both German and Cornish miners, many of them are exceedingly small in scale. Many of the German influenced cottages have pise or mud brick components, while the Cornish cottages were often made of random stone walls or incorporate stone walling. Often the cottages are a composite structure, a mixture of timber, stone, brick and pise and have been continually adapted with minor changes over the years. They have a high level of integrity although many massive chimneys have been removed and extensions added in later years.

The majority of cottages appear to have been erected in the mid-1860s and 1870s on miner's Residence Areas by miners themselves. They were built on Crown land beside company mines prior to the survey of roads and seldom have a formal alignment with later street patterns. Additions that incorporate fashionable contemporary architectural detailing are small in scale and characteristically correspond to periods of prosperity, when mining work was stable. The cottages cluster around the upper contours of the slopes near gullies and water supplies and have a relationship to each other that reflects social and family ties.

How is it Significant?

The collection of miners' cottages associated with the Miner's Right 1855 and Mines Act 1865 and the Residence Area Act, 1881, from areas such as Long Gully, Ironbark, Victoria Hill, Ironbark Hill, Golden Gully and other former mining areas, auriferous lands and Bendigo goldfields commons have historic, aesthetic, representative significance as well as potential to yield further knowledge at a local level to the City of Bendigo. (Criteria A, C, D and E)

Why is it Significant?

Criterion A: Importance to the course, or pattern, of Victoria's cultural history

The miners' cottages of the Long Gully, Victoria Hill and Ironbark Hill and other former mining areas such as New Chum and Golden Gully are historically significant as the homes of the working class miners who serviced some of the wealthiest and deep quartz mines of Bendigo and Eastern Australia as both waged miners and Tribute miners.

The miners' cottages are representative of the diverse range of miners' cottages including examples of the typical Cornish vernacular long house built by early emigrant Cornish, who formed a significant ethnic group of miners in the area. They demonstrate the way in which design, fabric and decorative embellishments reflected the evolving status of the owners as immigrant miners.

The miners' cottages provide an important historic insight into the domestic lives and typical homes of Cornish and German miners, among other migrants, some of whom worked in the related trades as blacksmiths, engine drivers, carriers and mine engineers.

Criterion B: Possession of uncommon, rare or endangered aspects of Victoria's cultural history.

The miners' cottages of the Long Gully, Victoria Hill, Ironbark Hill, Golden Gully and other former mining areas are associated with one of the unique features of the Victorian goldfields- the miners' Residence Area, which allowed the development of unregulated settlement on Crown land amongst mining sites. Many cottages are still intact and provide a rare record of the home occupiers such as in the Ironbark Hill area during the period, 1866-1882, listing their occupations as miners or associated jobs such as carter, engine driver, blacksmith and mine manager.

The miners' cottages and their large gardens in Moonta area are self-made community housing that resulted from adverse possession of Crown land at the time of the 1890s depression. In Victoria The cottages belong to a group of increasingly rare structures that show a combined use of timber weatherboards and pise, rammed earth construction techniques, the mud coming from the nearby creek. Groups of mud adobe and pise rammed earth dwellings associated with the German community were once a common feature on the Bendigo goldfields and in the former Long Gully Creek area but are now becoming increasingly rare.

The miners' cottages form an important visual element in the cultural landscape of Ironbark and Long Gully. They clearly tell the story of the early alluvial, puddling and deep quartz company mining and workings of the tailings in Bendigo from the 1850s through to early 1950s.

Criterion C: Potential to yield information that will contribute to an understanding of Victoria's cultural history.

The miners' cottages the Long Gully, Victoria Hill, Ironbark Hill, Golden Gully and other former mining areas are associated with extensive archival materials, including but not restricted to the Quarterly Reports of the Mining Surveyors and Registrars, 1863-91, detailed social demographic information since 1861 particularly in Bendigo and Ballarat goldfields, scholarly research and publications as well as contemporary journals and diaries.

Criterion D: Importance in demonstrating the principal characteristics of a class of cultural places or environments.

Criterion E: importance in exhibiting aesthetic characteristics and/or in exhibiting richness, diversity or unusual integration of features.

The miners' cottages of the Long Gully, Victoria Hill, Ironbark Hill, Golden Gully and other and other former mining areas are an excellent representative example of the early gabled ended miner's cottage type, particularly associated with German and Cornish miners of Long Gully and Ironbark Hill.

The miners' cottages at numbers 19, 21, 25 and 24 Lazarus Street are excellent representative examples of miner's cottages particularly associated with the influence of the German community, who worked nearby on the gold mining works along Long Gully, Derwent and Sparrowhawk Gullies, where they built most of their building from locally made mud bricks and pise. All miners' cottages in the Moonta precinct are significant features and are an excellent architectural record of some of the earliest types and designs of miners' cottage. The two former weatherboard and timber cottages at 7 and 9 Harvey Street are significant as highly intact mid 19th century miners' cottages erected on Miners Residency Areas, which were retained on Crown land until the 21st century.

The miners' cottages display a level of intactness and authenticity in terms of their architectural character, form and scale that demonstrates the principle characteristics of cottages, built by unemployed miners and sustenance workers, during the depression years of 1890s and 1930s.

The miners' cottages of the Long Gully, Victoria Hill, Ironbark Hill, Golden Gully and other and other former mining areas have aesthetic significance as they illustrate the rich diversity of a working class miners' cottages, a key feature of the Victorian 19th century goldfields. The size, shape and design of miners' cottages provide a historical and architectural record of a vernacular class of buildings.

Inclusion of additional houses: The lists of cottages identified in the *Miner's Cottages Survey, 2017, and in this Report, Golden Square Area:* Adam Street, 37, Hollow Street, 1, Belle Vue Road, 48, 54, Thistle Street, 15, Woodward Street, 274, 270., Panton Street, 611, 612, 613, 614, 615, 623, 629.

Assessment against the Criteria HERCON CRITERIA

Criterion A Importance to the course or pattern of our cultural or natural history.

Criterion B Possession of uncommon rare or endangers aspects of our cultural or natural history.

Criterion C Potential to yield information that will contribute to an understanding of our cultural or natural history.

Criterion D Importance in demonstrating the principal characteristics of a class of cultural or natural places or environments.

Criterion E Importance in exhibiting particular aesthetic characteristics. **Criterion F** Importance in demonstrating a high degree of creative or technical achievement at a particular period.

Criterion G Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of the continuing and developing cultural traditions.

Criterion H Special association with the life or works of a person, or group of persons, of importance in our history.

Recommendations 2010 /External Paint Controls: No /Internal Alteration Controls: No
Tree Controls: See Ironbark Heritage Area – Incorporated Plan /Fences & Outbuildings: No
Prohibited Uses May Be Permitted: No /Incorporated Plan: Yes (Incorporated Plan - Miner's Cottages) Aboriginal Heritage Place: No.

3.3 Quartz Gold Boom Miners' Houses



Former quartz boom miners' cottages in MacDougall Street and Woodward Street beside Golden Gully and the far right in Adam Street.

Statement of Significance

What is Significant?

The 1870s quartz mining boom in the Greater Bendigo area generated a huge influx of gold miners and their families seeking waged work in the gold quartz mines. Wealth generated by the quartz mining attracted a large construction and building industry in Bendigo. Mass production of dimensioned timber products allowed quick cheap prefabricated relocatable timber houses for the migrant waged miners and their families. The holder of a Miner's Right license was entitled to erect a house, collect timber, graze animals and mine for gold on their quarter acre block of auriferous land. The modest hip roof timber, simple house built with commercially sawn timber that could be erected quickly on Crown land was the means by which miners arriving in Bendigo with their families could be rapidly housed.

The use of timber frame construction technology was new at the time and is associated with mass social housing on the Victorian goldfields. It allowed the miner to easily relocate his house to different gold fields and mining areas. The typical design consisted of a modest square shaped house consisting of either two or four rooms, with hip roof, corrugated roof, timber frame, exterior and interior lining boards. The houses were erected on mining land and are associated with the Mines Act, 1865. The threat of being moved off the land by expanding mining operations was removed by the Residence Areas Act, 1881. This made it more likely, depending on the fortunes of the owners, to erect additions, alterations and decorative external details. Competitive sale by public auction was also removed. The Amendment in 1884 removed competitive aspects of auction and controlled annual licences fees of the Residence Areas on auriferous land.

These small 1870s and 1880s miners' houses formed scattered clusters of settlement grouped around the company mines. The houses were built prior to the survey of roads and there was no formal alignment with later street patterns. The houses form small settlements around the main mine shafts and battery buildings. Additions to the houses were undertaken depending on the success of the mine and could incorporate fashionable contemporary architectural detailing. Generally, this type of miners' house is small in scale and characteristically correspond to periods of prosperity, such as the great quartz boom of 1870s, when waged mining work was stable.

By the 1880s the housing stock could be easily relocated to another Residence Area without paying a penalty. By then, the holder of the Miner's Right could have several Residence Areas

and lease out the properties. And improvements could be inherited by family members. This allowed entry of non-miners, other industrial or manufacturing workers to be housed in former miners' houses. The holder of the Miner's Right could become a speculative landlord. It was common to find large groups of houses headed by widows subsisting on cheap rents, renting out rooms and operating home-based businesses.

Bendigo was an 'instant city'. The opening up of quartz reefs was labour intensive, labour was recruited in the space of a few years, miners moved into the city in family groups and working-class families needed to be housed 'instantly'. The solution to this problem was timber-framed housing built on Crown land. The early use of timber distinguishes Bendigo from the inner working-class suburbs of Melbourne- Hotham (North Melbourne), West Melbourne or Carlton (in the City of Melbourne). This pattern of timber housing was adopted in Melbourne working class suburbs of the 1880s – most importantly Footscray and Brunswick.

How is it Significant?

The collection of miners' houses associated with the Miner's Right 1855, Mines Acts, 1865, 1881 and 1884 Amendment on former goldfields' commons, auriferous or mining lands in the greater Bendigo area have historic, aesthetic, representative significance as well as potential to yield further knowledge at a local level to the City of Bendigo. (Criteria A, C, D and E)

Why is it Significant?

Criterion A: Importance to the course, or pattern, of Victoria's cultural history.

The miners' houses are historically significant as the homes of the waged miners associated with the influx of thousands of miners and their families to participate in the great quartz reef gold mining boom period in Bendigo from the late 1860s to the mid 1870s. The Greater Bendigo area was one of the richest gold mining areas at the time in Australia. The miners' houses provide an important historic insight into the domestic lives and typical homes of miners, some of whom worked in the related trades as blacksmiths, engine drivers, carriers and mine engineers. They are associated with the development of the construction industry in Bendigo and widespread use of timber frame construction technology used to solve the many issues of mass social housing on the Victorian goldfields.

The miners' houses are historically significant for their association with the Mines Act, 1865, and the Residence Areas Act 1881 and the Amendment in 1884 that removed competitive aspects of auction and controlled annual licences fees of the Residence Areas on auriferous land.

Criterion C: Potential to yield information that will contribute to an understanding of Victoria's cultural history.

The miners' houses associated with the quartz gold mining boom in Greater Bendigo area have potential to yield further information as their location indicates the distribution of gold reserves and the hundreds of mining tenements that were spread along the main lines of reef. The miners' houses are associated with extensive archival materials, including but not restricted to the Quarterly Reports of the Mining Surveyors and Registrars, 1863-91, detailed social demographic information since 1861 particularly in Bendigo and Ballarat goldfields, scholarly research and publications as well as contemporary journals and diaries.

Criterion D: Importance in demonstrating the principal characteristics of a class of cultural places or environments.

Criterion E: importance in exhibiting aesthetic characteristics and/or in exhibiting richness, diversity or unusual integration of features.

The miners' houses associated with the quartz gold mining boom have aesthetic and representative significance for the early use of timber frame construction technology, which was new at the time. The examples of this generic type of prefabricated house is associated with mass housing on the Victorian goldfields. By the late 1870s and 1880s houses became more standardized and were constructed by skilled carpenters, with timber frames and rafter roof systems. The timber frame weatherboard miners' houses are significant representative examples of the introduction of mass produced dimensioned prefabricated timber construction technology which allowed standardized dimensions, cheap relocatable housing to be built quickly and also disassembled.

Inclusion of additional houses:

Golden Square Area: Macdougall Street, 4, 5, 10, 13, 15, 16, 20, 21, 22, 23, 25, 26, 28, 29, 34, 35a, 36, 41, 45, 48.

Allingham Street, 2,4, Laurel Street, 8.

Woodward Street, 344, 262. Belle Vue Road, 3, 25,27, 35, 38, 51, 58, 60, 56, 55, 57.

Abel, 1, Adams, 23, 26, 28, 30, 31, 32, 34,36, 38, 40, 42,44.

McKenzie Street, 40, 44, 48, 65, 67, Young Street,2, 4,

Assessment against the Criteria HERCON CRITERIA

Criterion A Importance to the course or pattern of our cultural or natural history.

Criterion B Possession of uncommon rare or endangers aspects of our cultural or natural history.

Criterion C Potential to yield information that will contribute to an understanding of our cultural or natural history.

Criterion D Importance in demonstrating the principal characteristics of a class of cultural or natural places or environments.

Criterion E Importance in exhibiting particular aesthetic characteristics. **Criterion F** Importance in demonstrating a high degree of creative or technical achievement at a particular period.

Criterion G Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of the continuing and developing cultural traditions.

Criterion H Special association with the life or works of a person, or group of persons, of importance in our history.

Recommendations External Paint Controls: No. Internal Alteration Controls: No.

Tree Controls: No. Fences & Outbuildings: No. Prohibited Uses May Be Permitted: No

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3.4 Workers and Mine Speculators' Houses



Adam Street.



Adam Street.



Old High Street



Mackenzie Street.



Fir Street



Young Street early and later additions.

Statement of Significance

What is Significant?

A revival in the quartz mining operations during the 1890s led to a mining boom in Bendigo. The associated Mines Act, 1890, and Mines Act, 1892, had an important impact on the development of housing across the goldfields' commons, mining land of the greater Bendigo area. In 1891 there were 2,400 Residence Areas with associated miners' houses. The Mines Act, 1892, which upheld the right of the Crown to ownership of minerals on all lands, meant that sale of Crown land for private ownership was now actively encouraged. It could be alienated without the Crown losing ownership of the minerals beneath the soil. In addition, the Act negated the power of mining officials to cancel Residence Areas for the purpose of mining operations.

The 1890 and 1897 Mines Acts permitted residency areas to be leased by non-miners, in effect opening up abandoned or unused mining land to development. Conversion of the land to freehold title was encouraged. Certainty of tenure, cheap land and growth of the middle class led to a boom in housing construction at a time when the rest of Victoria was experiencing economic depression. The strong local building construction industry, presence of a large number of prominent émigré architectural firms, production of pattern books and activity of building societies such as the early Bendigo Bank which provided mortgages for prospective property owners, all led to a renewed optimism in house construction with the popularity of decorative styles. Many houses now had five to six or even eight rooms. The designs were more elaborate with intricate decorative detailing, and complex roof forms and large gardens.

The more sophisticated occupational structure that emerged with a mature mining community required the services of a range of unskilled workers and tradesmen. The late expansion of the Residence Area on auriferous land included non-miners, that is manual and skilled workers and women holders of crown land. The Mines Act, 1897, considerably reduced annual fees of the Residence Areas and the Mines Act, 1910, permitted the transfer of Residence Areas to widows whose husbands had died intestate and without probate, to continue occupation and furthermore permit inheritance of these places. The consequence of these acts ensured the

continued availability of cheap housing for workers. It also provided full security of land occupation resulting in increased investment in house construction and gradual conversion to freehold title. The evolution of the insecure miner's right to a more permanent miner's residence area, which by the mid-1880s provided all the benefits of freehold, led to the construction of grander bigger homes by the 1890s.

How is it Significant?

The collection of miners' houses associated with the Mines Acts, 1890, 1892, 1897 and 1910, on former goldfields' commons, auriferous or mining lands in the greater Bendigo area have historic, representative and aesthetic significance as well as potential to yield further knowledge at a local level to the City of Bendigo. (Criteria A, B, C, D, E)

Why is it Significant?

Criterion A: Importance to the course, or pattern, of Victoria's cultural history.

The miners' houses on former mines lands in the Bendigo area are historically significant during a transition period of the 1890s when former miner's residency areas were opened up to other occupations. Newly built houses demonstrate the way in which design, fabric and decorative embellishments reflected the evolving status of the owners in a mature mining era.

The miners' houses have historic significance associated with the Mines Act, 1890, Mines Act, 1892, Mines Act, 1897, and the Mines Act, 1910, which ensured the availability of cheap housing for workers. It also provided full security of land occupation resulting in increased investment in larger more opulent house construction and the gradual conversion of many of the former mining lands to freehold title.

Criterion B: Possession of uncommon, rare or endangered aspects of Victoria's cultural history.

The later miners' houses have rarity value as they are associated with a maturing gold mining industry in the Greater Bendigo area. By the end of the twentieth century the provisions of the Mines and Residence Area Acts provided cheap housing for workers on the fringes of the urban municipalities and in the adjoining rural shires. A stable quartz mining industry encouraged ancillary industries as well as mining related. In addition, manufacturing located industrial workers in the inner city and the north-eastern fringes. In places like Golden Square where mining land met the inner city there was an intermingling of mining and manufacturing employment, this resulted in the transition of former mining housing into housing for industrial and manufacturing workers. The different types of land tenure that co-existed side by side for much of the 20th and early 21st century produced some of the most heterogeneous mix of housing styles in the Greater Bendigo area, which is rare on a statewide scale.

Criterion C: Potential to yield information that will contribute to an understanding of Victoria's cultural history.

The later miners' houses have significance for their capacity to yield further information about the development of judicature in Australian mining law. This is the principle that legislation such as the Mines Acts is separate from judicature such as the Warden's Courts that represented the rights of the holders of Miner's Rights in disputes over administration and interpretation of those acts. The later miners' houses remain as physical evidence that describes the manner in which the colonial government managed access to Crown land through proclamation of the goldfields' commons over auriferous land and controlled development through the Department

of Mines, Courts of Mines and Wardens' Courts. The manner in which colonial government policies and both mining tenements and Residence Area leases and licences were managed is both extraordinary and little researched.

Criterion D: Importance in demonstrating the principal characteristics of a class of cultural places or environments.

Criterion E: importance in exhibiting aesthetic characteristics and/or in exhibiting richness, diversity or unusual integration of features.

The later miners' houses located on the former Bendigo goldfields' commons, auriferous or mining lands, in the greater Bendigo area have representative and aesthetic significance as they provide a remarkable record of the development of mass social housing on a large scale during the 19th century. The legacy of different housing designs and features have aesthetic significance in demonstrating the rich diversity of working-class miners' housing, a key feature of the Victorian 19th century goldfields.

The Mines Acts of 1890, 1897 and 1910 introduced a complexity to the Residency Areas that resulted in different attributes to the miners' houses. The diversification of the mining policy with regard to disposal of wasteland, abandoned mining lands, permitted new opportunities for the private individual in outer areas of Bendigo that enabled a transition to working class and middleclass suburbs, and also created a rare mix of housing types.

Inclusion of additional houses:

Golden Square Area: 66,62. 58, Old High Street, 290, 292, 300, 324, 330 Mackenzie Street, 23 Fir Street 383 Midland Highway

Assessment against the Criteria HERCON CRITERIA

Criterion A Importance to the course or pattern of our cultural or natural history.

Criterion B Possession of uncommon rare or endangers aspects of our cultural or natural history.

Criterion C Potential to yield information that will contribute to an understanding of our cultural or natural history.

Criterion D Importance in demonstrating the principal characteristics of a class of cultural or natural places or environments.

Criterion E Importance in exhibiting particular aesthetic characteristics. **Criterion F** Importance in demonstrating a high degree of creative or technical achievement at a particular period.

Criterion G Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of the continuing and developing cultural traditions.

Criterion H Special association with the life or works of a person, or group of persons, of importance in our history.

Recommendations External Paint Controls: No. Internal Alteration Controls: No.

Tree Controls: No. Fences & Outbuildings: No. Prohibited Uses May Be Permitted: No

3.5: Quartz Reefers' Houses



33 Belle Vue Rd



44 Belle Vue Rd

Statement of Significance

What is Significant?

The colonial regency styled 19th century miners' houses built by aspiring speculators and mine owners, the first mining tenement leasee, is a characteristic of the greater Bendigo area. Many of these reefers and investors built their homes near their mining tenements and mines. They took advantage of the Mines Act 1865 to convert their Miner's Rights into freehold properties. Their homes were usually built of brick or stone and are spread across the quartz mining district. The first mining tenement leasee is a most interesting feature of the Greater Bendigo goldfields. Their houses usually became the centre of smaller concentrations of miners' houses, like small settlements they grouped around the mine owner's homes, mining plant – head frames, engine houses and battery houses. The dispersed nature of the industry encouraged scattered clusters of this type of unit across the mining lands.

After mining ceased or was abandoned, the environs of the small mining communities usually became the site of noxious industries, decaying machinery, open shafts, contaminated dust blown mullock heaps and tailings. Many working miners relocated their houses, in contrast mine owners retained their homes, which slowly lost rateable value. They become surrounded by abandoned mining land, wasteland, that became overgrown. Slum conditions prevail.

The quartz reefers' houses remained in isolated pockets, often in landscapes that were rehabilitated during the mid 20th century when former mining land was reclaimed for state social housing programs. A fine example is the house of Robert Lisle, a substantial house built by an early quartz reefer. In 1864 Lisle, whose house is located at 44 Belle Vue Road was listed on the Sandhurst rate books as the rate payer of the Union Company's properties at Sheepshead Gully.

Development of these houses on Crown land emerged under an unprecedented colonial gold mining licence system and the development of Victorian mining law, which spread throughout Australia and the British colonies. In conjunction with the Miner's Rights, Residency Areas and Mines Acts of 1855 to 1910 the development of judicature in Australian and mining legislation was unique in the world. It influenced the mining landscape of Greater Bendigo, mining work

practices and introduced the possibility of small scale, private mining operations and housing on Crown Land.⁵³

How is it Significant?

The collection of quartz reef mine owners' or speculators' houses on former mines lands in the Bendigo area associated with the Mines Act 1855 and 1865 have historic and aesthetic significance and representative heritage value at a state level to the City of Bendigo. (Criteria A, D and E).

Why is it Significant?

Criterion A: Importance to the course, or pattern, of Victoria's cultural history.

The colonial regency styled 19th century miners' houses built by aspiring speculators and quartz reefers have historic significance as they are associated with the first mining tenement leasees. It is a characteristic of the greater Bendigo area that many of these reefers and investors built their homes near their mining tenements and mines. They took advantage of the Mines Act 1865 to convert their Miner's Rights into freehold properties. Their homes were usually built of brick or stone and are spread across the quartz mining district.

The mine owners' or speculators' houses on former mines lands in the Bendigo area are historically significant as a record of the many mine owners that contributed to the wealth and reputation of Bendigo as the leading deep quartz mining area in Australia during the 19th century.

Criterion D: Importance in demonstrating the principal characteristics of a class of cultural places or environments.

Criterion E: importance in exhibiting aesthetic characteristics and/or in exhibiting richness, diversity or unusual integration of features.

The mine owners' or speculators' houses on former mines lands in the Bendigo area are an excellent representative example of one of the many different types of miners' houses. The mine owners' or speculators' houses are representative of a particular mining structure in the Bendigo goldfields. They demonstrate a way of life, where design, fabric and decorative embellishments reflected the evolving status of the owners.

They have aesthetic significance as they illustrate the rich diversity of housing types of the Victorian 19th century goldfields. They have high aesthetically significance as a special type of housing that can be found on former mine land that is associated with the early conversion to freehold title under the 1865 Mines Act. Examples of these 19th century houses can date from the late 1850s to the 1900. They are marked by their difference from other miners' houses with regard to scale, grander, and architect designs. Other homes are associated with wealthy early speculators who were often the original mining leasees of mining tenements. Later they became successful mine owners, who purchased and built on their original mining leases. The mining tenements are usually small scale and located on the outskirts of Bendigo.

They have high aesthetically significance as early examples of miners' houses designed in the Colonial Regency architectural style. Such early quartz reefers' houses are usually small in scale, brick or stone construction, often well-articulated in form, with large hip roofs and sweeping

⁵³ Jean, A., Ironbark Heritage Study, 2010, City of Greater Bendigo

encircling verandahs. The siting of these houses is orientated towards the associated mining operations and mine sites and not the road.

Inclusion of houses:

Golden Square Area: Example of existing individual heritage overlay listing for Belle Vue Road, 33 and 44. There are a number of other examples.

Assessment against the Criteria HERCON CRITERIA

Criterion A Importance to the course or pattern of our cultural or natural history.

Criterion B Possession of uncommon rare or endangers aspects of our cultural or natural history.

Criterion C Potential to yield information that will contribute to an understanding of our cultural or natural history.

Criterion D Importance in demonstrating the principal characteristics of a class of cultural or natural places or environments.

Criterion E Importance in exhibiting particular aesthetic characteristics. **Criterion F** Importance in demonstrating a high degree of creative or technical achievement at a particular period.

Criterion G Strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. This includes the significance of a place to Indigenous peoples as part of the continuing and developing cultural traditions.

Criterion H Special association with the life or works of a person, or group of persons, of importance in our history.

Recommendations External Paint Controls: No. Internal Alteration Controls: No.

Tree Controls: Yes. Fences & Outbuildings: No. Prohibited Uses May Be Permitted: No.

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Charles Fahey has researched Victorian and Australian history for over thirty years with numerous publications in the fields of Labour History and the history of rural and regional Australia. He is a recognized authority on the history of the Victorian Goldfields. His work on the goldfields has focused on the demography of nineteenth century mining communities and the establishment of mining households. He has explored the history of goldfields industrial relations and the business and domestic life of the mining elite on the Bendigo goldfield. Charles Fahey has won Large Discovery and Linkage Grants from the Australian Research Council. He is currently working on an ARC Linkage Grant - 'Faith on the Goldfields'. In 2020 he published (with Richard Broome Andrea Gaynor and Katie Holmes) *Mallee Country: Land, People, History*, Monash University Publishing, 2020 (released November 2019). This was the outcome of a Large ARC Discovery Grant.

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