

Digging Deeper: The Archaeology of Gold Mining in Queensland

Geraldine Mate^{1,2}

1 *The Workshops Rail Museum, Queensland Museum, North Ipswich QLD 4305, Australia* geraldine.mate@qm.qld.gov.au

2 *College of Arts, Society and Education, James Cook University, PO Box 6811, Cairns QLD 4870, Australia*

From the 1860s mining has been a key feature of the economic landscape of Queensland. In excess of 40 investigations into historical goldfields in Queensland have been undertaken since the late 1970s, falling predominantly into two fields – historical examinations and cultural heritage surveys. This review of archaeological work on historical gold mining in Queensland examines the geographic areas investigated, the approaches used and analyses undertaken. The results presented indicate there are limitations in our current understandings and interpretations of the archaeology of historical goldfields. Studies have primarily focussed on identification of industrial heritage, rather than encompassing both industrial and domestic domains. Work predominantly comprises brief cultural heritage surveys or historical studies with supplementary reference to material remnants rather than full-scale comprehensive and systematic survey or excavation. Despite the range of investigations, there are few syntheses capitalising on the body of work undertaken and little in-depth research of people, place and behaviour is being carried out. This overview is used to suggest possible frameworks for more detailed analysis, allowing a fuller understanding of social, cultural and industrial facets of these settlements.

Introduction

From the 1860s mining has been a key feature in the economic landscape across Australia. In Queensland in the second half of the nineteenth century, gold exploration and mining was a primary factor in the impetus for the European settlement of remote places such as the far north (Bell 1980:5; Johnston 1982:42; also see Grimwade 1992:4) and led to an increase in the settlement of areas already occupied by Europeans for grazing. This activity resulted in a proliferation of towns large and small related to mining, many of which were deserted as quickly as they were founded.

Continued growth of the mining sector in Queensland across the last century, while leading to financial benefits, has resulted in the gradual erasure of archaeological remnants of historical mining, particularly in areas where lower grade ore left by historical processes is now considered economically viable. As has been explored elsewhere (Hardesty 2010:308; Metheny 2010), the blanket approach of mining in the late twentieth and early twenty-first centuries, driven by economies of scale, obliterate earlier remnants. In addition, there is continuing interest from the general public in the remnants of gold mining in particular, fed by the romanticised picture of gold exploration and mining in Queensland (e.g. Holthouse 1980; Idriess 1958). Narratives focus on rushes to remote places such as the Palmer River and the somehow evocative picture of nearly deserted townships like Ravenswood, contrasting with wealthy towns like Charters Towers (Figure 1). These interests lead to pressures of their own in relation to gold mining heritage, with steadily increasing 4WD access making sites evermore vulnerable to vandalism, theft and even well-meaning curation by the public. The impact of these pressures, together with the gradual encroachment of larger-scale mining in many mineral fields, is a steadily diminishing archaeological record of nineteenth century settlements and technology related to gold mining.

While the depiction of historical mining has been fed in the past by popular publications focussing on the

‘digger’ character, in reality the social landscape was far more complex than the traditional picture of a gold rush, with women and children present on goldfields, settlements building up and resulting in towns that in some cases lasted and in other cases did not. The discovery of gold brought, in particular, a flood of non-property owners who took up land associated with mining settlements, with people setting up businesses supporting the local miners and in some cases underwriting them. As new settlements developed, a range of administrators from government departments often came as well. In contrast to the picture of individual miners staking their claim, there was often a complex interplay of companies and individuals creating joint ventures operating on the fields. However, in keeping with the tough life on the goldfields characterised in accounts in popular literature, gold miners and their families often lived in relatively remote areas, faced economic and physical hardships, had transport and equipment difficulties associated with isolation, and had to deal with administrative inconsistencies.

Much of this picture of gold field life has been provided by historians examining the documentation from that time (e.g. Kirkman 1980; Menghetti 1980; Wegner 1980). However, the descriptions from historians – based on sources such as Mining Warden Reports, court documents and newspaper articles – do not necessarily reflect the entirety of the social landscape of the nineteenth century gold mining settlements of Queensland. As many authors (e.g. Comber 1995; Kerr 1992; Lawrence 2000) have pointed out, the contemporary historical documentation of mining only covers a small group of the population, is often incomplete and frequently inaccurate. In addition, the approach used by historians tends to differ from those of archaeologists, not only in the differing emphases on material remnants but also through focus on frameworks based on political and economic influences rather than the physical manifestations and experiences of mining. It is important that, in conjunction with historical

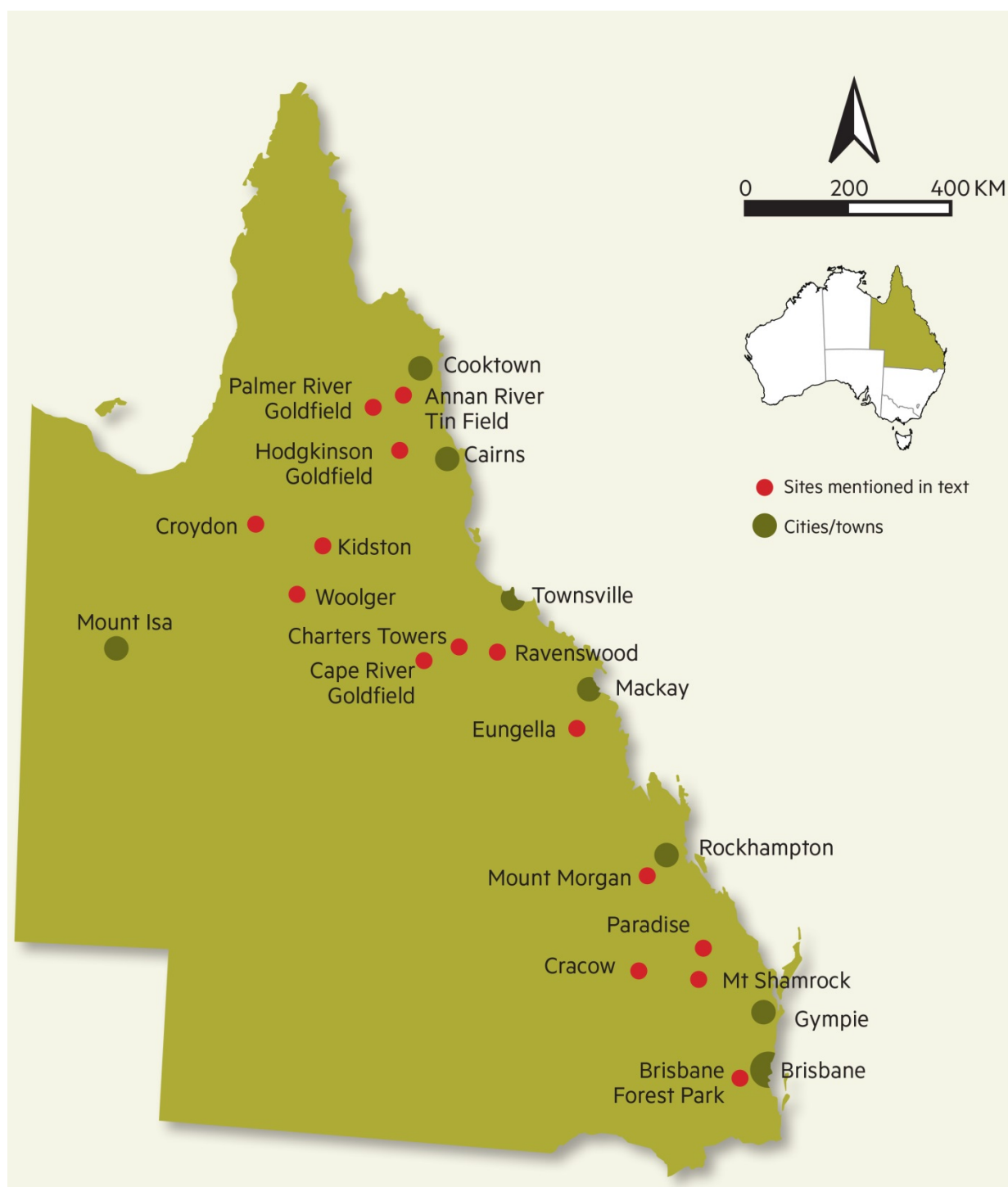


Figure 1. Map showing places mentioned in the text.

documentation, the archaeological record is used to give a clearer picture of gold mining and processing procedures and the nature of the settlement florescence and abandonment associated with the gold mining activity. The information of the finer details of settlements, and the way people moved into and occupied areas of mining provides us with a better understanding of the development of these towns in the past. It may also be possible to draw out meaningful case studies for social impacts of future mining based on archaeological investigations, although to date little if any work has centred on re-examining past mining settlements as lessons for future social impact. Nevertheless, research into current development of functional mining settlements

and their social impact is a key area of research in Queensland (Sustainable Minerals Institute 2014).

In order to understand the current state of knowledge about mining in the past, various studies utilising archaeological remnants that have been undertaken on historic gold mining settlements in Queensland over the last 40 years are reviewed here.

Regional Surveys and Cultural Heritage Management (CHM) Investigations

Although a great deal of the published work on gold mining has been based on historical research rather than archaeological investigation, since the 1970s, in excess of 40 investigations into remnant material on historical

goldfields in Queensland have been undertaken (Table 1). This summary does not represent all archaeological surveys undertaken over the last 40 years but is an inventory of those projects which have either been published or have produced reports accessible through government department libraries. There are a number of additional cultural heritage reports that are not readily accessible due to commercial-in-confidence restrictions, heritage disputes, or that are simply held in company records inaccessible to researchers, which are therefore not included in these figures. While this 'grey' literature may constitute additional archaeological investigations across Queensland, it is unlikely that it would substantially differ in content to the more readily accessible heritage reports reviewed here.

In many early works, rather than a formal archaeological investigation, research based primarily on the historical record has been undertaken and then supplemented by examples of archaeological remnants. The amount and nature of archival documentation available lends itself to historical research, particularly enabling emphasis on business details, mining technologies, and regulations. While these investigations tend not to be conducted using archaeological frameworks, they are nevertheless included as they deal with material remnants as well as archival detail. The bulk of archaeological studies (70%) have been carried out for the purpose of cultural heritage management (particularly on the Palmer Goldfield Reserve), resulting in unpublished reports with the majority of investigations conducted through the 1990s (Figure 2). Around 38% of the studies examined (mainly those conducted in the 1980s and 1990s) focus on particular features (most typically the remnants of mining and processing) and are presented in the form of catalogues of equipment types and assessments of relative states of preservation. While more than 60% of studies undertake some assessment of domestic remnants (Figure 3), as the synopsis summarised in Table 1 demonstrates, the majority do not present any finer detailed analysis beyond the presence/absence of domestic artefacts and/or remnants of domestic residences. Analysis of domestic, agricultural or industrial artefacts, fine-grained evidence from settlements, assessments of pathways, space and land-use, for example, are generally neglected in these studies. This lack of analysis may in part be a result of the legislative framework operating in Queensland, which does not address post-survey/excavation analytical requirements.

The intent, style and content of the work published has also been assessed for each individual project (Table 1) and sheds further light on the information available as a result of these investigations. In one of the more widely cited works on historic mining in Queensland, Bell (1987) presented an examination of industrial remains on the Palmer River Goldfield in Far North Queensland, describing major reef mining and processing sites across the area. This study focussed on providing historical detail, descriptions of equipment, photographs and drawings of selected sites, together with a general discussion of the reasons for the selection of particular types of technology. With the exception of the Mining Warden's residence at Palmerville (Bell 1987:15-17), this work did not include associated dwellings or settlements. However, Bell (1984) also conducted an extensive survey

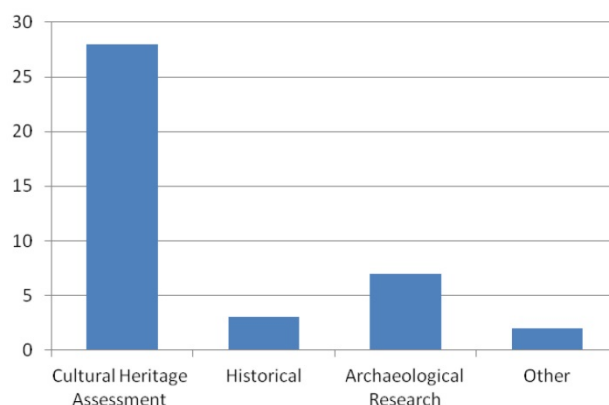


Figure 2. Proportion of study type undertaken in the investigation of gold mining remnants.

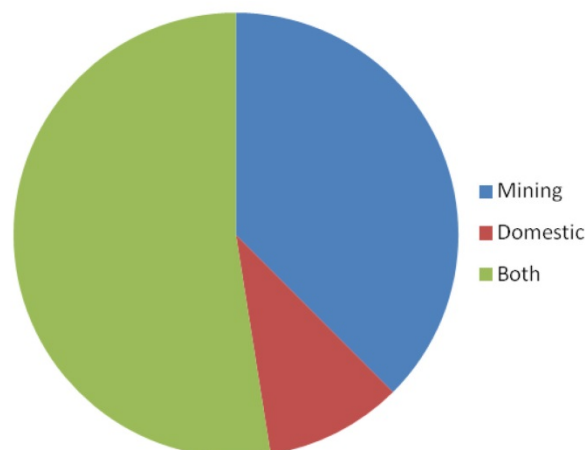


Figure 3. Proportion of gold mining surveys related to mining and/or domestic remnants.

of typical dwellings in the mining towns of north Queensland, identifying a range of characteristic house types. While admitting broader social influences, such as the influence of traditional British methods on building, Bell particularly focussed on practical reasons for the variety of house sizes and types (Bell 1984; also see Bell 1998 for a comparative discussion on mining settlements across Australia).

Two other regional studies have focussed on mining remains in relatively defined areas. Tresize (1989) carried out a survey of mining remnants in the Brisbane Forest Park area, examining 'landscape planning and extractive material' in the project. The report contains a description of the present condition of the remnants and a brief history for each mine, and is supplemented with plans showing the location of mines, spoil heaps, batteries, steam engines and so on. This was an informal study, with no specific survey area identified, no detailed recording of features or artefacts and no interpretive analysis included in the report. Moylan (1996, 1997) carried out a similar survey of goldfields near Mackay, examining the Eungella, Mount Britton, Mount Spencer, Grasstrees, Normanby and Marengo goldfields. He focussed on interesting mining remnants, also in a more informal manner than the work by Bell. The report includes a description of site visits, photographs and some historical information. However, it was not a full-scale survey and did not identify or map the distribution of

features; rather it provided a brief summary of the types of artefacts found.

In a more specific investigation, Kirwan (1991) carried out a survey of the Mount Morgan Mine in Central Queensland and associated processing buildings. Mount Morgan is an historically significant mine, and the survey was undertaken 'to locate and record extant remains across areas of specific interest' (Kirwan 1991:1). Difficulties were encountered due to the size of the project, labour limitations, and the planned level of detail for recording. The report includes photographs, maps and detailed descriptions of features (although no overall site plan was provided). The project followed the brief of recording extant remains but no interpretive analysis was undertaken. It therefore provided a catalogue of the site, rather than an investigation of mining and processing methods of Mount Morgan – a site that was in its time an example of ground-breaking technological changes in mining and processing methods in Queensland (Kerr 1982:78, 83).

Many of the more recent examinations of the gold mining areas in Queensland have been initiated as a result of concerns about the loss of cultural heritage from the Queensland Estate (e.g. Jane Lennon and Associates 1996; Kerr 1992; Moylan 1997; Pearson 1994). Kerr (1992) completed a state-wide survey of a variety of mine sites and minerals, including gold, copper and tin mining, incorporating historical detail and a brief summary of major remnants. This resource identifies substantive mining remains for a variety of minerals, although as Kerr (1992:2) points out, it does not cover every mining site known, focussing instead on locations and remains considered significant due to both their integrity at the time of the survey and their representativeness of specific types of mining and ore treatment. The study did not address domestic remnants.

Sites identified as having likely significance were also the subject of the Mining Heritage Places Study covering southeast Queensland, made by Pearson (1994). Jane Lennon and Associates (1996) conducted a similar survey for northern and western Queensland. Both studies examined a large number of historical mining places, covering a range of minerals, including gold, copper, tin, coal, silver, silver-lead-zinc complexes, wolfram, antimony and uranium. Their reviews were aimed at mining and processing remains alone and consisted of brief surveys. Results were presented with photographs, scaled plans of extant remains and a short history of each site. They are an excellent resource and, although the reviews have not covered every historical mining site in Queensland, they provide a good synopsis across the state. The surveys however are not a record of every piece of mining heritage in Queensland; nor do they address all aspects of gold mining heritage. Pearson (1994:18) points out the need for more detailed studies across specific districts and more fine-grained surveys at each site, while Jane Lennon and Associates (1996:xxix) and Pearson (1994:xxix) both suggest that the focus on mining and processing remains in particular has meant that other features that could yield a great deal of information were necessarily neglected. These include features such as townships, gardens, transport infrastructure, sawmills and remnant landscapes, together with identifiable ethnic differences in land-use and settlement patterns.

This focus on industrial remnants is not an uncommon approach. As necessitated by the intent of these projects, Kirwan (1991), Kerr (1992), Trezise (1989) and Moylan (1997) have also focussed their work specifically on mining and processing. However, mines and settlements are not separate entities but are in fact integrally linked and their remnants are often commingled. The inter-relations between town and mine warrant recognition and therefore any study of a mining area should not just be limited to the mines and processing areas.

In north Queensland, Roderick (1980) examined the gold mining settlement of Ravenswood, recognising the need to investigate not only mining remnants, but also features of the township (Roderick 1980:39). While this was an historically-based research project, Roderick supplemented historical information by completing a relatively systematic survey of mines, townscape, and settlement layout. He examined the extant remains of mines (Roderick 1980:56-61) and buildings (Roderick 1980:62-73) and also located other high profile buildings by their footprints, stumps, paths and fireplaces (Roderick 1980:73-74). Further to this, he examined several additional elements, including environmental effects on the landscape, roadways, land-use, and movement in the landscape. This study was comprehensive, encompassing the whole township. Although Roderick discussed the larger features he examined, detailed recording of site locations, the production of site drawings and the identification and cataloguing of artefact scatters was not carried out. These details can reveal finer-grained aspects of day-to-day life when used in interpretive analysis, informing beyond the mere buildings and historical documents.

Also in north Queensland, as part of a heritage management initiative, Grimwade (1990) and Comber (1991, 1995) carried out a comprehensive survey of the Palmer Goldfields Reserve, identifying over 200 sites first through a desktop study (Grimwade 1990) followed by site surveys (Comber 1991). These surveys examined not only industrial remnants but also domestic remains and further considered differences of ethnicity particularly with respect to the Chinese. However, as Grimwade (1996:15) points out, although the approximately 200 sites identified are sometimes considered to be a complete and detailed inventory of sites, they are, in fact, only a small sample of the sites which exist on the R16 Palmer Goldfields Reserve. Grimwade (1996:15) suggests that it is likely that there are more than 900 sites in just 80% of the reserve. Many of these sites remain unrecorded as there has not been a comprehensive archaeological examination of the entire reserve, or any systematic detailed recording of individual sites (Comber 1995:41).

Ongoing work in the Palmer Goldfields Reserve by Grimwade (1993a, 1993b, 1993c, 1994, 1996; Grimwade and Burke 2001; Grimwade *et al.* 2000; Resource Consulting Services 1991, 1993) and Meiklejohn (1995, 1996, 1998) has allowed the development of a cumulative picture of archaeological sites in the area that has added a considerable number of sites to those identified in the original work and improved understanding of the range of site types. A review of the work by Meiklejohn and Grimwade shows that this range of work has resulted in a further 100 sites being identified in the R16 reserve area – an increase of almost 50% in documented sites in 12

Table 1. Summary of research on historic gold mining in Queensland.

Year	Author	Study	Area	Findings	No. of Sites	Report	Mining	Domestic
1975	National Trust	Historical	Kidston	Treatment plant including battery and berdan pans; electric plant; and water supply	3	Brief history of battery and summary of existing relics	✓	
1980	Roderick	Historical	Ravenswood	Distribution of mine sites and buildings across the township	31	Brief description, location and photographs of mining and building remains – standing structures and remnant features	✓	✓
198?	National Trust	CH Assessment	Charters Towers	Venus Battery building and contents	1	National Trust description of building structure and state of repair. List of moveable laboratory equipment <i>in situ</i>	✓	
1984	Jack, Holmes and Kerr	Excavation	Palmer River	Material culture and features of Chinese dwelling and market garden	1	Site descriptions, photographs and maps, and some interpretation		✓
1986	McNiven	CH Assessment	Cracow	General description of 1930s mining site	n/a	Brief description	✓	✓
1987	Bell	Survey	Palmer River	Mining and processing equipment, Mining Warden's residence	18	Detailed history and brief description of remnants, photographs of equipment, selected site plans	✓	✓
1988	Grimwade	CH Assessment	Palmer River	Alluvial workings, stone structure (interpreted as a Chinese settlement), graves, artefact scatters	18	Description, maps, photographs, significance assessment	✓	✓
1989	Resource Consulting Services	CH Assessment	Cooktown	Alluvial workings, dwellings and workshop site, artefact scatters	10	Site descriptions, photographs and maps	✓	✓
1989	Treize	Survey	Brisbane Forest Park	Batteries, battery site, steam engines, spoil heaps	35 mines across 6 locations	Brief history, sketch of locations, brief description of remnants	✓	
1990a	Resource Consulting Services	CH Assessment	Palmer River	Dray road, mine shaft, habitation site, dam, artefact scatters	8	Site description, photographs, maps	✓	✓
1990b	Resource Consulting Services	CH Assessment	Palmer River	Water race, occupancy site and alluvial workings	3	Site description, photographs, maps	✓	
1990c	Resource Consulting Services	CH Assessment	Palmer River	Occupancy site bench, stone arrangement and artefact scatters	2	Site description, plans, drawings, photographs, maps	✓	✓
1990	Grimwade	Desktop Heritage Survey Stage 1	Palmer River	Desktop survey identified burials, civil works, mining, retail, gardening and domestic sites	201	Base data included site location and allocation of an identifying number, brief description, including site type, history and statement of significance	✓	✓
1991	Resource Consulting Services	CH Assessment	Palmer River	Forge, stone structure, Chinese grave, stone pitching, alluvial workings, Laura-Maytown Road	9	Site description, photographs, map	✓	

Year	Author	Study	Area	Findings	No. of Sites	Report	Mining	Domestic
1991	Comber	Field Inspection Heritage Survey Stage 2	Palmer River	83 sites recommended to retain or receive category 1 status out of 205 surveyed. Sites included mining – alluvial and reef, house and building sites, ovens and forges, graves, artefact scatters	205	Site description and status, brief history, statement of significance, photographs, general description of site remnants and artefact types	✓	✓
1991	Kirwan	CH Assessment	Mount Morgan	Buildings and processing areas	1	Detailed descriptions, drawings and photographs	✓	
1992	Kerr	Historical Mining Sites Study	Queensland	Mines, tramways, ore treatment mills and smelters	135	Historic details and site descriptions of 56 gold mining remnants and 79 non-gold related remnants	✓	
1993a	Grimwade	CH Assessment	Palmer River	Occupation sites and stone structures, stone-pitched gully, artefact scatters	5	Site description, photographs, site plans, map and significance assessment	✓	✓
1993b	Grimwade	CH Assessment	Palmer River	Chinese campsites, habitation sites, hearths, alluvial workings, graves, water race, rockwall dam, and artefact scatters	16	Site description, photographs, plan drawings, map and significance assessment	✓	✓
1993c	Grimwade	CH Assessment	Palmer River	Grave and alluvial mine site	2	Site description, photographs, map and significance assessment	✓	
1993	Resource Consulting Services	CH Assessment	Palmer River	Dwelling sites, stone pitching, hard rock mines, alluvial workings, possible market garden, artefact scatters	10	Site descriptions, maps, plan drawings, photographs	✓	✓
1994	Pearson	Mining Heritage Places Study	Southeast Queensland	Mine shafts, mineral processing foundations and equipment, tramways and haul roads	68	Industrial site description, list of remnants, brief history, scale drawings and photographs for 22 gold related and 46 non-gold related sites	✓	
1994	Grimwade	CH Assessment	Palmer River	Reef mine, stone pitching and benched area	2	Brief site description, sketch of location description of typical artefacts, assessment of significance	✓	✓
1995	Meiklejohn	CH Assessment	Palmer River	Alluvial workings and forge	4	Site description and maps	✓	
1995b	Wegner	Historical PhD Research	Croydon	Winding equipment	15	Description and photographs of winding gear. Interpretation of historical and archaeological information. No specific drawings, inventories or descriptions of other archaeological remnants	✓	
1996	Jane Lennon and Associates	Mining Heritage Places Study	Northern and Western Queensland	Mine shafts, mineral processing foundations and equipment, tramways and haul roads	180	Industrial site description, list of remnants, brief history, scale drawings and photographs	✓	

Year	Author	Study	Area	Findings	No. of Sites	Report	Mining	Domestic
1996	Meiklejohn	CH Assessment	Palmer River	Stone pitched dam. Campsite, mullock heaps, coach road	7	Brief site description, sketch of location description of typical artefacts, assessment of significance		✓
1996	Grimwade	CH Assessment	Palmer River	Stone pitched gully, dwelling site, grave site and a mined reef	6	Brief site description, sketch of locations, photographs and assessment of significance	✓	✓
1997	Moylan	Safety Assessment	Mackay Region	Mines, races, trackways, townships, artefact scatters	27	Location, brief descriptions, historic detail, photographs and maps of some sites	✓	✓
1998	Meiklejohn	CH Assessment	Palmer River	Mine workings, mullock heaps, camp sites, dams, stone pitching, artefacts	29	Brief site description, sketch of location, description of typical artefacts, assessment of significance	✓	✓
2000	Archaeo Cultural Heritage Services	CH Assessment	Cracow	Mine shafts, cyanide mill, assay furnace, pipes, prospectors camps, miners camps, cottage and domestic structures, artefact scatters	14 'feature complexes'	Plot showing relative positions of features, including the cottage, floor plan of cottage, description of artefacts	✓	✓
2000	Grimwade, Sachs and Ferguson	Survey	Torres Shire	Gold mine on Horn Island	1	No description	✓	
2001	Grimwade and Burke	CH Assessment	Palmer River	Dam, and domestic site with range of artefacts suggesting Chinese occupants	2	Brief description, contextualised with summary of other CH studies on the Palmer	✓	✓
2002	Prangnell, Reid, Herbert-Cheshire and Rains	CH Assessment	Paradise	65 artefact scatters and >17,000 individual artefacts, domestic structural remnants including 97 fireplaces and stumps from 25 structures, mineral processing foundations, gardens, slaughter yards, roadways	Entire town ~100ha and 4 external sites	Detailed history; photographs, maps and drawings; summary of artefact and feature types, descriptions, quantities and distribution; discussion of post-depositional events, synthesis of archaeological and historical research providing analysis and interpretation		✓
2003	Robertson	Safety Assessment	Paradise	Mine shafts and adits, waste dumps	8	Photographs, map of location of shafts, assessment of stability and recommendations for risk minimisation. Brief statement of 'heritage value'	✓	
2003	Rowney and Grimwade	CH Assessment	Hodgkinson - Tyrconnell Mine	Main Shaft, Mill including Assay Office, Cyaniding area, Battery Managers House, Living Quarters, miscellaneous equipment and peripheral remnants including domestic sites	7 major areas	Description, general history, plan of mine layout, photographs, assessment of condition, significance assessment and cultural heritage management plan	✓	✓

Year	Author	Study	Area	Findings	No. of Sites	Report	Mining	Domestic
2007	Quirk	PhD Research	Paradise	Artefact analysis	Entire town, 4 key sites	Site description, detailed history, photographs and plans of archaeological remnants of residential lots, detailed artefact analysis, synthesis of archaeological research, interpreted using a landscape framework		✓
2010	Mate	PhD Research	Mt Shamrock	Mine workings, processing areas, cyanide tanks, domestic sites, artefact scatters	Northern part of township, school reserve and entire mining area - 67 features	Site description, detailed history; photographs, maps and plans of archaeological remnants including features and artefacts from town and from industrial area; synthesis of archaeological research, interpreted using a landscape framework.	✓	✓

limited surveys. Grimwade and Burke (2001:17) show how this accumulation of data over 10 years can better demonstrate the distribution of European and Chinese sites across the Palmer Goldfields Reserve. These surveys have also led to predictive modelling of typical site location (Meiklejohn 1996).

The range of sites identified in these surveys encompass mine workings, tailings, campsites and dwelling sites, dams, stone pitching, haul-ways and roadways (including the old Laura-Maytown Coach Road). This inclusive approach is in contrast to earlier work in the area that focussed on mine workings and processing equipment alone. However, as Comber, Grimwade and Meiklejohn all comment, the surveys have been aimed only at site location and identification for the purposes of assessing significance, to provide a snapshot of the remnants in the Goldfield reserve, and more recently to allow or disallow mining activity on current mining leases. Fine-grained survey, excavation and analysis are therefore required if an interpretive picture about life and social practices on the goldfields, the use of technology and 'relationships between workplace and residence' (Grimwade 1994:16) is to be developed.

With a similar focus to Grimwade and Meiklejohn, Archaeo Cultural Heritage Services (ARCHAEO) carried out a large-scale survey of historical gold mining remnants near Cracow in central Queensland (ARCHAEO 2000). The survey included domestic as well as mining and processing areas and a range of archaeological sites were identified, from domestic debris and artefact scatters to processing complexes. This survey (of a much smaller area than the Palmer River Reserve) used a 'features system' approach to recording (ARCHAEO 2000:37). The method used enabled the recording of complex combinations of standing and remnant features and artefacts. They produced a plan illustrating the position of historical sites, together with plots and photographs of the features of the Orange Creek mining complex showing relative positions and sizes of features, including the floor plan of a mining cottage. As with work in the Palmer, the project brief did not include interpretive analysis. Another example of an intensive survey, recording both domestic and industrial remnants over a complex site is seen in the Rowney and Grimwade (2003) investigation of Tyrconnell Mine on the Hodgkinson Goldfield. This is a well-preserved mine that continued operating into the twentieth century. Rowney and Grimwade (2003) have suggested a number of interpretive approaches that could be considered as part of further work in the management of this site, but within the scope of the project, were unable to make further analysis or interpretation.

Cultural heritage studies, while having an important role in the identification of significant places, have a disadvantage in that they tend by sheer necessity only to produce a brief overview of a site, allowing little scope for interpretive analysis. This is an ongoing issue and an obvious frustration for many consultant archaeologists who would like the opportunity to deepen their investigations. And there are certainly a number of gaps in current knowledge that identify the need for a wider ranging investigation. Informal, limited and descriptive surveys, while not informing us specifically about past lifeways, do allow us gradually to accumulate a picture of the distribution of historical mining sites across

Queensland as demonstrated by Grimwade and Burke (2001). However, the opportunity exists for detailed regional surveys, identifying historical mines (large and small) for each area. While the Queensland Government did initiate a state-wide heritage survey as a means of procuring a better understanding of different elements of the heritage of the state, only limited areas were surveyed before the completion of the project in 2010 (Department of Environment and Heritage Protection 2012:154).

In addition to the absence of a synthesised picture of gold mining heritage across the state, there are issues with the accessibility and representativeness of current understandings as a result of the over-representation of CHM studies. The results of CHM studies are largely found in grey literature which is either publically inaccessible or subject to access restrictions; consequently the content of these studies is largely unavailable for syntheses. In addition, the areas of these studies are concentrated in areas of high development, primarily southeast Queensland, coastal developments and in mining areas (Gietzelt *et al.* 2007), causing an inherent bias in the type and location of remnants recorded. Finally, several authors have identified the necessity of neglecting some sites in their surveys as a result of time, budget and access constraints. Therefore, even after comprehensive surveys such as those by Comber (1991), Kerr (1992), Pearson (1994) and Jane Lennon and Associates (1996), there is a need to return to sites for more detailed regional and site specific examinations.

The review of regional surveys and CHM investigations undertaken in the last 40 years demonstrates that, despite the range of work undertaken, little interpretive research has been carried out. As has been noted, the emphasis of studies has mainly focussed on identification of particular remnants, rather than a full-scale comprehensive and systematic survey or excavation; and little opportunity has arisen for detailed interpretation. The information from these surveys does, however, show that there is an opportunity to move beyond mere identification of historic mine sites to examine broader social and technological questions.

Social Approaches to the Archaeology of Mining Settlements

Consideration of social influences on the methods used in gold mining and processing is one avenue for deeper analysis and some studies have addressed elements of social and technological interpretation. As part of an historically-based study of the goldfields of Croydon, Wegner (1995a, 1995b) examined industrial remains of mining equipment. This was done in order to investigate the reasons why particular equipment was used, taking into account the availability of finance, and the availability and suitability of the technology. This study was primarily historical and therefore results from the survey of material remains were not presented; rather, the evidence from archaeological remnants was used to supplement assessments about the technology utilised. More recently, Menghetti (2005) has examined technological innovations and inventions in Australian and Queensland mining at a broad scale, using historical data. She argued that the particular conditions found in mines all over Australia enhanced the process of innovation. However, in order to fully assess the

technology used and the need, influence and success of adaptation and innovation, it is important that the physical traces of these technologies are examined. It is only by examining the *in situ* configuration of equipment that processes can be clearly understood and interpreted. In many instances, historical documentation does not provide sufficient detail to understand process configuration or allow investigation of social influences on technology. Nevertheless, Wegner and Menghetti provide interpretations that consider the material evidence for socially constructed actions.

Jack *et al.* (1984), writing on the Chinese on the Palmer River Goldfield, have made one of the very few archaeologically-based attempts to interpret questions of lifeways about a particular group of people on the goldfields of Queensland. On the Palmer River, the Chinese substantially outnumbered the Europeans (Kirkman 1980:124) and so understandably the work by Jack *et al.* (1984) focuses on a Chinese site. One other archaeological study of the Chinese, indirectly related to mining, is the work by Rains (2005) examining Chinese businesses in Cooktown that serviced, amongst others, the Palmer River Goldfields. However, there has been no similar type of published work until very recently that informs us about the other major groups of people present on the goldfields of Queensland, such as Aboriginal people, or European miners.

One project that has partially filled this gap is the archaeological examination of the nineteenth century gold mining town of Paradise in the Upper Burnett region, carried out by Prangnell *et al.* (2002). This study encompassed archaeological survey and excavation that identified features and artefact scatters associated with residential, business and some processing areas. In particular, they examined the domestic aspects of life in a gold mining town, looking at churches, schooling, law and order, retail and domestic settings (Prangnell *et al.* 2005). Analysis of the location and types of artefacts was undertaken, and this information was used to identify people and places associated with the town. The extensive study has produced interpretive projects including an examination of gentility in nineteenth century mining towns (Quirk 2007, 2008), and consideration of marginalised people in the landscape (Dudley 2005).

More recently the author (Mate 2010) examined the landscape of the gold mining town of Mount Shamrock, which operated in the Upper Burnett, near to Paradise, in the nineteenth and twentieth century. This project, carried out as part of the research for a PhD dissertation, used archaeological survey to examine social constructions of identity and technology embedded in the landscape, showing both the applicability of a landscape framework to historical archaeology and the versatility and depth of interpretation that can be gained by considering landscapes as a whole. Elements including the analysis of the material culture found and its link to known residents, the size of residential blocks, their location relative to other residential and mining land lots, and the location of residences, institutional and industrial buildings in the landscape was used to examine social hierarchy and the integrated nature of the landscape. The industrial remnants were also examined for evidence of the specific technology used in mining and mineral processing, the suitability of that technology and the appropriateness of

the processing configuration and flow to the ore being treated. The historical data were examined in conjunction with material remains to draw conclusions about the social influences on the technology adopted and how it was used. This analysis demonstrated clear social influences on technology and also in the formation of the industrial landscape. Evidence of how the residents of Mount Shamrock created meaning in the landscape and adopted and promoted the town as a mining town showed that the industry and settlement of Mount Shamrock were integrally linked, making up a meaningful and engaged landscape for the residents of the town.

Two other PhD projects contributing a more nuanced picture of gold mining settlements are currently nearing completion. A study of the landscape of the Cape River goldfield is being conducted by John Edgar (JCU), and Victor Taylor (UNE) is examining the social and industrial archaeology of the Woolgar goldfield. These two dissertations will further add to new understandings of gold mining as a feature of Queensland's history.

Future Directions for Examinations of Gold Mining in Queensland

Lawrence (2004:58) writes that 'despite (a) long history of research, social approaches are considered marginal to mining archaeology'. She goes on to point out that:

continued emphasis on technology to the exclusion of its social dimension results in an impoverished understanding of the nature of industry and its associated human culture. Only by enlarging the scope of investigation within industrial archaeology can we develop more sophisticated interpretations of that past (Lawrence 2004:58).

Further, it has been suggested that 'mining communities cannot be understood in a cultural vacuum' (Knapp 1998:2). This is a particularly important concept in examining the remote historical mining townships of Queensland, where, by virtue of relative isolation, a community was bound up with the industry it supported in a symbiotic relationship that made settlement and livelihood inter-dependant. In Britain, studies of industrial heritage are increasingly recognising the importance of deeper analyses that consider the fusion of domestic and industrial loci of operation, together with elements of class, gender, power and the importance of understanding the entirety of an industrial landscape, whether urban or rural (e.g. Casella 2005; Palmer 2005; Palmer and Neaverson 1998). Similarly, work done in North America on mining communities (e.g. Hardesty 1998, 2003, 2010; Metheny 2002, 2010) has demonstrated a range of interpretive frameworks that can be applied in a social approach to the archaeology of mining towns, including landscape and technology. From the basis of these approaches there are clearly several avenues for deeper interpretation of mining in Queensland.

Social Aspects of Technology

Archaeological investigations of historic gold mining in Queensland have often ignored social elements of mining in favour of a technological emphasis. In CHM-related work this may be because the identified area for survey is a result of applications related to mining development.

Other studies have a technological focus as a result of the interest of the researcher. However, even in those projects with clear technological focus, the technology used has not been fully explored, and there is room for more complete investigations of equipment and methods used. Consideration needs to move beyond the descriptions of the equipment to analyses that examine a variety of influences, including sources of economic funding, the suitability of the technology used, the social framework of the operation, the type of mining venture undertaken (e.g. one man show vs capitalist investment), the relative knowledge and experience of the miners, and social influences on technology adopted and used. Examinations at Mount Shamrock, for example, demonstrated that the archaeological remnants of the equipment used shed light on the details of the suitability and relative success or otherwise of technology in comparison to the technology available, and explored the role of individual agency and social influences on the adoption and adaptation of technology (Mate 2010). Investigations showed that individuals had a (not always positive) influence on the technology used in a mine, which could have a long-lasting impact on the viability of a venture, and even a settlement. Individual relationships could also be fundamental in decisions to reject or adapt certain technologies. Furthermore the social standing of a person or group could be impacted by the success or failure of technology. The investigations of remnants of technology at Mount Shamrock also demonstrated the relative skill or otherwise of individuals in using adopted (and adapted) technology.

These are not new ideas and researchers in other states and working on other forms of metalliferous mining have shown how social influences on technology can be identified. Jackman (1995), examining tin mining in Tasmania, and Gibbs, considering the lead smelter at Warriban (Gibbs 1997a) and copper mining at Northampton (Gibbs 1997b) in Western Australia, have looked at more than just the equipment present. Both Jackman and Gibbs demonstrate how particular ethnic groups have influenced the type of technology implemented at a mining site, and also how social networks and the organisation of labour impinge on the way settlements and mines are created and operate. There is room for similar considerations in Queensland, not only for the influence of the Chinese on technology, as examined in New Zealand by Ritchie (1981), but also the influence of, for example, Welsh and Cornish miners, both of whom were present on the goldfields (and other mineral fields) of Queensland.

Social Themes and Mining Communities

Another facet of interpretation is provided by examining the social landscapes of mining communities themselves. In Victoria, the landmark study on gold mining settlements carried out by Lawrence (2000:8) on the settlement of Dolly's Creek examined the social construction of identity in goldfields society, the place of women in the goldfields including the construction of feminine identity, the domestic environment and day-to-day life for women on the goldfields (see also Lawrence 1999). Using a different approach to community, McGowan (1992) examined the gold mining settlements around Shoalhaven in New South Wales, focussing on the

wider networks that were only apparent after a combination of archival research and archaeological survey. Little of this type of analysis has been done in Queensland. As Lawrence (2001:250) suggests of Victoria, 'Gold and goldmining infused Victorian society because of its sustained economic and social influence'. The same may be said of Queensland, however, differences in the social context of the time, together with issues of wider distribution and remoteness of towns may have created a very different society. Before life in nineteenth century Queensland can be fitted into the broader narrative of the social landscapes of gold mining in colonial Australia, it is necessary to consider local manifestations of that narrative. Local studies interpreted within a social framework can then be contrasted with work done elsewhere to draw conclusions about the nature of nineteenth century gold mining communities in Queensland. Quirk's (2007, 2008) work on gentility at Paradise has demonstrated how topics such as class, status and gender can elucidate our understanding of the past and Mate's (2010, 2013) work on the landscape of Mount Shamrock shows how deeper understandings of social construction of space and changing social identity can be drawn from the archaeological record. The recent synthesis of the historical archaeology of the Chinese in Far North Queensland by Burke and Grimwade (2013) similarly demonstrates how archaeological investigations can address deeper insights into ethnicity and its influences on settlements, material culture and community. As has been demonstrated in a range of studies, particularly from the US (e.g. Delle 1998; Orser 2007; Sheridan 1998; Sydorik Allen 2010) and also nearer to home in Australasia (Casella 2000; Lawrence 2000; Simmons 1998) gender, status and race are important themes for deeper investigation of the social operations of communities in the past.

Landscapes

As mentioned earlier, Prangnell *et al.* (2005) produced the first comprehensive picture of the social landscape of a gold mining town in Queensland. However, it is possible to go beyond the township itself to consider an integrated picture of the two seemingly disparate areas of settlement and industry, acknowledging the relationship between mines and homes through cultural landscapes. This can include examinations of social influences on decisions regarding the location of the mines and associated settlements: the proximity/location of the settlement in relation to mines and processing; the location of each in relation to topographical features; and social influences on the layout of the settlement. One shortcoming of 'traditional' mine-site oriented surveys is the neglect of the networks and landscapes beyond the actual mine. The remnant landscapes of some areas are as much a source of information about mining practices as the mines themselves, and a wider landscape-focussed approach has been recognised elsewhere (Cassels and Stachiw 2005; Hardesty 2003; McGowan 2001; Palmer 2004:2) as an effective framework for interpretation of industrial, and particularly mining, archaeology. The investigation of the landscape at Mount Shamrock demonstrated this integration. Evidence for the spatial integration of the mine and township, the impact of the mine and mineral processing on the physical experiences of people living in

the town and moving through the landscape, the importance of mining in the construction of social identity in the town, and the dialectic relationship between social identity and technology (with working relationships reflected in the townscape and mine-scape, and social relationships reflected in decisions made both with respect to settlement and mining) all show that mine and settlement were bound together (Mate 2010, 2013; Prangnell and Mate 2011).

There is also an opportunity to examine integrated cultural landscapes, where, for example, predominantly European settlements may also have had Aborigines and Chinese settled in the same vicinity (if not actually in the township). Therefore, recognition of landscapes is one way of approaching the presence of different ethnic groups. While not centred on gold mining, work carried out by Anderson (1983) on the tin mining area of Annan River in north Queensland demonstrates how cultural landscapes from differing perspectives can be explored. Anderson found that ecological impacts of tin mining on the water supplies and the resultant destruction of culturally important waterholes impacted on the environment of the Kuku-Nyungkul. The ecological disruption of traditional subsistence patterns and the advent of different modes of food supply had an impact on camp location and composition, on social relations and on economic activities. This is one of the only such studies in Queensland acknowledging a variety of influences and relationships with Indigenous people. There is certainly a need to better acknowledge that mining settlements were places of contact, interaction and conflict with Aboriginal people, particularly in Queensland. Investigating the landscapes of mining therefore affords an opportunity to explore post-European contact and perpetuated ties to the landscape of the Aboriginal people whose country was occupied by mining. These concepts have been largely ignored in the studies that have been reviewed.

Landscape as an interpretive framework also lends itself to deeper interpretive questions related to the creation of meaning and attachment and different ways of knowing a landscape. This is particularly pertinent to both contact archaeology and more recent approaches to historical archaeology that recognise the importance of place in both community and wider colonial and world system paradigms.

Future research into historic mining in Queensland should incorporate, or at the very least give consideration to, approaches that encompass social frameworks such as gender and community, cultural landscapes (particularly the integration of industrial and community components of a site), and deeper consideration of social influences on technology. We need to move beyond merely recording mining and processing sites and recognise that the narrative of mining in nineteenth century Queensland should be mediated by an understanding of not just the mine or the settlement, but by the people occupying a particular cultural landscape.

Conclusion

Many of the goldfields in Queensland have had at least some investigation, particularly due to the mining places studies by Kerr, Pearson and Jane Lennon and Associates. Further, as a result of heritage assessment studies, a

number of additional sites have been identified and recorded. However, in almost all archaeological investigation carried out, limited analysis has been undertaken.

As this review of work on Queensland goldfields has shown, the majority of studies undertaken in the last 40 years have had an emphasis on historical detail and equipment. However, it is only through systematic, fine-detailed survey and excavation and post-fieldwork analysis that the breadth and depth of archaeological interpretation can be realised. There have been some attempts to address the shortcomings of analysis recently, with researchers beginning to deepen the examinations and interpretations of gold mining in Queensland. The body of work contained in the grey literature is another avenue for deepening understandings of historical gold mining. With current moves towards making grey literature more accessible, such as the New South Wales Archaeology Online (NSW AOL) Project (Gibbs and Colley 2012), there are enhanced opportunities to prepare syntheses such as those by Grimwade and Burke (2001). The question remains as to the value of cultural heritage studies to archaeological research. In their current form, do these studies provide adequate evidence from the sites they examine, sites which are often eventually destroyed? While not part of this analysis, consideration of how cultural heritage studies can be made more effective is worth further discussion. The results from this survey of work in Queensland indicate that while some regional syntheses can be developed, the capacity for subsequent analysis and the development of better understandings of past lifeways in the mining towns of Queensland within a range of frameworks is dependent on the level of investigation conducted.

Systematic investigation of mining settlements and their associated industrial areas fosters our understanding of Queensland's past. As it is for gold mining, the investigation, context and histories of mining for other minerals (such as copper, tin, arsenic and even coal) have similar challenges in terms of variable research approaches. There exists the potential to revisit these industries with more in-depth examinations that could similarly benefit from a focus on interpretation of the social, technological and environmental aspects of mining.

Although anecdotally it appears that some researchers feel that mining has been 'done' in Queensland, it is very apparent that investigations that give attention to more comprehensive survey and excavation, together with contemporary interpretive frameworks, are still needed. There is also clearly an opportunity to consider a more integrated approach to the study of mining towns, realigning the focus on technology and mines to a more inclusive recognition of the footprints of people. In particular, this paper has focussed on three elements that can be used as interpretive frameworks to approach investigations, namely the recognition of cultural landscapes, an inclusion of social themes such as gender and ethnicity in examinations of mining communities, and the importance of considering a range of influences on technology. If we wish to gain a better understanding of life on the goldfields of Queensland, it is necessary to go beyond the phase of site identification to a point where

this information is not just gathered but is also productively utilised in analysis and interpretation.

With only a handful of socially-informed analyses of gold mining in Queensland, it is clear that there remains much scope for investigation to better understand the particular way of life in a mining town. While archaeological investigations certainly give a view of the past, they also contribute to a better understanding of the cultural heritage of the state for its future protection, and if lessons on lifeways, community and social influences on technology can be applied to the present, they may provide additional understandings to be applied to future success of Queensland mining communities.

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References

- Anderson, C. 1983 Aborigines and tin mining in north Queensland: A case study in the anthropology of contact history. *Mankind* 13(6):473-498.
- Archaeo Cultural Heritage Services Pty Ltd (ARCHAEO) 2000 Cultural Heritage Assessment of the Klondyke Gold Exploration and Mining Project, Cracow. Unpublished report to Newcrest Mining Ltd and Queensland Environmental Protection Agency, Brisbane.
- Bell, P. 1980 Essays on north Queensland mining settlement. In K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, pp.1-46. Vol. 2. Townsville: James Cook University.
- Bell, P. 1984 *Timber and Iron: Houses in North Queensland Mining Settlements, 1861-1920*. St Lucia, QLD: University of Queensland Press.
- Bell, P. 1987 *Gold, Iron and Steam: The Industrial Archaeology of the Palmer Goldfields*. Townsville: James Cook University Press.
- Bell, P. 1998 The fabric and structure of Australian mining settlements. In A.B. Knapp, V.C. Pigott and E.W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, pp.27-38. London: Routledge.
- Burke, H. and G. Grimwade 2013 The historical archaeology of the Chinese in Far North Queensland. *Queensland Archaeological Research* 16:121-139.
- Casella, E. 2000 "Doing trade": A sexual economy of nineteenth-century Australian female convict prisons. *World Archaeology* 32(2):209-221.
- Casella, E. 2005 "Social workers": New directions in industrial archaeology. In E.C. Casella and J. Symonds (eds), *Industrial Archaeology: Future Directions*, pp.3-31. New York: Springer.
- Cassels, M.S. and M.O. Stachiw 2005 Perspectives on landscapes of industrial labour. *Historical Archaeology* 39(3):1-7.
- Comber, J. 1991 Palmer Goldfields Heritage Sites Study (Phase 2). Unpublished report to Queensland Department of Environment and Heritage, Brisbane.
- Comber, J. 1995 The Palmer Goldfield. *Australasian Historical Archaeology* 13:41-48.
- Delle, J.A. 1998 *An Archaeology of Social Space: Analysing Coffee Plantations in Jamaica's Blue Mountains*. New York: Plenum Press.
- Department of Environment and Heritage Protection 2012 *State of the Environment Queensland 2011*. Brisbane: The State of Queensland.
- Dudley, J. 2005 Paradise Lost: The Archaeological Landscape of a Late Nineteenth Century Queensland Gold Mining Community. Unpublished BA (Hons) thesis, School of Social Science, University of Queensland, Brisbane.
- Gibbs, M. 1997a The technology of colonial ore processing in Western Australia: The Warribanno lead smelter. *Australasian Historical Archaeology* 15:55-65.
- Gibbs, M. 1997b Landscapes of meaning: Joseph Lucas Horrocks and the Gwalia Estate, Northampton. *Studies in Western Australian History* 17:35-60.
- Gibbs, M. and S. Colley 2012 Digital preservation, online access and historical archaeology 'grey literature' from New South Wales, Australia. *Australian Archaeology* 75:95-103.
- Gietzelt, A., D. Cummins, J. Graham, N. Franklin, M. Rowland and K. Murphy 2007 Natural and cultural heritage: Knowledge of Queensland's heritage. In *State of the Environment Queensland 2007*. Brisbane: The State of Queensland.
- Grimwade, G. 1988 Historical Site Survey: A Preliminary Assessment of Historical Sites within and adjacent to MLAs 1217, 1291 and 1244, Palmer River, North Queensland. Unpublished report to Fortuna Pty Ltd and Queensland Department of Environment and Heritage, Brisbane.
- Grimwade, G. 1990 Palmer River Goldfields Cultural Resources. 3 vols. Unpublished report to Queensland Department of Environment and Heritage, Brisbane.
- Grimwade, G. 1992 Cultural Resources Site Assessment Griffith Mine. Unpublished report to Red Dome Pty Ltd and Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. 1993a Cultural Heritage Study Palmer Goldfield (R16) ML40034 and Access Road. Unpublished report to W.D. McGrath and Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. 1993b Cultural Heritage Study Palmer Goldfield (R16) MLs 6787, 6788, 40023-5 & Access Roads. Unpublished report to S.V. Foster and Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. 1993c Environmental Impact Study Cultural Resources: Palmer Goldfield (R16) ML40050 and Access Road and Update on Adjacent Sites on ML3054. Unpublished report to Jabarol Pty Ltd and Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. 1994 Cultural Heritage Study: Palmer Goldfield (R16) ML40053 & Access/Haul Roads. Unpublished report to L.T. Rockley and Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. 1996 Cultural Heritage Assessment Palmer Goldfield (R16) MLs 20266 and 20267. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Grimwade, G. and H. Burke 2001 Cultural Heritage Assessment ML20309 & ML20311, Palmer River Goldfield (R16). Unpublished report to Queensland Environmental Protection Agency, Brisbane.

- Grimwade, G., K. Sachs and A. Ferguson 2000 Cultural Heritage Study: Torres Shire. Unpublished report to Torres Shire Council and Queensland Environmental Protection Agency, Brisbane.
- Hardesty, D. 1998 Power and the industrial mining community in the American West. In A.B. Knapp, V.C. Pigott and E. W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, pp.81-96. London: Routledge.
- Hardesty, D. 2003 Mining rushes and landscape learning in the modern world. In M. Rockman and J. Steele (eds), *Colonisation of Unfamiliar Landscapes: The Archaeology of Adaptation*, pp.81-95. London: Routledge.
- Hardesty, D. 2010 Gendering mining landscapes. In S. Baugher and S.M. Spencer-Wood (eds), *Archaeology and Preservation of Gendered Landscapes*, pp.293-312. New York: Springer.
- Holthouse, H. 1980 *Gympie Gold: A Dramatic Story of Queensland Gold*. Sydney: Angus and Robertson.
- Idriess, I.L. 1958 *Back o' Cairns*. Sydney: Angus and Robertson.
- Jack, I., K. Holmes and R. Kerr 1984 Ah Toy's Garden: A Chinese market garden on the Palmer River Goldfield, North Queensland. *Australian Journal of Historical Archaeology* 2:51-58.
- Jackman, G. 1995 'No good is to be found in granite': Aspects of the social maintenance of mining concepts on Blue Tier tin-field, Tasmania. *Australasian Historical Archaeology* 13:49-58.
- Jane Lennon and Associates 1996 Mining Heritage Places Study: Northern and Western Queensland: Identification, Assessment and Documentation of Cultural Heritage Significance. Unpublished report to Queensland Department of Environment.
- Johnston, W.R. 1982 *The Call of the Land: A History of Queensland to the Present Day*. Brisbane: Jacaranda Press.
- Kerr, J. 1982 *Mount Morgan: Gold, Copper and Oil*. St Lucia, QLD: J.D. and R.S. Kerr.
- Kerr, R. 1992 Queensland Historical Mining Sites Study: Report for the Department of Environment and Heritage. Unpublished report to Queensland Department of Environment and Heritage.
- Kirkman, N. 1980 The Palmer River Goldfield. In K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, pp.113-144. Vol. 1. Townsville: James Cook University.
- Kirwan, D. 1991 Mount Morgan Mine: Historical Archaeological Catalogue of Mount Morgan Gold Mine. Unpublished report to Mount Morgan Committee, University of Central Queensland, Rockhampton.
- Knapp, A.B. 1998 Social approaches to the archaeology and anthropology of mining. In A.B. Knapp, V.C. Pigott and E.W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, pp.1-23. London: Routledge.
- Lawrence, S. 1999 Towards a feminist archaeology of households: Gender and household structure on the Australian goldfields. In P.M. Allison (ed.), *The Archaeology of Household Activities*, pp.121-141. London: Routledge.
- Lawrence, S. 2000 *Dolly's Creek: An Archaeology of a Victorian Goldfields Community*. Melbourne: Melbourne University Press.
- Lawrence, S. 2001 After the gold rush: Material culture and settlement on Victoria's central goldfields. In I. McCalman, A. Cook and A. Reeves (eds), *Gold: Forgotten Histories and Lost Objects of Australia*, pp.250-266. Cambridge: Cambridge University Press.
- Lawrence, S. 2004 Landscapes of industry: Archaeology of mining in Australia. In T. Murray (ed.), *Archaeology from Australia*, pp.55-70. Melbourne: Australian Scholarly Publishing.
- Mate, G. 2010 Mining the Landscape: Finding the Social in the Industrial through an Archaeology of the Landscapes of Mount Shamrock. Unpublished PhD thesis, School of Social Science, University of Queensland, Brisbane.
- Mate, G. 2013 Mount Shamrock: A symbiosis of mine and settlement. *International Journal of Historical Archaeology* 17(3):465-486.
- McGowan, B. 1992 Aspects of Gold Mining and Mining Communities in the Shoalhaven Area of New South Wales: An Archaeological and Historical Study. *Australasian Historical Archaeology* 10:43-54.
- McGowan, B. 2001 Mullock heaps and tailing mounds: Environmental effects of alluvial goldmining. In I. McCalman, A. Cook, and A. Reeves (eds), *Gold: Forgotten Histories and Lost Objects of Australia*, pp.85-100. Cambridge: Cambridge University Press.
- McNiven, I. 1986 A Preliminary Archaeological Survey of the Cracow Gold Mine ML186, Cracow, Southeast Queensland. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Meiklejohn, A. 1995 Survey of ML 40022 Palmer Goldfield. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Meiklejohn, A. 1996 A Cultural Heritage Survey of ML20248 Palmer Goldfield, North Queensland. Unpublished report to Jessops Gold Pty Ltd and Queensland Environmental Protection Agency, Brisbane.
- Meiklejohn, A. 1998 Cultural Heritage Survey of MLA 20289, Palmer Goldfield. Unpublished report to Ralph Delacey and Queensland Environmental Protection Agency, Brisbane.
- Menghetti, D. 1980 The gold mines of Charters Towers. In K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, pp.49-117. Vol. 2. Townsville: James Cook University.
- Menghetti, D. 2005 Invention and innovation in the Australian non-ferrous mining industry: Whose technology? *Australian Economic History Review* 45(2):204-219.
- Metheny, K. 2002 The Landscape of Industry and the Negotiation of Place: An Archaeological Study of Worker Agency in a Pennsylvania Coal Company Town, 1891-1947. Unpublished PhD thesis, Boston University, Boston.
- Metheny, K. 2010 Engendering the corporate landscape. In S. Baugher and S.M. Spencer-Wood (eds), *Archaeology and Preservation of Gendered Landscapes*, pp.313-340. New York: Springer.
- Moylan, J. 1996 Report on the Status of Some Heritage Gold Mining Sites in the Crediton State Forest. Unpublished report to Queensland Department of Natural Resources.

- Moylan, J. 1997 *Overview of Heritage Mining, Milling and Mining Related Sites in the Mackay Region*. Mackay, QLD: James Moylan.
- National Trust 1975 Kidston Gold Battery. Unpublished report to National Trust of Australia, Queensland.
- National Trust 198? The Venus Battery Building, Charters Towers. Unpublished report to National Trust of Australia, Queensland.
- Orser Jr, C.E. 2007 *The Archaeology of Race and Racialization in Historic America*. Gainesville: University Press of Florida.
- Palmer, M. 2004 The Archaeology of Industrialization: Introduction. In D. Barker and D. Cranstone (eds), *The Archaeology of Industrialization*, pp.1-4. Leeds: Maney Publishing.
- Palmer, M. 2005 Industrial archaeology: Constructing a framework of inference. In E.C. Casella and J. Symonds (eds), *Industrial Archaeology: Future Directions*, pp.59-76. New York: Springer.
- Palmer, M. and P. Neaverson 1998 *Industrial Archaeology: Principles and Practice*. London: Routledge.
- Pearson, M. 1994 Mining Heritage Places Study: Stage 2B: Southern and Central Queensland. Report for Queensland Department of Environment and Heritage. Canberra: Heritage Management Conservation.
- Prangnell J. and G. Mate 2011 Kin, fictive kin and aspirational movement: Working class heritage of the Upper Burnett. *International Journal of Heritage Studies* 17(4): 318-330.
- Prangnell, J., L. Cheshire and K. Quirk 2005 *Paradise: Life on a Queensland Goldfield*. Brisbane: The University of Queensland Archaeological Services Unit and Burnett Water Pty Ltd.
- Prangnell, J., J. Reid, L. Herbert-Cheshire and K. Rains 2002 Archaeological Salvage of Paradise: Survey and Historical Research. Unpublished report. Brisbane: University of Queensland Archaeological Services Unit.
- Quirk, K. 2007 The Victorians in 'Paradise': Gentility as Social Strategy in the Archaeology of Colonial Australia. Unpublished PhD thesis, School of Social Science, University of Queensland, Brisbane.
- Quirk, K. 2008 The colonial goldfields: Visions and revisions. *Australasian Historical Archaeology* 26:13-20.
- Rains, K. 2005 Intersections: The Overseas Chinese Social Landscape of Cooktown, 1873-1935. Unpublished PhD thesis, School of Social Science, University of Queensland, Brisbane.
- Resource Consulting Services 1989 Environmental Impact Study Archaeology: MLAs 1255-1258 Cooktown and 4189 Mareeba. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Resource Consulting Services 1990a Environmental Impact Study Archaeology: Palmer Goldfield EP 31/90. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Resource Consulting Services 1990b Environmental Impact Study Archaeology: Palmer Goldfields MLA 6714 - Chaos. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Resource Consulting Services 1990c Environmental Impact Study Archaeology: Palmer Goldfields MLAs 1300, 1319, 1323, 1324, 1327, 1350. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Resource Consulting Services 1991 Environmental Impact Study Cultural Resources: Palmer Goldfield (R16) ML 3119. Unpublished report to Mr K. Lawton and Queensland Environmental Protection Agency, Brisbane.
- Resource Consulting Services 1993 Environmental Impact Study Cultural Resources: Palmer Goldfield (R16) MLs 3075-3077, 6719, 7355, 40057. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Ritchie, N.A. 1981 Archaeological interpretation of alluvial gold tailings sites, Central Otago, New Zealand. *New Zealand Journal of Archaeology* 3:51-69.
- Robertson, A.C. 2003 Burnett River Dam Mine Shaft Investigation, Exploration and Rectification. Unpublished report to Burnett Water Pty Ltd.
- Roderick, D. 1980 Ravenswood: Surveying the physical evidence. In K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, pp.39-86. Vol. 1. Townsville: James Cook University.
- Rowney, M. and G. Grimwade 2003 Tyrconnell Gold Mine Conservation Management Plan. Unpublished report to Queensland Environmental Protection Agency, Brisbane.
- Sheridan, T. 1998 Silver shackles and copper collars: Race, class and labour in the Arizona mining industry from the eighteenth century until World War II. In A.B. Knapp, V.C. Pigott and E.W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, pp.174-187. London: Routledge.
- Simmons, A. 1998 Bedroom politics: Ladies of the night and men of the day. In A.B. Knapp, V.C. Pigott and E.W. Herbert (eds), *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, pp.59-80. London: Routledge.
- Sustainable Minerals Institute 2014 Centre for Social Responsibility in Mining - Research. Retrieved 11 April 2014 from <https://www.csrmi.uq.edu.au/research/all-projects>.
- Sydoriak Allen, K.M. 2010 Gender dynamics, routine activities, and place in Haudenosaunee territory: An archaeological case study from the Cayuga region of Central New York State. In S. Baugher and S.M. Spencer-Wood (eds), *Archaeology and Preservation of Gendered Landscapes*, pp.55-77. New York: Springer.
- Treize, D.L. 1989 The History of Gold Mining, Brisbane Forest Park, Southeast Queensland. Unpublished report.
- Wegner, J. 1980 Gold mining on the Etheridge. In K.H. Kennedy (ed.), *Readings in North Queensland Mining History*, pp.87-111. Vol. 1. Townsville: James Cook University.
- Wegner, J. 1995a Winding engines on the Croydon Goldfield: What the documents don't say. *Australasian Historical Archaeology* 13:11-17.
- Wegner, J. 1995b Croydon: Technology Transfer on a North Queensland Goldfield, 1885-1915. Unpublished PhD thesis, James Cook University, Townsville.

